

The Morning Star and the *Chompola* Squash Cycle in Tepoztecan Ritual

El lucero del alba y el ciclo de la calabaza *chompola* en el ritual tepozteco

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- ABSTRACT This essay examines the temporal intervals found in the cultivation, rendering, and first ritual consumption of the *chompola* squash found in Tepoztlán, Mexico. These periodicities are significant because they replicate the eight plus 236 days that represent the planet Venus’ interior conjunction and Morning Star phases as set forth in the Mayan *Dresden* and *Grolier* codices but not recorded for central Mexico. The purpose of rendering the squash is to use the seeds in the manufacture of a sacred food (*ayobhuachmölli*). The ingredients that comprise *ayobhuachmölli* are examined for their symbolic content and I end the essay by discussing the reified 236-day Morning Star cycle as establishing the parameters of the Tepoztecan agrarian calendar.
- KEYWORDS Tepoztlán, *Chompola* squash, Morning Star, Agrarian calendar, Worldview
- RESUMEN Este ensayo examina los períodos temporales en el cultivo, la reproducción y el primer consumo ritual de la calabaza *chompola* encontrada en Tepoztlán. Estas periodicidades son significativas porque reproducen los ocho más 236 días que representan la conjunción inferior del planeta Venus y las fases del lucero del alba, tal como se establece en los códices *Dresde* y *Grolier* de los mayas, pero que no han sido registradas para el México central. De esta calabaza se usan las semillas para fabricar un alimento sagrado (*ayobhuachmölli*). Los ingredientes del *ayobhuachmölli* se examinan aquí en busca de su significado simbólico y, al final del ensayo, se analiza el ciclo del lucero del alba de 236 días que establece los parámetros del calendario agrario tepozteco.
- PALABRAS CLAVE Tepoztlán, calabaza *chompola*, lucero del alba, calendario agrario, cosmovisión

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INTRODUCTION

This essay describes the ritual events that attend the planting, harvest and consumption of the *chompola* squash (*Cucurbita argyrosperma*) indigenous to the village of San Andrés de la Cal in the municipality of Tepoztlán, México. The temporal spacing of these observances reveals a correlation between the days that separate the squash's harvest and planting and the Mesoamerican ritual determination of the cycle of Venus in inferior conjunction and as the Morning Star; in both cases there are intervals of eight and 236 days. An examination of data from historic and ethnographic sources strengthens the correlation between the Tepoztecan *chompola* squash cycle and the Morning Star periodicities.

This study is significant because with the exception of the data to be presented in this article, there appears to be no evidence that the separation of the Venusian year into the sub-periods as described in the Dresden and Grolier codices was recognized in the Mexican highlands.¹ The data presented here links the codical Venus Morning Star passages from the Maya codices to the state of Morelos in Central Mexico.

I have organized the present work as follows: 1) I begin with an introduction to the Mesoamerican determination of the planet Venus' synodic period as found in the *Dresde* and *Grolier* codices; 2) I next briefly describe the location in which the study has taken place and relevant aspects of

1 Bricker, "A method for dating Venus almanacs in the Borgia Codex", p. S23. See Milbrath's explication of the *Dresden Codex* Venus pages (Milbrath, *Star Gods of the Maya*, p. 163-172).

Tepoztecan *cosmovisión* that pertain to agriculture and the squash cycle;² 3) In the pages that follow I discuss the reason why the *chompola* squash is cultivated and the use of its seeds to make a sacred food, *ayohhuachmōlli*, which, through an examination of attendant symbols and historic sources, I hypothesize to be a symbolic offering of transubstantiated blood; 4) I examine the 236-day Morning Star cycles as establishing the parameters of an agrarian calendar that use invariant astronomical events, the solstices, as pivot points; and, 5) I conclude with a summation of this paper's findings.

THE MESOAMERICAN VENUS CYCLE

The ancient Mesoamericans were conscientious observers of the heavens and their diligence as astronomers was reflected through their use of a solar calendar and was portrayed in the *Maya Dresden Codex*, an almanac that detailed the movement of the sun, predicted lunar eclipses, and charted the movement of the planet Venus. That planet's synodic period was calculated by the Mesoamericans to be 584 days, a close approximation to the modern astronomers' average of 583.922 days. Moreover, the Mayas divided Venus' synodic period into four sub-periods: 1) morning star (236 days), 2) superior conjunction (90 days), 3) evening star (250 days), 4) inferior conjunction (eight days).³

There appears to be no astronomical basis for the irregularity described by the Mayas for the morning star/evening star intervals since these should be about the same in empirical observations (263 days).⁴ Studies suggest that the discrepancies between the empirical and *Dresden Codex* calculations for the Venusian sub-periods were purposefully distorted to

2 *Cosmovisión* is defined by Johanna Broda as "the structured view in which the ancient Mesoamericans combined into a coherent whole the notions about the natural environment in which they lived and about the cosmos in which they situated themselves". Broda, "Calendrics and Ritual Landscape at Teotihuacan", p. 399.

3 See Coe, "Native Astronomy in Mesoamerica", p. 20.

4 Gibbs has tabulated the empirical values at about 263 days (morning star), 50 days (superior conjunction), 263 days (evening star), and 8 days (inferior conjunction). Gibbs, "Mesoamerican Calendrics as Evidence of Astronomical Activity".

fit ritual cycles keyed to the 260-day divining calendar⁵ and to fit lunar cycles.⁶

The reasons for the Mesoamerican interest in Venus are complex. With respect to agriculture in general, John Carlson has pointed out that there is evidence for an association of Venus with rain, fertility and maize in the *cosmovisión* of pre-Columbian Mesoamerica. The same author poses a central question:

Does the Mesoamerican association of Venus with maize and agricultural fertility stem from a deep-lying cultural mythic tradition of fertility created from the transformation of blood into water through warfare and sacrifice under the auspices of Venus, or was there an astronomical/calendrical link?⁷

I shall return to the question of the relationship of Venus as the Morning Star, agricultural fertility, and the “transformation of blood into water” later in the body of this essay.

THE LOCI OF THE STUDY: SAN ANDRÉS DE LA CAL AND TEPOZTLÁN, MORELOS

The specific locus of this study, the Morelean village of San Andrés de la Cal, is located eight kilometers south of the ethnographically well-known town of Tepoztlán.⁸ First mentioned in the *Relaciones* of 1580,⁹ San Andrés is nestled in the apex of a v-shaped valley formed by the intersection of two cordilleras and is unique in the municipality because it is the site of a seasonal or intermittent lake. For these reasons, San Andrés became a preferred and ritualized landscape that has been termed in Spanish, a *rinco-*

5 Gibbs, “Mesoamerican Calendrics...”; Tedlock, *Popol Vuh*, p. 233-234.

6 Aveni, “Archaeoastronomy in the Maya Region”, p. 8.

7 Carlson, *Venus-regulated Warfare and Ritual Sacrifice in Mesoamerica*, p. 53.

8 Redfield, *Tepoztlán, a Mexican Village*; Lewis, *Life in a Mexican Village*; Bock, “Tepoztlán Reconsidered”; Dubernard Chavreau, *Apuntes para la historia de Tepoztlán*.

