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DISARTICULATED DUAL SEASONS AND MAYA COSMOLOGY IN HIGHLAND MAYA COMMUNITIES

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ABSTRACT

Weather in Mayan areas of Chiapas, Mexico, conforms to two sets of annual climatic seasons, each comprised of two six-month periods: The Hot-Cold set divided by the axis of the Spring-to-Autumn Equinoxes (March 21-September 21), and the Wet-Dry set, divided by the axis of the Cross-Quarter (also called Mid-Quarter) day of May to that of November. The articulation of these two kinds of climatic years is non-congruent by one-half a quarter; e.g., the quarter delineated by the Spring Equinox and the Summer Solstice divides into a Hot-Dry (but transitioning to Wet) first half and a Hot-Wet second half; the shift occurs at the time immediately after the May Cross-Quarter day, which is also the water festival of Holy Cross. A similar dissonance occurs in the quarter running from the Autumnal Equinox to the Winter Solstice, the first half being Cold-Wet (but transitioning to Dry), and the second Cold-Dry, shifting near the November Mid-Quarter day when All Saints' is celebrated. Only the half-quarters bracketing the Summer and Winter Solstices are congruent. Weather data from the zone support these interpretations. Further evidence for disarticulated seasons comes from the staggered times of seasonal shift, from the placement of festivals and pilgrimages, and from parallels with human gestation, maize growth, and the human life cycle. These beliefs about when rains should begin or end and when warmth arises or abates to cold organize farming practices. Pilgrimages are made to influence deities to regulate water; most of these are concentrated around Cross-Quarter days. Many fiestas celebrated in home villages call for steady rain at the time of strongest plant growth. Others attend to patron and other local saints, including sacred natural landscape features, and may also be water related. Pilgrimages to distant sites initiate calls for rain (February, La Candelaria or San Caralampio) and requests for drying (September, San Matéo Ixtatán). Such climatic and cultural events structure Mayans' manipulation of water and organize faming practices, and they underscore the vegetative metaphor for the reproduction of all life, human and animal, as well as plant.

KEYWORDS: Mesoamerican seasons, Hot-Cold, Wet-Dry, Disarticulation, Tojol-ab'al Mayan

1. INTRODUCTION

Cross-Quarter days are the mid-points between Equinoxes and Solstices, and because they mark the centers of the quarters of the year, they are frequently termed Mid-Quarter days in the cultural astronomy literature (e.g. McCluskey (1989). The actual mid-points fall around February 4, May 5, August 5, and November 7; variation is due to Leap Year. Here Cross-/Mid-Quarter days are given approximate dates according to relevant religious-political holidays, as February 2 (Candlemas, Purification or the Virgin, or Presentation of Christ at the Temple); May 1 (May Day); August 7 (St. Oswald's Day), and November 1 (All Saints' Day).

The celebrations may take place a few days from the actual Cross-/Mid-Quarter day but still be associated with them; for example, for the Cross-/Mid-Quarter day of February 2-6, two feasts are celebrated by Tojol-ab'al Mayans: the Feast of La Candelaria, which falls on February 2, and also that of San Caralampio, whose official day is February 18. However, Tojol-ab'ales celebrate San Caralampio primarily at the Entrance of the Flowers on February 10, the day that opens a week of celebrations for the priest-martyr. San Caralampio is the legacy of a late colonial period Greek Orthodox missionary-priest's work in Comitán. During an epidemic in the city, he apparently urged parishioners to pray to the Greek Orthodox saint Haralambos to lift the scourge from them, prayers that were answered positively. St. Haralambos' name was Hispanized to Caralampio, and annual pilgrimages to honor him and to ask for rain remain a major Tojol-ab'al ritual event.