9 Paso y Troncoso, *Papeles de Nueva España*, p. 246-247.

nada.¹⁰ With a current population of about 1 400, San Andrés was until the early 1970's without an automobile road to the Tepoztlán-Cuernavaca highway. This relative isolation has contributed to the retention of significant elements of pre-Columbian *cosmovisión* and ritual practices; the village's surrounding hillsides are where offerings continue to be made in May to supernatural demigods, the *āhuahqueh*,¹¹ who assist the saints Pedro of Verona and Lucas in controlling the weather.¹²

The Sanandreseño farmers have traditionally timed their agrarian activities to the start and end of the seasonal rains. Embedded within the agrarian schedule are ceremonial events directed to the supernatural; festivals for patron saints (*fiestas patronales*) and rituals to assure successful crops (*rituales de costumbre*) conducted to influence the *āhuahqueh*.¹³ While these agrarian activities and associated *rituales de costumbre* are grounded in the weather patterns that determine the growth cycle of the utilized plants, folk explanations for seasonal change can be understood through an examination of another less accessible physical and temporal dimension: the underworld and its inhabitants.

COSMOVISIÓN: FOLK METEOROLOGY AND THE UNDERWORLD

The “folk” explanation of the mechanics of climate change, *i.e.*, the factors that cause the onset and conclusion of the rainy season, are derived from my fieldwork in Tepoztlán's satellite village of San Andrés de la Cal. Like other indigenous people of Mesoamerica, the Sanandreseños believe that there is a land that lies beneath the observed earth's surface. As with the

10 García Zambrano, “Ancestral Rituals of Landscape Exploration and Appropriation among Indigenous Communities in Early Colonial Mexico”, p. 193-220.

11 Andrews and Hassig translate *āhuahqueh* as “water-owners”. Ruiz de Alarcón, *Treatise on the Heathen Superstitions That Today Live among the Indians Native to This New Spain*, p. 220.

12 Grigsby, “In the Stone Warehouse”; Huicochea, “Yeyecatl-yeyecame”; Ruiz Rivera, *San Andrés de la Cal*.

13 See Reina for a discussion of *rituales de costumbre*. Reina, “Annual Cycle and Fiesta Cycle”, p. 319.

surface topography in San Andrés de la Cal, there is also a large body of water in the underworld which is believed to be replenished through a whirlpool that drains into a sump-like cave. As the dry season reaches its climax in April and early May, the heat generated by the sun causes the underground lake to evaporate—as will the surface lake during the rainless months from November to the first half of May—and send clouds of steam that condense to form rain through caves located to the south of the village where offerings are made in May.¹⁴

The underworld is said to be inhabited by various “races” of invisible dwarfs, a belief widespread in the Americas in general and Mesoamerica in particular,¹⁵ and is called *tepetlcalco* or *tlallancalco* in Tepoztecan Náhuatl.¹⁶ While in modern Tepoztlán there is a belief in a first cause, the Christian god and the Roman Catholic pantheon of saints, the Tepoztecan agricultural cycle is thought to be in the diminutive hands of the *āhuahqueh* because they control the caves whence the rain clouds come.

It is beyond the scope of this paper to illustrate all of the attributes assigned to these supernatural beings; the descriptions presented here represent a consensus by the villagers of some of their attributes. For example, the *āhuahqueh* are said to be dark-skinned dwarfs about six cm. tall that appear to human beings only in dreams or in their shape-shifting transformations as snakes, fish, frogs, toads, ants, or other creatures. They are often described as being mute, hard of hearing, nearly naked, and because they lack mouths, smell food to get their sustenance. There are various “races” within the chthonian population; the *yehyehcameh*, the “air people”, or in Spanish, “*los aires*”, are perhaps the best known sub-group and are said to be the “soldiers” or the “police” of the *āhuahqueh* populace.¹⁷

These beings are believed to live in a parallel but contrary subterranean world where time and seasons are reversed. When it is midnight in

14 Grigsby, “In the Stone...”.

15 See Knab, *The Dialogue of Earth and Sky*; Lévi-Strauss, *The Jealous Potter*; Lorente Fernández, “Nociones de etnometeorología nahua”; Miller, “Basin Religion and Theology”.

16 See Grigsby, “In the Stone...”, for a discussion of *tepetlcalco*. An alternative term for the place where the *āhuahqueh* live is *tlallancalco*, “houses under the ground”.

17 See Redfield, *Tepoztlán*, p. 163-166; Lewis, *Life...*, p. 280.

the surface world, it is noon below the surface of the earth, when it is the longest day of the year in the surface world, it is the shortest day there, when it is the dry season here, it is the rainy season there. Consequently, it is said that the dwellers of the underworld hold “the same fiestas that we do” (albeit with a six-month difference) and “plant when we harvest, and harvest when we plant”.

THE RITUAL AGRARIAN SCHEDULE AND *CHOMPOLA* SQUASH¹⁸

Returning to the surface world, the Tepoztecan say that the agrarian year begins on April 29, the day of the important *barrio* fiesta of San Pedro the martyr of Verona. At this time San Pedro is believed to unlock the rain-clouds that will escape from the underworld. Soon after, the people of San Andrés visit sacred sites where they conduct *rituales de costumbre* to petition the *āhuahqueh* for rain and a bountiful harvest.¹⁹

The rainy season begins throughout central Mexico in late May and by mid-June afternoon showers have become relatively constant. The Sanandreseño farmers observe a planting *ritual de costumbre* on the feast-day of San Antonio on June 13 because that day is considered to be especially propitious to sow maize, beans, and the *chompola* squash.²⁰

18 I have observed the following activities in San Andrés de la Cal during the agricultural seasons of 1969, 1982, and 1990.

19 Grigsby, “In the Stone...”; Grigsby and Cook de Leonard, “Xilonen in Tepoztlán”. The first Friday of May was the traditional date given me by the older Sanandreseños however in recent years the third Friday of the same month has been substituted. Moreover, at least five more sites have been added to the seven offering sites reported to have been visited in the 1960’s (Grigsby, “In the Stone...”).

20 Grigsby and Cook de Leonard, “Xilonen...”, p. 112. San Antonio’s feast-day is important elsewhere, *i.e.*, Hémond and Goloubinoff identify June 13 as a date related to planting in the Río Balsas region of Guerrero. Hémond and Goloubinoff, “El ‘Via Crucis del agua’”, p. 9, 32. Eric Boot writes that in “Tixkobob (Yucatan) San Antonio’s day is celebrated June 13 in the *finca Calcachín Cantón*, which is the most important *novena* at the end of Spring” and a day to ask for sufficient rain. Boot, “To Cut the Clouds”, p. 36, n. 23.

According to the farmers the seedlings will emerge eight days later on the day of the summer solstice, June 21.²¹

Cultivation of the fields traditionally proceeds in 20-day intervals until late July/early August when cultivation ceases and the fields are abandoned.²² The villagers return to their fields on September 28, the day of the important *ritual de costumbre de pericón*, at which time the *chompola* squash are cut from their vines and removed from the fields together with the first roasting ears of corn.²³ The feast day of San Lucas twenty days later on October 18 is the occasion for a *ritual de costumbre* that marks the end of the rainy season and anticipates the important nationwide commemorations that honor the dead (*Los días de muertos*) from October 28 to the first of November.²⁴ According to village tradition, San Lucas stands in opposition to San Pedro of Verona because he stops the rains and opens the doors of the underworld that allows the spirits of the ancestral dead to return to their homes for their annual visit.²⁵

The squash's fruit are opened and their seeds extracted and spread out to dry on October 20.²⁶ Eight days later the seeds are used in the preparation of a special occasion food *ayohhuachmölli*, or as it known in Spanish, *mole verde*, which is served as a *primicia* or first fruit offering to the ancestral spirits who died without the last rites of the Roman Catholic Church and will arrive on the evening of October 28. The

21 Squash should germinate in 7-14 days with soil temperatures from 25-35°C. "How to Grow Squash".

22 Lewis, *Life...*, p. 140; Grigsby and Cook de Leonard, "Xilonen...".

23 The *ritual de costumbre de pericón* celebrates the harvest of the first milk-stage ears of maize (Spanish *jilotes*, Náhuatl *xilotl*) and the picking of *pericón* flowers (*Tagetes lucida*) which are fashioned into crosses. See Grigsby and Cook de Leonard, "Xilonen...", p. 113-115, for a discussion of the ritual.

24 Comparable observances regarding the feast day of San Lucas have been reported in the state of Guerrero by Hémond and Goloubinoff, "El 'Via Crucis'...", p. 45.

25 Allen Christenson has found a similar dichotomy between deities presiding over the wet and dry seasons. Christenson, *Art and Society in a Highland Maya Community*, p. 84-85, 157, 202.

26 I have not witnessed the opening of the squash on October 20, but this was attested to as a traditional practice by Sanandreseño elders Gonzalo Sánchez, Jovita Jiménez, and Silvestra Roldán.

cycle will be repeated 236 days later with the sowing of *chompola* squash, maize, and beans on June 13 at the aforementioned *ritual de costumbre* of San Antonio.

An examination of Table 1 shows that the ritual planting, the cleaving of the *chompola* squash to extract its seeds, and the first fruits consumption of *ayobhuachmölli* is framed in a continuum of periodicities of eight plus 236 days that is replicated in the *Dresden* and *Grolier* codices' canonical phases of Venus in inferior conjunction and as the morning star. A second set of periodicities based on 236-days is reflected in the contrary space and time of the *āhuahqueh* and is seen in Table 2.

<i>Date</i>	<i>Interval</i>	<i>Date</i>	<i>Interval</i>	<i>Date</i>
October 20 Squash opened and seeds spread out to dry.	8 days to:	October 28 First Fruit offering of <i>ayobhuachmölli</i> (mole verde)	236 days to:	June 21 Summer Solstice/ Plants are “born.”
	236 days to:	June 13 Planting <i>Costumbre</i> of San Antonio.	8 days to: ²⁷	

Table 1. Sanandreseño *Chompola* Squash-Related Activities and eight + 236-Day Periodicities

- 27 Iván Šprajc corroborates the eight-day interval of planting and emergence of the plants with an astronomical linkage when he writes that: “As suggested by Dütting and Graulich, Venus, during its disappearance period around inferior conjunction and before the Morning Star’s heliacal rise, may have been associated with the sown maize seed which remains invisible for a comparable lapse of time before the new plant is born” (Šprajc, “The Venus-Rain-Maize Complex in the Mesoamerican World View”, p. S41). Moreover, the connection between planting on June 13 and birth of the plants on the day of the summer solstice may be reflected in the *Dresden Codex*. Bricker and Bricker, “A Method for Cross-dating Almanacs with Tables in the Dresden Codex”, p. 72.

<i>Date</i>	<i>Interval</i>	<i>Date</i>
April 29 - Festival of San Pedro and the start of agrarian year. (<i>āhuahqueh</i> October 28)	236 days to:	December 21 Winter Solstice. (<i>āhuahqueh</i> calendar June 21)
December 13 – The day after the Festival of Virgin of Guadalupe and an idealized Tepoztecan harvest date. (<i>āhuahqueh</i> calendar June 13)	8 days to:	

Table 2. *Āhuahqueh* Contrary Squash-Related Activities and the Eight + 236-day Periodicities

The data presented above reveals a numerological relationship between the *chompola* squash cycle and the inferior conjunction/morning star phase of Venus as set forth in the Mayan codices discussed above. I now turn to the question of *why* the Tepozteicans plant the *chompola* squash: the villagers say that the purpose for the plant's cultivation is to use the seeds in the manufacture of *ayohhuachmōlli* that is presented as a *primicia* on the evening of October 28.

THE IMPORTANCE OF OCTOBER 28, *AYOHHUACHMŌLLI* AND THE SACRAMENT OF FIRST-FRUITS

October 28 falls 182 days after the *barrio* fiesta of San Pedro of Verona, which, as described above, is celebrated on April 29 and marks the beginning of the agrarian year. The October date therefore divides the year in half and is correlated with the end of the rains and growing season. Moreover, October 28 is explicitly identified with death; the date initiates a five-day period of ceremonial events that ends with the departure of the souls of the ancestral adult dead on November 2, the Roman Catholic observance of All Souls Day.

The spirits of the dead are released from their spectral homes ten days earlier on San Lucas Day, October 18, and the first souls to arrive on October 28 are those who have died by trauma and not given the sacrament

of the last rites by the Catholic Church.²⁸ Among these individuals, herein called *los matados* or “the slain ones”, are those who have drowned or been struck by lightning. These specially-called individuals are prayed to and act as intermediaries between the living and the *āhuahqueh* in times of pluvial crisis.²⁹

In sum, there are two important interrelated events fall on October 28: 1) the first of “specially dispatched” spirits of the dead return to their earthly homes; and, 2) *ayohhuachmōlli* is presented on household altars as a first-fruits offering. These events are correlated with the change of the season; from wet to dry. I now turn to a description of the composition of *ayohhuachmōlli* and the symbols attached to its ingredients.

THE FIRST-FRUITS OFFERING: AYOHHUACHMŌLLI AS A SACRED FOOD

Ayohhuachmōlli is prepared by cooking the ground-up seeds (Náhuatl, *ayohhuachtli*) of the *chompola* squash with serrano chili peppers (*Capsi-*

28 As shown earlier in this paper, the *chompola* squash growth-to-harvest cycle consists of 129 days counting from the emerging seedlings on the day of the summer solstice (June 21) to the first offering of *ayohhuachmōlli* (*mole verde*) to the spirits of the returning dead on October 28. Prior to the Gregorian calendar correction of October 1583, the summer solstice in the Julian calendar fell on June 11. Adding 129 days to that date is October 18, San Lucas’ feast day. The 10-day calendrical correction subtracted from San Lucas’ position in the cycle means that the saint’s feast day originally fell 10 days later than now observed, on October 28. The 10-day journey of the dead is most probably a post October 18 adaptation to the Gregorian calendar correction. San Pedro of Verona wasn’t installed into the Roman Catholic liturgical calendar until after 1586. Who preceded him in the Tepoztecan religious calendar on April 19 (Julian) is not known.