To further confuse matters, what are called "Quarter Days" in England, Ireland, Scotland, Wales, and most other former colonial holdings of Great Britain, are maintained in modified form as the political, juridical, school term, and estate management dates for civil and religious purposes. These dates are effectively those of the Solstices and the Equinoxes, so they quarter the year accordingly. They are the times when taxes are paid and when estate staff are hired or replaced. They have little currency in Latin America, where Great Britain was a small player in colonial affairs. Because the British Empire had such limited effect in Southeastern Mexican Highlands, we do not attempt to integrate Quarter Days into this account of Mayan calendric legacies and present-day agricultural festivals.

Although the Cross-/Mid-Quarter days may be seen as mid-points of the named seasons under many European societies that used a Solstice-Equinox-driven calendar system, the Cross-/Mid-Quarter days do not generally "name" the seasons. Instead the seasons are named at the time of a Solstice or an Equinox, when they identify them at their inceptions. Nonetheless, Cross-Quarter days would offer an alternative way of identifying a season in that they mark the mid-point between the start and end of a seasonal period and fall at the time of typical rather than incipient seasonal behavior. This would be akin to counting mountain ranges by peaks and ridges rather than valley bottoms.

2. CLAIMS & EVIDENCE

Our primary claim in this work is that the well-recognized Hot-Cold and Wet-Dry seasons that characterize the Mesoamerican climate interact with one another, but are not fully congruent. The evidence and arguments for these positions are embedded in research on cultural astronomical phenomena, in meteorological data, and in ethnographic descriptions of cognition and ritual practices associated with the seasons and their activities. Cross-Quarter days are identifiable by the increased ritual activity around them, as is observable as well near Solstices and Equinoxes. Further, there are indications in patterns of temperature and precipitation that support the disarticulation.

Cultural Astronomy & Covert Categories: The Solstices and Equinoxes divide the year into four quadrants. A four-part familiar pattern prevails in Mesoamerican cosmology. It exists in areas as diverse as residential patterns and groupings of important cognitive categories, such as major divisions within classes of plants and animals (Hopkins 1980). The off-setting of the Hot-Cold seasonal divisions and the Wet-Dry seasonal divisions by one-half a quarter produces a second set of four-part divisions because the Hot-Cold season and the Wet-Dry season divide along different axes (Figure 1). The Hot-Cold seasons are split by the axis between the Vernal and Autumnal Equinoxes. The Wet-Dry seasons divide along an axis running between the Cross-Quarter day of May and the Cross-Quarter day of November. The duplication leads to what appears to be a violation of the usual four-part division. However, following the pervasive Mayan tradition of major and minor pairs of relations (Hopkins and Josserand 2001), the Hot-Cold takes prominence over the Wet-Dry, and here the rising and falling of temperatures "lead" the increases and decreases in precipitation, as can be seen in Figure 2.

The status of Equinox is a controversial issue in the literature on Mayan culture, ancient or contemporary. Vogt (1997:111) discovered no words for equinoxes, and emphasized the importance of solstices, citing V. Bricker (1982), V. Bricker and H. Bricker (1988), Tate (1986, 1992), and Friedel and Schiele (1990), all of whom extolled the ubiquity of solstice. More recently, Sprajc and Sánchez Nava

(2013) reviewed a number of Mesoamerican archaeological sites for which equinoctial alignments had been reported, and concluded, often on methodological grounds, that the evidence did not support positive conclusions, although they presented some possible examples.

Finding so few strong cases for equinoctial alignments in Mesoamerican archaeology argues that, if extant, they are at the least difficult to identify, often because later construction has rendered them nonfunctional. This brings us back to Vogt's dilemma of not finding names of what we argue appears an important concept, the Equinox. Alignments may have been unrecognized or underreported because the descendants of their builders do not employ a basic name for the concept of equinox, even if they recognize it and can describe it (*see* entry for "equinoccio", C. Lenkersdorf, 2002: 278). The absence of a name does not rule out the possibility of the category existing. The concept of Equinox may be a *covert category*, one that exists but is unlabeled and usually only recognized in opposition to a named category (Whorf 1947), which in this case would be Solstice. This situation resembles that of the naming of the cardinal directions (North, South, East, West, and Zenith-Nadir-Center) in Mayan languages, where North and South lack Mayan names in most of the languages, and East and West (and sometimes Zenith-Nadir-Center) carry them.