29 See Grigsby, “In the Stone...”; Grigsby and Cook de Leonard, “Xilonen...”. “*Los matados*, the slain ones, are the earliest to arrive back to their earthly homes perhaps because their place in the underworld is closest to the surface of the earth”. Grigsby, “In the Stone...”, p. 175. The intermediary role of those killed by lightning or drowning was related to me by the inhabitants of San Andrés de la Cal and specifically by Doña Jovita Jiménez while I was living in that village during 1983-1984. During my initial stay in 1969 a man drowned in the intermittent lake at the foot of the village and in 1983 I was present when another man, Miguel A., was electrocuted by lightning while working in a tomato field. According to Doña Jovita, these individuals would be prayed to for four years during their stay with the *āhuahqueh*.

cum annuum), cilantro (*Coriandrum sativum*),³⁰ and water.³¹ There is consensus in the village that *ayobhuachmōlli* is a sacred food, and this is clearly demonstrated by the occasions when it is prepared, offered, and served. The reasons for its sanctification are not so well defined; the most frequent explanation given me was because of “the way that it smells” or because it has a “strong odor.” This attribute is commensurate with the sauce’s sacred nature because the mouthless *āhuahqueh* to whom it is offered consume food by smelling it; they are therefore attracted to and pleased by the odor of the *ayobhuachmōlli*.

Bowls of *ayobhuachmōlli* are offered to the *āhuahqueh* and left at sacred locations in May and at the village spring as part of a curing ceremony for the supernatural disease, *mal aire*, which has been caused by the *yehyehcameh*, the dwarfish “air people”. *Ayobhuachmōlli* is shared with supernatural beings other than the *āhuahqueh*—the saints and the souls of the ancestors—and is consumed by the living at communal meals on the Days of the Dead (October 28 to November 1) and on the fixed days of *fiestas patronales* and *rituales de costumbres*. In addition, *ayobhuachmōlli* is served at various idiosyncratic ritual events that include the cross-raising ceremony that takes place on the ninth day after death. However, my focus here is on the use of *ayobhuachmōlli* as a first-fruits offering on October 28 when it is cooked with either white beans, *alberjones* (*Vicia* sp.), or fish heads instead of the usual beef.³²

30 Cilantro or coriander is a post-contact introduction; the villagers prefer to use a native wild herb, *tepecilantro* (unidentified genus and species), when available.

31 The first descriptions of *mole* (Náhuatl *mōlli*) come to us from Sahagún’s *Historia de las cosas de la Nueva España* (p. 59). While the priest-chronicler lists various moles and their ingredients there is no mention of *ayobhuachmōlli* or a sauce composed of only squash seeds and chilies or its utilization as a special occasion or “sacred” food. The *mole verde* now known throughout the western hemisphere is asserted to be “not Pre-Hispanic” and is composed of various post-contact nuts and spices (Barros Bruno, “Los moles”, p. 23-24) and tomatillos (*Physalis philadelphica*).

32 The villagers say that the spirits of the dead specifically want fresh *ayobhuachmōlli* made from the seeds of the season’s first harvest of *chompola* squash. The serving of fish heads may be related to the fact that fish are one of the more common transformations of the *āhuahqueh*. Moreover, the added piscine pungency no doubt attracts the “owners of water” who consume their food by smelling it.

THE SQUASH AS A DECAPITATED HEAD

Chompola, the word for the specific squash grown in Tepoztlán, is from the Náhuatl *tzompōlli*, “big head”.³³ The relative size and shape of the fruit has no doubt been responsible for its widespread linguistic and physical substitution for the human cranium and this commutation is found in the *Popol Vuh*; the following episode describes decapitation and the squash-as-head:

While in the Bat House, the Hero Twin Hunahpú is decapitated by a snatch-bat and the disembodied head rolls into the ball court. Hunahpú’s brother Xbalanque assembles all of the animals and tells them to bring him food. The coati mundi arrives last bumping a *squash* with his nose. With supernatural help the squash is carved into the simulated head of Hunahpú.

An opossum then prepares to make the first dawn while the brothers make plans for the ballgame to be played with the Lords of the Underworld. While it was still dark, the rabbit is given instructions to hide among the trees and wait until the ball is hit toward him. The ball—which is actually the severed head of Hunahpú—is kicked out of the court, bounces once, and stops among the trees. The rabbit then hopped off and the Lords of the Underworld chased him thinking that he was the ball. The Hero Twins then retrieved Hunahpú’s head and Xbalanque planted the squash.³⁴

Seen here is the interrelationship between decapitation, the ballgame, and the squash as a substitute for the mythic hero’s head.³⁵ Moreover,

33 The etymology of *tzompōlli* appears to be derived from the Náhuatl “*tzontecomatl*”, severed head (García Zambrano, “Ancestral Rituals of Landscape Exploration and Appropriation among Indigenous Communities in Early Colonial Mexico”, p. 199) and “*-pōl*”, an augmentative (Andrews, *Introduction to Classical Náhuatl*, p. 290).

34 This passage was adapted from Dennis Tedlock’s translation of the *Popol Vuh*. Tedlock, *Popol Vuh*, p. 125-130.

35 Tedlock further references this interrelationship in the following: “The vine shown growing out of the head of a [decapitated] ballplayer in one of the ball-court relief panels at Chichen Itza may well be a squash vine; note that the ball in this panel is shown as enclosing a skull...”. *Ibid.*, p. 126.

Tedlock connects the cucurbits with celestial bodies when he writes that in the classic *Popol Vuh*, “The Quiché gods who eventually become Venus and the sun and the moon must first descend to the underworld. The head of one of the gods becomes a calabash while another has his head replaced by a squash”.³⁶

The squash-as-head also appears as a supernatural transformation in the seventeenth-century writings of Ruiz de Alarcón, when he records a Nahua incantation to sow squash seeds as follows: “They will go entangling their feet in the subsistence ropes, the *nahualli*-guts [*i.e.*, the vines]. They will go stumbling upon the *nahualli*-head carriers [*i.e.*, the vines]”.³⁷ The squash vines of this incantation are seen to support a fruit that is, in the language of the sorcerers, a *nahualli*, “the head of one who has interposed himself between the natural and the supernatural”, *i.e.*, a sorcerer of a god.³⁸

In summary, there is a clear identification in Mesoamerica of the squash as a substitute for the head as seen in its name and its appearance in mythic as well as in present time. By cleaving the squash’s fruit, the “big head”, the Sanandreseños extract and dry the seeds which, when mixed with chili peppers, are transformed into sacralized *ayohhuachmōlli*.

THE TRANSUBSTANTIATION OF THE SACRED MEAL:

AYOHHUACHMŌLLI AS SACRIFICIAL BLOOD

Depictions of cucurbits are found on Late Preclassic Maya (400 B.C.E. to 250 C.E.) murals at the archaeological site of San Bartolo in the Department of Petén, Guatemala, where they are associated with the womb, birth and blood. Figure 1 shows “copious blood” flowing from a gourd; according to Saturno and his colleagues, “it is likely that the scene concerns the birth of the five children from this object”.³⁹

36 *Ibid.*, p. 225.

37 The supernatural identification of the squash-as-head is reported for Chichicastenango, wherein a surfeit of squashes may mean the death of a family’s principal male whose head, like the squash, may be rotting. Bunzel, *Chichicastenango*, p. 54.

38 Ruiz de Alarcón, *Treatise...*, p. 246.

39 Saturno, *et al.*, *The Murals of San Bartolo, El Petén, Guatemala*, p. 9.



Figure 1. Gourd Birth Scene from the North Wall Mural at San Bartolo.
 Saturno *et al.*, *The Murals of San Bartolo, El Petén, Guatemala*, p. 13, fig. 9.
 Detail of drawing by Heather Hurst; used by permission

Further association of the cucurbit with the womb, birth, and the divine is found in central Mexico. Paulinyi's interpretation of the Atetelco murals from the Xolalpan phase (350-550 C.E.) at Teotihuacán emphasizes the importance of the squash image and its shared divinity with the supernatural (Figure 2).⁴⁰ The Nahuatl adepts of the late sixteenth century symbolically combined squash seeds and chili peppers in an esoteric form of discourse (*nahuallatolli*) to represent blood. An explicit example of this relationship comes from a native doctor's incantation to effect bleeding in a patient: "Priest, One-Jaguar, come. At last you will become drunk in the

40 Paulinyi, "The Butterfly Bird God and his Myth at Teotihuacan", p. 29-48.

night. Look diligently at the place where the *chili peppers and squash seeds* that you are seeking are coming from”.⁴¹

Two qualities of *ayohhuachmōlli* strongly suggest the use of the sauce as a sacralized substitute for human blood. The first of these factors is the metaphorical coupling used to identify blood in Ruiz de Alarcón’s incantation cited above; we have seen that chili peppers and squash seeds are the principle ingredients in *ayohhuachmōlli*. A second quality is *ayohhuachmōlli*’s green color; blood was called *chālchiuhātl*, “precious jade water”,⁴² by Nahuatl adepts who believed that “the blood of the sacrificed victim, made divine by its name [...] had life giving properties”.⁴³ Sacrifice, decapitation and the benefits from the resultant flow of blood were intertwined in pre-Contact Mesoamerican *cosmovisión*. Indeed, Baquedano and Graulich have written that: “Decapitation in Aztec Mexico was so important that both the written and the archaeological record are full of examples of its practice”.⁴⁴ The same authors describe the occasions when decapitation took place, which included the mythic beginnings of agriculture, the festivals of the solar year, and as an important fertility ritual associated with the Mesoamerican ballgame. It is significant for this essay that the timing of the decapitation-sacrifice-ballgame complex occurred at the change of the season; Baquedano and Graulich write that there was an “Aztec and probably Mesoamerican belief in the ballgame as an instrument to help ensure that the dry and rainy season followed each other”.⁴⁵

41 Ruiz de Alarcón, *Treatise...*, p. 181; my emphasis. The native doctor addresses the lancet, One-Jaguar, with the name of a calendrical sign. The “chili and squash seeds” are identified as blood by Andrews and Hassig in Ruiz de Alarcón (*Treatise...*, p. 181), while Alfredo López Austin writes that this is a “metaphor that means food”. López Austin, “Conjuros médicos de los nahuas”, p. 16, n. 92. See Katarzyna Mikulska for a discussion of the esoteric form of Nahuatl discourse (*nahuallatolli*). Mikulska Dąbrowska, “Secret Language in Oral and Graphic Form”.

42 The etymology of the word comes from the Nahuatl *chālchihu (i) -tl*, “precious green stone, turquoise” and *ā-tl*, “water, liquid, crown of the head”. Karttunen, *An Analytic Dictionary of Nahuatl*, p. 45, 13.

43 López Luján, *The Offerings of the Templo Mayor of Tenochtitlan*, p. 36.

44 Baquedano and Graulich, “Decapitation among the Aztecs”.

45 *Ibid.*, p. 168.



Figure 2. Birth of a god between two halves of a broken squash.
After Séjourné, *Arqueología de Teotihuacan*, fig. 94

THE SYMBOLISM OF SQUASH SEEDS AND CHILI PEPPERS

The Nahuatl word for the seeds of the *chompola* squash is *ayohhuachtli*,⁴⁶ which is also a central Mexican euphemism for the vulva.⁴⁷ When linked with the Nahuatl word for chili peppers (*chilli*), *ayohhuachtli* forms half of the couplet that signifies blood in Ruiz de Alarcón's seventeenth-century incantation cited above.

The lanceolate shape of the squash seed suggests its identification as a "flint knife" in Mesoamerican literature.⁴⁸ In an incantation for sowing squash recorded by Ruiz de Alarcón in Guerrero, Nahua farmers addressed the seed by a calendrical name, *ce-tecpatl*, "1-Flint", as follows: "Come my mother, Tlalteuctli, She-is-supine, my father, 1-Rabbit [*i.e.*, the earth]. I am placing 1-Flint [*i.e.*, a knife, metaphor for the squash seed] in the palm

46 Karttunen, *An Analytical...*, p. 16.

47 Similarly, *pepita*, "pip or kernel", figuratively refers to the vulva in current Mexican Spanish.

48 An example of this usage appears in the *Chilam Balam of Chumayel* when a father says to his son, "Son, show me the light complexioned woman with her skirt bound who sells white flints. It is [the squash called] *ca*". Roys, *The Book of Chilam Balam of Chumayel*, p. 98.

of your hand”.⁴⁹ The squash seed that has been referred to here as “flint”, or in Nahuatl, *tecpatl*, refers to a double-ended flint knife that was the quintessential symbol of sacrifice. The *tecpatl* was also one of the two symbols associated with the god of fire and the year, Xiuhtecuhtli,⁵⁰ as well as with Tlahuizcalpanteuctli, an avatar of Quetzalcoatl as the Morning Star.⁵¹ Finally, the association of the squash seed-as-vulva provides a symbolic linkage between the Aztec earth goddess Tlaltecuctli, the *tecpatl* as the sacrificial knife, and the *vagina dentada*.⁵² The “toothed” flint knife as it appears in the codices is seen with squash seeds in Figure 3.⁵³

The other half of Ruiz de Alarcón’s native doctor’s hematic couplet, the chili pepper, is the second essential ingredient in *ayohhuachmölli* and is a well-known Mexicanism for the penis.⁵⁴ Chili pepper-as-penis is root-

49 Ruiz de Alarcón, *Treatise...*, p. 128. There is disagreement with regards to the meaning of 1-Flint. Marcela Szałańska (*Supernatural Metaphors*, p. 44) writes: “Andrews and Hassig (in Ruiz de Alarcón, *Treatise...*, p. 128) argue it is a knife metaphor for squash seeds. Coe and Whittaker (*Aztec Sorcerers in Seventeenth Century Mexico*, p. 44) translate it as squash seeds as well. Alarcón’s notes say it is a seed, without further reference, while Serna states it is a squash seed due to its shape (in Coe and Whittaker, *Aztec Sorcerers...*, p. 183). However, López Austin disagrees with the above, arguing that despite being a calendrical name it should be considered as a piece of flint. López Austin, “Términos del nahuallatolli”, p. 1-36. Andrews and Hassig write that the god Tlaltecuctli, “Lord-of-the-land”, is used here as a ritual name for the land (in Ruiz de Alarcón, *Treatise*, p. 238) as is the calendrical name *Ce-Tochtli*, “1-Rabbit” (*Ibid*, p. 221). The numerical relationship of the *tonalpohualli* day-signs 1-Rabbit (the earth) and 1-Flint (the seed) may be symbolically significant since they are 130 days apart, one day more than the time between the ritual planting of the *chompola* squash and its opening for the removal of its seeds.