In this instance, a confusion of labels for directions leads one to doubt the importance of directions. Bassie-Sweet (1996) identified East and West terms not as labeling directions, but rather *quadrants* of the sky. Many Mayan languages name East and West with words based on phrases describing the sun's action. For East, the action of exiting from or sprouting out of or arising from; for example, Tojol-ab'al *eli-* 'exiting out' and *b'ojti-* 'burst out, be born', or *k'e'i-* 'rising up from'). For West, the sun's action of entering into or being buried in the earth: Tojol-ab'al *ochi-* 'enter down' or *mukxi-* 'get buried'. These terms label quadrants for East and West, the extent of which are limited by the locations of the sun's appearance and disappearanc on the eastern and western horizons, respectively, in the course of its annual movement back and forth across those horizons from an azimuth of 66° to 114° at sunrise and from an azimuth of 246° to 294° at sunset. The broad swaths of sky conceptually join at the mid-point to form quadrants. The center is labeled 'navel' (Tojol-ab'al *muxuk'*) or 'navel of the world'. The North and South are derivatively named as side quadrants to the primary East and West quadrants (Hopkins and Josserand 2001: 14). In the Tojol-ab'al Mayan language the directions-quadrants are as follows:

East: *b'a wa sk'e' k'a'u 'where the sun arises'*
b'a wa xb'ojti k'ak'u 'where the sun bursts forth'
b'a wa xel k'ak'u 'where the sun exits upward'

West: *b'a wa xoch k'ak'u 'where the sun enters down'*
b'a wa xmuk'xi k'ak'u 'where the sun gets buried'

The derivative names for the North and South in Tojol-ab'al are given from the point of view of a person facing the East:

North: *spakaxil jk'ab'tik* 'our left hand'
South: *stojol jk'ab'tik* 'our right (proper) hand'

In the Tzeltal-speaking community of Majosik' in Tejejapa, Chiapas, all four terms have been lost, and the local setting has lent the names of *ta alan* 'downhill' and *ta ajk'ol* 'uphill' for North and South, respectively. Reference is to the mountain landscape. East and West are both known as *jejch* 'transverse', 'to the side' (Brown and Levinson 1993). Thus even without a labeled category in opposition, the concepts of four quadrants of the world remain— classic examples of covert (unlabeled) categories (Whorf 1947). Once relabeled, they even have the priorities reversed with the North and South bearing specific names that identify the dominant dimension, 'downhill' and 'uphill', whereas the formerly dominant East-West dimension is now derivative ('transverse', 'at the side', for both quadrants). Orientation via the sun's pathway has been replaced by the local landscape referent, 'uphill' - 'downhill'.

Such a replacement seems also to pertain in the dominance of the mountain named Tlaloc in central Mexico to which there appear to be equinoctial alignments from the Templo Mayor in Tenochtitlan that are related to the position of the rising sun at intervals of 20 days from the vernal equinox (Aveni, Calnek, and Hartung 1988). And, there is an arresting similarity in Vogt's Figure 1 (1997: 111) where he finds that, as in B. Tedlock's formulation (1992), the pathways of the sun form an X passing through the world center and defining two side quadrants, namely the segment of the eastern horizon along which the sun rises during the year between the summer and the winter Solstices, and the similar segment on the western horizon where the sun sets during the year between summer and winter Solstices. The pattern expresses the extremes of sunrises and sunsets throughout the year, and describes the space of the sun's path across two of the four quadrants at sunrises and sunsets over the periods of the

year (summer and winter). Rather than committing oneself to the requirement of an dimension of Equinox existing in the deep Maya past, it might be better to think of *equinoctial quadrants* rather than a dimension since the Majosik' Tzeltal data (Brown and Levinson 1993) show the reality of the quadrant is stronger than that of the directional dimension.

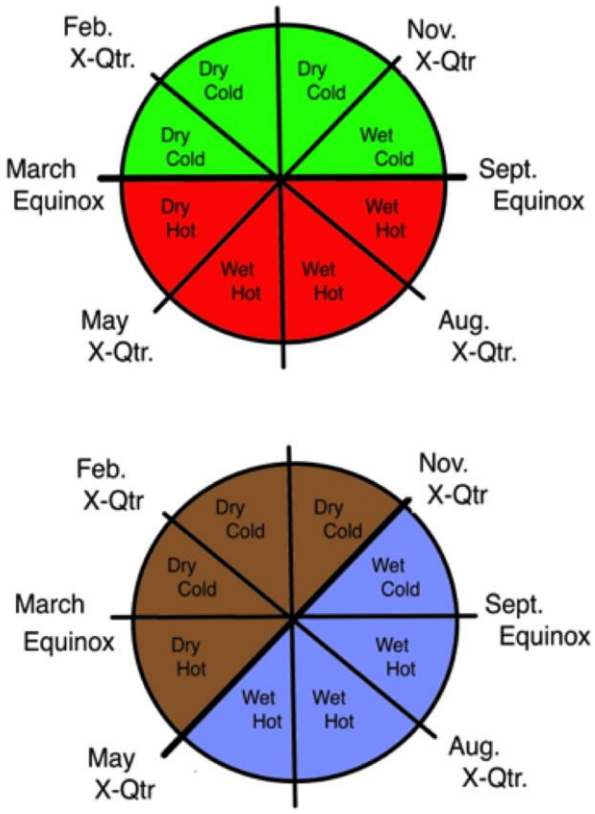

Figure 1 Schematic shows disjunction of Hot-Cold & Wet-Dry sets of seasons. Top: Hot-Cold divided by axis between the 2 Equinoxes. Hot season is at bottom; Cold, at top. Bottom: Wet-Dry divided by axis between Cross-Quarter days of May & November. Dry is at top and left, ; Wet, at bottom and right.

Important festivals at Equinox are introduced and have no obvious Maya antecedent (unlike, for example, the May 3rd Water festival, which existed in ancient Maya times). The Equinox is likely the minor member of any pairing of Solstice-Equinox, but we think it preliminary to abandon it as not recognizable. The absence of a term for a concept does not rule out the existence of the category. So, for example, most English speakers have no term to denote the parents of their spouse ('in-laws' has a wider reference; 'mother-in-law' and 'father-in-law' define separate categories). 'Parents-in-law' is recognized but is not commonly used apart from in social science; it is a covert category. At best, Equinox also likely a covert category.

Weather Data & Transitioning Climatic Features: The graph in Figure 2 below shows the temperature and precipitation data from Comitán, Chiapas. The temperature (line with squares) rises in advance of the precipitation (line with diamonds). The hottest period of the year is in the dry period of March to May. In May the rains rise and the temperatures drop in response. The depression in both lines in July and August is the *canícula*, the annual pause in the rainy season, after which rains resume strength and temperatures first rise and then drop precipitously in response to the increase in the rain intensity, which follows on with a decline as the seasons cool as they near the cold-dry period that begins in November. The non-congruity of the temperature and precipitation graphs demonstrates the *half-quarter disjunction* of the two sets of seasons, Hot-Cold and Wet-Dry.