50 Fernández, *Dioses prehispánicos de México*, p. 104-106.

51 *Códice borbónico*, lám. 9.

52 See López Hernández and Echeverría García, “Tlaltecuctli como vagina dentada en la concepción nahua prehispánica”; Balutet, “La vagina dentada o el miedo a la castración entre los aztecas”, p. 147.

53 Carr and Gingerich (1983: 189ff) discuss the possible Aztec identification of the *vagina dentata* in the story of “Xiuhnel, Mimich and the Star Demon” (Carr and Gingerich, “The vagina dentata motif in Nahuatl and Pueblo mythic narratives”, p. 189ff). Far to the north among the White Mountain Apache, a link exists between squash seeds and the vagina dentate, as shown in a myth that recounts how Vulva Woman tried to kill her husband through intercourse with her toothed vagina. He escapes and hides in a squash patch and later brings the seeds to his people (Goodwin, *Myths and tales of the White Mountain Apache*, p. 71-74).

54 See Esther Katz for her discussion of the chili pepper-as-penis. Katz, “Chili pepper, from Mexico to Europe”, p. 222.



Figure 3. The “toothed” *tecpatl* and *chompola* squash seeds. The drawing of the *tecpatl* is from www.azteccalendar.com/xihuitl/tecpatl; the photograph of the *chompola* squash seeds is by the author

ed in antiquity; Sahagún relates the myth of the Toltec ruler Huemac’s daughter who becomes inflamed with desire at the sight of a chili-pepper seller’s virile member.⁵⁵ The resultant blending of squash seeds as toothed vagina and chili pepper as penis appears to be a symbolic recreation of penile-blood sacrifice which, to the ancient Mesoamericans, had an “extraordinary fertilizing power”⁵⁶ and the ability to create humankind.⁵⁷ This linking of penile blood sacrifice and procreation is found in a version of a Nahuatl myth when the god Quetzalcoatl descends into the realm of the dead in order to solicit the bones of a previously created race of humans. After wandering about, the bones are taken to the mythical paradise Ta-

55 Sahagún, *Florentine Codex*, Bk. 3, p. 17.

56 Joralemon, “Ritual Blood-Sacrifice among the Ancient Maya”, p. 67.

57 Elsewhere in Mesoamerica, Betty Bernice Faust has identified the chili pepper and the slotted cacao bean as primary symbols of male and female genitalia for the reproduction of gender in Yucatec Maya cosmology (Faust, “Cacao Beans and Chili Peppers”). The squash seed-as-blood linkage is also present in a modern Maya curing ritual in which the patient “ate four *empanadas* with their *ground squash seeds symbolizing fertile blood*” (*Ibid.*, p. 630; emphasis provided by the author).

moanchan where the goddess Quilaztli grinds them into powder and places them into a clay pot. Quetzalcoatl then pierces his penis in an act of auto-sacrifice and sprinkles his blood on the powdered bones. A man and a woman arise from the mixture and they became truly human after they had partaken of corn.⁵⁸

The schema of events and ingredients attached to the serving of *ayobhuachmōlli* as a first-fruits offering may be interpreted as symbolic of a change-of-season sacrifice by decapitation resulting in a copious issue of blood which, in traditional Nahua *cosmovisión*, was essential for the creation, continuance, and regeneration of life. Moreover, as we have seen, contained within the timing of the planting, germination, and utilization of the *chompola* squash as *ayobhuachmōlli* are Venusian Morning Star periodicities that further reinforce its sacred nature.

SUMMATION

Squash and the Morning Star Correlation

I have noted in Tables 1 and 2 above that the cleaving of the *chompola* squash to extract and dry its seeds, its ritual consumption as *ayobhuachmōlli*, and the sowing and emergence of the new plants are framed in a continuum of eight plus 236-day periodicities that is found in the *Dresden* and

58 López Austin, *Human Body and Ideology*, p. 326. Seeming parallels between Aztec religion and Catholicism were observed by sixteenth-century Spanish proselytizers (Lara, “Sacred Blood”; Madsen, “Christo-Paganism”). Among these similarities were the sacrifice and actual consumption (*teotlaqualli*) of the flesh of a god-impersonator which was likened to Christ’s crucifixion and the Eucharist. Sixteenth-century friar Bernardino de Sahagún used the same Aztec term, *teotlaqualli*, for the Christian Eucharist and wrote that tortillas and wine were substituted for Christ’s body and blood (Lara, “Sacred Blood”). I hypothesize that the use of *ayobhuachmōlli* to represent the blood in a sacramental meal is part of a pre-contact tradition that Michael Smith has termed a “little tradition of domestic rituals” (Smith, “Domestic Ritual at Aztec Provincial Sites in Morelos”) and not a post-contact phenomenon. This contention is supported by the use of “squash seeds and chili” to represent blood found embedded in Ruiz de Alarcón’s late sixteenth-century incantation for bleeding cited earlier. Moreover, the identification of squash seed-as-blood appears to be widespread in Mesoamerica as seen in the Yucatec ceremony described by Faust (see note 57 above).

Grolier codices' canonical phases of Venus in inferior conjunction and as the Morning Star. These findings have led me to the following observations:

1) The eight and 236-day periods, conjoined and doubled, represent significant Mayan Venus calendar intervals, the time of inferior conjunction and Morning Star phase, introduced into the Tepoztecan agrarian calendar. The 236-day interval is contrived because empirical observations of Venus' Morning Star phase calculate it to be about 263 days instead of the figure used in the Dresden and Grolier codices. Therefore, while the canonical intervals are not based on the empirical observation of the planet's Morning Star phase, their inclusion in the Tepoztecan ritual agrarian calendar appears to be an example of the Mesoamerican predilection to combine mathematics with astrological, numerological, and hence divinatory, significance.⁵⁹ Moreover, studies suggest that the discrepancies between the codices' canonical intervals and empirical observations were purposefully distorted to fit ritual cycles keyed to the 260-day divining calendar.⁶⁰

2) The reified 236-day periodicities found within the Tepoztecan squash cycle are correlated with the solstices that act as pivot points in the local ritual calendar as follows: 1) October 28 plus 236 days falls on the day of the summer solstice (June 21); and, 2) April 29 plus 236 days equals the day of the winter solstice (December 21). As seen in the body of this essay, both April 29 and October 28 are well-defined, ritually important dates that represent the 182-day interval between the beginning and end of the rainy season and of subsistence vegetative growth in Tepoztlán; contained within this periodicity is an explicit theme of death and rebirth.⁶¹

59 Carlson, "A Geomantic Model for the Interpretation of Mesoamerican Site".

60 Gibbs, "Mesoamerican Calendrics..."; Tedlock, *Popol Vuh*, p. 233-234.

61 The two Tepoztecan ritual events that explicitly demarcate the seasonal year, the *fiesta* of San Pedro de Verona on April 29 and the *costumbre* of *los matados* on October 28, are separated by 182 days, an interval that represents one-half of a Mesoamerican "computing year" ($4 \times 91 = 7 \times 52 = 13 \times 28 = 364$) (Carlson, "A Geomantic Model...", p. 211). April 29 therefore initiates a symmetrical, four-fold, 91-day division of the year that includes July 29, October 28, January 27, and the 364th day, April 28. By curious coincidence the two intermediate days between the beginning and end of the agricultural year are worth noting because of their astronomical significance. July 29 is the day of the sun's

Ayohhuachmōlli as an Offering

By combining chili peppers and the *chompola* squash seeds to make *ayohhuachmōlli*, the villagers of San Andrés continue a tradition whereby the supernatural is propitiated and thanked for its help in ensuring sufficient rainfall and an abundant harvest. Specifically, I have shown that *ayohhuachmōlli* is served as a first-fruits offering, a *primicia*, to the souls of the ancestral dead, *los matados*, who act as intermediaries between the living, the saints Pedro of Verona and Lucas, and the owners and gate-keepers of water, the *āhuahqueh*, in times of pluvial crisis.

The greenness of *ayohhuachmōlli* denotes vegetation and *chālchiuhuitl*, jadeite, the most precious of all gemstones to the Aztecs,⁶² which, when combined with water, was a code word for blood, *chālchiuhātl*. The ingredients that go into the manufacture of *ayohhuachmōlli*, squash seeds and chili peppers, reinforce its supernatural generative power; the combining of the squash seed-as-vulva/sacrificial knife with the chili pepper-as-phallus suggests a powerful pre-contact form of self-sacrifice—the bleeding of the penis that, according to Nahua mythology, led to both increased fertility and the creation of humankind by Quetzalcoatl.

The schema of events and ingredients attached to the serving of *ayohhuachmōlli* as a *primicia* may be interpreted as symbolic of a change-of-season sacrifice by decapitation. The resultant issue of blood was, in traditional Nahua *cosmovisión*, essential for the creation, continuance, and regeneration of life. The use of the “precious liquid”, *chālchiuhātl*, “jade-water”, persists in Sanandreseño ritual observances through the use of *ayohhuachmōlli* as a sacred food; the blending of *chompola* squash

second zenith passage at a declination of +18°54', and January 27 is the day that the sun passes through its second nadir at a declination of -18°40'.

Since declination can be considered the celestial equivalent of latitude, the two intermediate dates are within 18 arc minutes of Tepoztlán's (18°59') and Xochicalco's (18°48') latitudes. Because of the incorporation of the zenith and nadir dates, it is apparent that as a computational calendar, it would only be valid for sites at about 19 degrees north latitude; within a geographical band that includes the locations of Xochicalco and 30 km. distant Tepoztlán.

⁶² See Forshag for a discussion of jadeite and its importance as a Mesoamerican gemstone. Forshag, “Chalchiuhuitl. A Study in Jade”, p. 1066.

seeds and chili peppers transforms the quotidian into the sacred. Finally, there is an association of Venus with agriculture, not through an astronomical link, but rather by reifying the 236-day Morning Star cycle into the cultivation and consumption of the seeds of the *chompola* squash as *ayohhuachmōlli*. I have in turn posited the sacred meal to be transubstantiated blood gained through the harvest and rendering of the *chompola*, “the big head”, squash. This reinforces Carlson’s observation cited earlier that “the Mesoamerican association of Venus with maize and agricultural fertility (that) stem from a deep-lying cultural mythic tradition of fertility created from the transformation of blood into water through warfare and sacrifice under the auspices of Venus”.⁶³

An Observational Calendar and Symbolic Intervals

The importance of the Tepoztecan 236-day periodicity also lays in its utility as an agrarian calendar reinforced and sacralized by ritual events. The significance of April 29 and its relationship with October 28 may be linked to local understandings of the cycle of wet and dry seasons rather than representing a survival from the pre-Hispanic calendar, the *xiuhpōhualli*. However, there are reasons why this may be part of a pre-contact calendrical system.

First, Iván Šprajc’s analysis of archaeological orientations has found that the observation of sunrises and sunsets on specific dates allowed for the use of an observational calendar that facilitated the prediction of seasonal changes “as well as for an efficient scheduling of the corresponding agricultural activities”.⁶⁴ I have shown that, contained within the *chompola* squash cycle, are periodicities that reinforce its sacralized place in the Tepoztecan ritual calendar and that the addition of 236 days to April 29 and October 28 mark the days of the solstices. This may have wider implications because the solstices occupied and continue to occupy an impor-

63 Note that the Tepoztecan agrarian calendar’s November to June periodicity closely matches the pre-European contact dry season of warfare with which Quetzalcoatl’s Morning Star avatar, the bellicose Tlahuizcalpanteuctli, is associated. Hassig, *Aztec Warfare*, p. 53-54.

64 Šprajc, “Astronomical Alignments in Río Bec Architecture”, p. 1.

tant place in Mesoamerican *cosmovisión*,⁶⁵ yet are notably difficult to determine directly and, as noted by Šprajc, were more common in Preclassic Central Mexican architecture than in later periods.⁶⁶ As we have seen, the interval that begins on October 28 and ends on June 21 combines a date that marks the end of the ritual year with the summer solstice and the rebirth of the year's subsistence crop.⁶⁷

Moreover, the relationship of the two Tepoztecan ritual days, October 28 and April 29, coincide with the sunset/sunrise dates generated by the archeological "17° family of orientations"⁶⁸ and specifically those measurements of the near cross-quarter days taken by Šprajc for the Pyramid of the Sun at Teotihuacán as well as elsewhere in Central Mexico.⁶⁹ This leads to a hypothesized alternative function for the 15.5° orientation: in lieu of architectural orientations directed toward the solstices—relatively rare in central Mexico—⁷⁰ the solstices can be marked by counting 236 days from the April/October orientations.

65 Milbrath, *Star Gods...*, p. 14, 15, 19, 20, 64-66, 68-71, 74, 78, 103; Šprajc, *Orientaciones en la arquitectura prehispánica del México central*, p. 75, n. 3.

66 Šprajc, *Orientaciones...*, p. 74, 76-77, n. 5.

67 The importance of the summer solstice has been noted by Šprajc (*Orientaciones...*, p. 74) and Tichy ("Order and Relationship of Space and Time in Mesoamerica", p. 95).

68 Aveni, *Observadores del cielo en el México antiguo*, p. 269; Aveni and Gibbs, "On the Orientation of Pre-Columbian Buildings in Central Mexico", p. 510.

69 Šprajc has calculated the relevant sunrise/sunset dates from the Pyramid of the Sun at Teotihuacán as October 30 + 3 days and April 30 + 3 days. At Xochicalco, Šprajc found that corresponding sunrise/sunset dates with respect to the orientation of the Pyramid of the Stelae is October 28 + 1 day, April 28 + 1 day (Šprajc, *Orientaciones...*, Tabla 5.59, p. 262); and, at the Morelean site of Las Pilas' Structure 4, October 29 + 2 days; April 28 + 2 days (*Ibid.*, Tabla 5.49, p. 249). The skewing of the Tepoztecan village plat away from the cardinal directions by approximately 12.5° suggests the existence of specific orientations toward astronomical events, a phenomenon seen throughout Mesoamerica (Aveni, *Skywatchers*; Šprajc, *Orientaciones...*; Tichy, "Order and Relationship..."). Because it was a common practice to build churches atop the sites of native temples (Stanislowski, "Early Spanish Town Planning in the New World", p. 94-105; Mc Andrew, *The Open-Air Churches of Sixteenth-Century Mexico*, p. 110), on April 28, 1990 I observed and photographed the sun setting atop the gnomon-like hill at an azimuth of 282.7° from a vantage point on the steps of the Ex-Convento adjacent to Tepoztlán's Church of Santa María de Natividad. These findings are detailed in my unpublished paper, "Defining the Tepoztecan Year with Saints and a Sunset: San Pedro, San Lucas and the 29th of April".