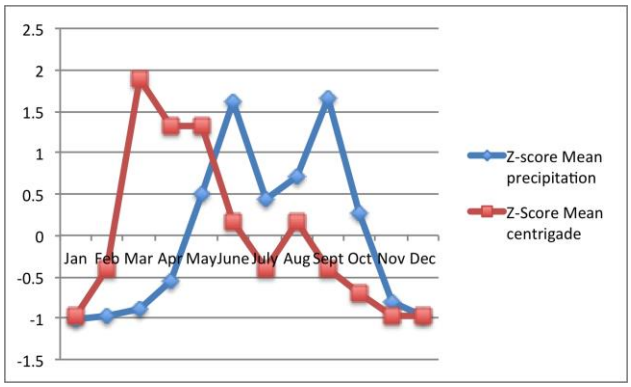

Figure 2 Graph of annual temperature (squares) & precipitation (diamonds) from Comitán, Chiapas, for years 1961-2000 shows disjunction of the 2 sets of annual climatic seasons. Temperature advances ahead of the precipitation, leading & perhaps pulling along rain. Depression in the lines around July identifies the canícula. Graph is constructed from Z Scores of the means of the monthly precipitation & temperature averages (data for humidity from Servicio Meterorológico Nacional (1981-2000); & data for temperature from Deutscher Wetterdienst (1961-1990)).

Most studies or mentions of the two seasons conflate the temperature-based year and precipitation-based year; however, we see them as disarticulated by one-half of a quarter. Unquestionably the two are congruent for six months (the 4 half quarters of the year numbered 3, 4, 7, & 8 in Figure 3), but they diverge in the half-quarters on each side of the equinoctial axis (numbered 1, 2, 5, & 6) because the Hot-Cold seasons are divided by that equinoctial axis, whereas the axis between the Cross-Quarter days of May and November (Figures 1 & 3) divides the Wet-Dry seasons. The half-quarters 1, 2, 5, & 6 are those that have one of the climatic features—hot, cold, wet, or dry—in transition from one state to another. Seasonal shifts that cause the disarticulation to occur both across Equinoxes and across the Cross-Quarter days following the Equinoxes make the quarters bisected by the Vernal and Autumnal Equinoxes the non-congruent quarters, and the quarters bisected by

the Solstices the congruent ones. The February and November Cross-Quarter days bound six half-quarters (1-6) of active growth in comparison with the quieter two half-quarters (7 & 8) that bracket the Winter Solstice. (Among the calendars by which Mayans in antiquity calculated time (*see* Malström 1978; Iwaniszewski 2013), the one named in modern times the "tzolk'in" of 260 days and the one called "haab'" of 360 plus 5 "extra" days are the best known. The two articulate.)

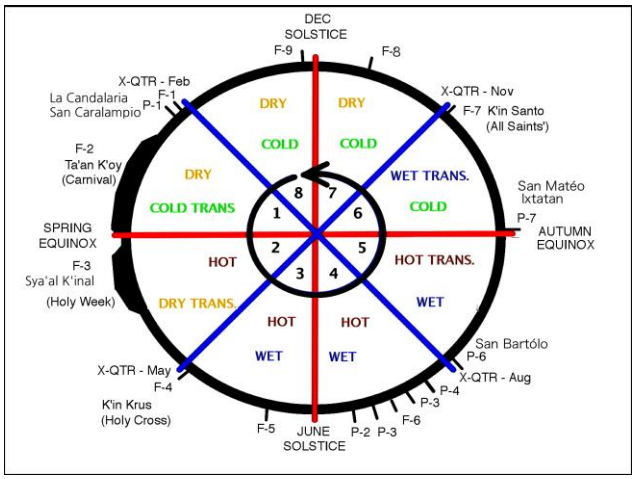

Figure 3 Model of disarticulated Hot-Cold & Wet-Dry Seasons, showing associated Tojol-ab'al festivals. P = Pilgrimage & F = Community-based fiesta. Key: F1 – La Candelaria; P-1 – San Caralampio; F2 – Ta'an K'oy (Carnival); F-3 – Sya'al Kinal (Holy Week); F-4 – K'in Krus (Holy Cross); F-5 – San Antonio; P-2 – Padre Eterno; P-3 – Santo Tomás, Oxchuc; F-6 – Virgin del Carmen; P-4 – Santa Margarita; P-5 – Santo Domingo, P-6 – San Bartólo, V. Carranza; P-7 – San Matéo Ixtatán; F-7 – K'in Santo (All Saints;); F- 8 – Virgin de Guadalupe; F-9 – Christmas.

Pilgrimages: Pilgrimages (called by Tojol-ab'ales, *romerías* from Spanish or *k'u'anel* in Tojol-ab'al), are now less practiced than in earlier years, but several remain important. Among them are the aforementioned La Candelaria and San Caralampio in February, for early calls for rain. Pilgrimages to San Bartólo in Venustiano Carranza on May 7 (Gómez Hernández (2012) or April 24 (Adams 2005); to Padre Eterno in Trinitaria (60 days after Easter), and to Santa Margarita en Las Margaritas (11 July) (Gómez Hernández 2012) to ask for steady rain throughout the growing season. In September 19-21, Tojol-ab'al pilgrims visit San Matéo Ixtatán in Huehuetenango, Guatemala (Chavarochette 2004; Armoni Calderón 2005; Adams 2005; Gómez Hernández 2012) to request dry weather for harvest. These saints (and others) may be visited at different times by different communities, and when a saint is deemed unable or unwilling to reward a community for its veneration, the community may change the saint it visits for a particular kind of petition, as when some abandoned Santo Tomás de Oxchuc during the drought in the 1930s for visits to other saints to ask for rain (Armoni Calderón 2005: 56).

Fiestas, Crops, Human Gestation, & Life Cycle: There are arresting parallels between agricultural production, especially the stages of corn growth and human life span, and between both human reproduction and the renewal of the natural world apart from the cultivated and husbanded aspects of it (Figure 4). Many festivals are bunched around the Cross-Quarter days. The active agricultural year opens with the pilgrimage to either La Candelaria on February 2 or the Entrance of the Flowers for the Fiesta of San Caralampio fiesta in Comitán, on February 10. Following those are the theatrical performances of the Carnival (*Ta'an K'oy* 'smutty encounter') within Tojol-ab'al communities. Together with early pilgrimages, the Carnival constitutes the first call for a shift from the Dry period to Wet and rainy. Performances are given in four discrete episodes in the villages over the course of several weeks; they involve numerous masked and costumed actors. According to Ricardo García Hernández, Carnival organizer in Ing. González de León, the purpose of the Carnival is to ask for rain:

> *The carnival is performed when the hot dry time of Lent has persisted a long time. Then we ask Our Lord Father that he send a bit of rain.* (interview with R. Jiménez Jiménez, April 2, 2003; text in archives of CDIT, AC, Comitán)

Where festivals are frequent outside of Cross-Quarter days, most fall within the three-month period between the May Cross-Quarter day (*K'in Krus*) and the August Cross-Quarter day (Santa Margarita, San Bartolo), which bracket the quarter of the year that is both Hot and Wet (half-quarters 3 & 4). That period requires intense cultivation at a time of high growth of plants.

The *carnival presentations* offer a running theater. They climax in Holy Week (called *Sya'al K'inal* 'World's Water') on Holy Saturday. On that day one or more "Judas" figures are mocked, made to ride bulls, and burned. These acts are expressions of the masculine principal. By then the period of planting preferred corn varieties has nearly closed and all effort moves toward the intensive period of care and feeding of the plants in the fields during the quarter between the May and August Cross-Quarter days, a time paralleled by both the second trimester of human gestation and the equivalent period in the life cycle of the corn. This period is one of rapid growth toward maturation.