70 Šprajc, *Orientaciones...*, p. 157ff.

Second, Johanna Broda has proposed that the continuity of post-Contact indigenous agrarian rituals is based on the structure of Mesoamerican calendar.⁷¹ This is clearly demonstrated by comparing the function and periodicities between Tepoztlán's beginning of the agrarian year (April 29) and the *rituales de costumbre* of planting on San Antonio's day, June 13, and the *ritual de costumbre* of *pericón* on September 28, when the first milk stage maize (*jilotes*) and *pericón* flowers (*Tagetes lucida*) are gathered. In the first instance, there are 45 days between April 29 and June 13, the same periodicity as between the last day of the Aztec New Year "month" of *izcalli* and the first day of the planting *veintena* of *tozoztontli*. Similarly, there are 153 days between April 29 and September 28, with the same numeric interval between the last day of the Aztec "month dates" of *izcalli* (February 7) and 8 *huēi tēcuilhuitl* (July 10) when, as in Tepoztlán 80 days later, the first green maize and *pericón* were gathered.⁷² We have elsewhere demonstrated how finely tuned the Tepoztecan agrarian ritual cycle is to the onset and end of the monsoonal rains, the growth cycle of the local maize, and the late summer/early autumn flowering of the *pericón*, and harvest.⁷³

The Morning Star periodicity closely demarcates the times for agricultural activity, *i.e.*, the onset and end of the rainy season. The *chompola* squash's ritualized schedule of planting, seed extraction and utilization occur in 129-day periodicities which, when subtracted from the 365-day solar year, yield the dates that initiate the 236-day periodicities, October 28 and April 29. As we have seen, both of these dates have explicit meaning in the Tepoztecan ritual/agrarian calendar; the former marks the arrival of "los matados", the latter begins the agrarian year with the fiesta of San Pedro of Verona.

Climatologically, the pairing of October 28 and June 21 and the resultant 236-day interval is a close approximation to the Mesoamerican dry season; from November to July there are 342 mm of precipitation or about

71 Broda, "La ritualidad mesoamericana y los procesos de sincretismo y reelaboración simbólica después de la conquista".

72 I am using Caso's Aztec calendar dates (Caso, "Calendrical Systems of Central Mexico").

73 Grigsby and Cook de Leonard, "Xilonen...".

24% of the yearly average.⁷⁴ The sprouting of the newly sown plants on the day of the summer solstice therefore completes a cycle of death and rebirth. In the contrary *āhuahqueh* (underworld) calendar, April 29 commemorates San Pedro of Verona whose fiesta initiates the rainy season and the agricultural year. In contrast to the October 28/June 21 cycle, the period between April 29 and December 21 encompasses most of the monsoonal rains; from May to the end of December there are 1193 mm of rainfall or about 85% of the year's total (1380 mm).⁷⁵ The *āhuahqueh* 236-day periodicity set in the surface world contrasts the beginning of the agrarian year with the harvest of year's maize at the time of the winter solstice. Symbolically, there is a distinction between the renewal of the agrarian year and its close.

Aside from being the canonical calculation of the Venus Morning Star cycle, 236 days is also a close approximation to eight synodic lunar months.⁷⁶ Tepoztecan farmers have expressed a preference for planting and harvesting during specific lunar phases and use the age of the moon to predict rainfall.⁷⁷ While current agricultural practice involves reference to published sources such as post-contact calendars and almanacs, the occurrence of the Morning Star periodicity in the local ritual/agrarian year suggests that it may have historically played a predictive role in the agricultural calendar since the 236-day lunar periodicity means that the moon's phase as observed on any given day will be repeated 236 days later. A long-range schedule for planting, harvesting and favorable days for rainfall could therefore be achieved by adding or subtracting the appropriate number of days from the observed lunar phase on the Tepoztecan liturgical dates of October or April.⁷⁸

74 *The Global Historical Climatological Network*.

75 *Ibid*.

76 Aveni, "Archaeoastronomy...", p. 8.

77 Lewis, *Life...*, p. 137-138; Gómez Espinoza, "En Morelos se siembra maíz", p. 109.

78 Elsewhere in Mesoamerica, groups such as the Tzotzil, Quiché and Zoque use phases of the moon to schedule their agrarian activities (Milbrath, *Star Gods...*, p. 151; Sánchez Cortés and Lozos Chavero, "Indigenous perception of changes in climate variability and its relationship with agriculture in a Zoque community of Chiapas, Mexico", p. 377). Such usage probably pre-dates European contact; Karl Taube writes that the "Classic association of planting cycles based on the moon could well be pre-Hispanic in origin"

CONCLUSIONS

In the preceding pages, I have demonstrated that ritual planting, opening of the *chompola* squash to extract its seeds, and the initial consumption of a special occasion food, *ayobhuachmōlli*, are framed in a continuum of periodicities that are found in the Mayan codices' canonical determination of the Venusian inferior conjunction/Morning Star phases. This is significant because while descriptions of the 236-day Venus-as-Morning Star cycle are limited to accounts from the Maya area, there are, according indications of the importance of Venus as the Morning Star in the Mexican highlands.⁷⁹ The data presented in this essay links the codical Venus Morning Star passages from the Maya codices to the state of Morelos in Central Mexico, a practice hitherto not known for that part of Mesoamerica.

The harvest and rendering of the *chompola* squash into *ayobhuachmōlli* transforms the plant's symbolically imbued seeds into jade-green blood, *chālchiuhātl*, a life-giving force that is consumed and shared with intermediaries of the saints that control the weather. The correlation of the Morning Star cycle with these events reinforces and realizes John Carlson's interpretation of the planet's mystical powers to transform "blood into water".

The 236-day Morning Star cycle establishes the parameters of an agrarian calendar that uses the solstices as pivot points tied to the ritual days that begin and end the seasons. The ritual days upon which the reified Morning Star phase is hinged, April 29 and October 28, are of interest because they appear as sunset/sunrise days associated with orientations of archaeological structures found throughout the culture area. Finally, with the exception of data presented in this essay, there is an absence of *Dresden/Grolier* Venusian codical sequences in Central Mexico. The existence of the Morning Star periodicity embedded in the Tepoztecan agrarian calendar suggests a pre-European origin and not a post-contact phenomenon.

(Taube, *The Major Gods of Ancient Yucatan*, p. 69). Moreover, the *Dresden Codex* clearly documents the importance of the lunar calendar and its emphasis on the moon's age and phases to ancient Mesoamericans, and such knowledge may have been put to use in determining yearly agricultural activity.

⁷⁹ Bricker, "A method..."; Taube and Bade, "An appearance of Xiuhtecuhtli in the Dresden Venus pages"; Vail and Hernández, *Re-creating Primordial Time*.

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