The oral-text theatrical performances of the Carnival open the active agricultural time of the year. No other festival ritual thereafter presents such text-based theater—although the clowns participating in

the pilgrimage to Las Margaritas for the Fiesta of Santa Margarita offer plenty of high jinks—until we reach the last festival in the "tzolkin" period, the festival of *K'in Santo* or All Saints' at the time of the November Cross-Quarter day. The performance is called *K'anuj Tek'ul*, a petition for fruit, conducted by young men of the village who go house to house reciting a memorized text to beg agricultural produce, especially fruit. The ritual speeches are rich in symbolic referents: In one such petition, the men ask for "medicine" for a sick "older brother". The actual referents are fruit and the community at large, since the fruit is redistributed to the village members. The "illness" may refer to social ills, as suggested in the concluding excerpt from a 1971 version from Plan de Ayala:

> Young men: *Ah, respected mother, respected father, the holy remedy that you will give, it will truly alleviate his suffering, it is the true cure for his cold stomach, for the life of our older brother, dear mother, dear father, ah, mother, ah, father, the holy medicine.*
> Householder: *Ah, young men, here is the medicine for the unbilicus of your older brother.*
> Young man: *Ah, mother, ah father, the holy medicine, it is true that it will cure him, it truly will calm the stomach of my dear older brother, my dear mother, my dear father. (Legacy Text 250, CDIT, AC)*

At this time the whole community, living and dead, has gathered once again, and commonalty is again generated by an antiphonal ritual performance, just as the enthusiasm for the hard work of creating a new crop was generated in February through similar participation in the antiphonal theatrical performances of the Carnival episodes. In Carnival a major role is actually taken by the audience who respond to the antics of the players, with verbal affirmations, jests, and exclamations. The visits of the young men petitioning fruit also invite a ritual dialogue, when they come begging to the householders.

Content of the petitions varies by community, and as the custom is being revived, the subject matter can change drastically from earlier versions. It is theater, it is public, and it refers to the whole history and future of human life in a community. The theme is continuity of life and community, even including the dead, and it serves as well as a first fruits harvest festival.

K'in Santo is a time when the village invites the souls of its deceased members to visit and be at one again with their living relatives. It recognizes that the living will one day be gathered into the underworld to await return to their community which will persist. Thus the "Tzolk'in Year" of 260 days is opened by participatory public theater near the time of the Cross-Quarter day of February, and it is closed by the the participatory public theater of the three-day festival of K'in Santo in November. During that time it welcomes its dead back into community once more and prepares its living to look to the time when they, like their corn crop and like their ancestors, will pass on to await rebirth.

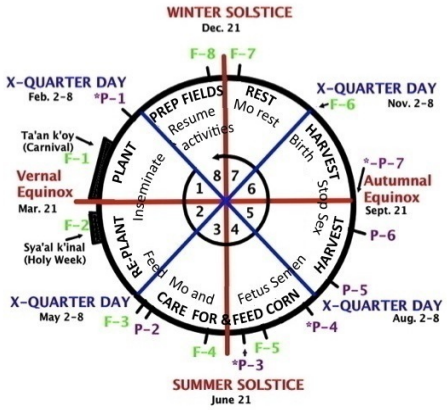

Figure 4 Parallels between growth & husbandry for both maize & fetus with some relevant festivals indicated. (Mo=mother.)

Among the *parallels of maize growth with fetal development* shown in Figure 4, the May-to-August period matches rapid fetal growth. Mother and fetus demand much "feeding" by the husband's frequent sexual intercourse, and during the festivals at this time the dual symbols of fertility and growth are highlighted in both the human reproductive and agricultural domains; for example, special corn gruels that symbolize semen are served at some fiestas during this period. Parallels between corn growth and fetal growth are openly recognized by Tojol-ab'ales, as shown in this explanation by a Tojol-ab'al midwife:

> *Like this here, this is how the man works in his cornfield. Thus the man gives his seeds, also for this reason their children get born*. [Midwife A]
> (Bayles 2002:138)

The seeds the man plants in his cornfield result in the crop that nourishes his family and those that he "plants" in his wife increase the human family. These practices and beliefs undergird the "*vegetative metaphor*" found to predominate in other ethnographically described Mayan societies (Carlson and Prechtel 1991, Wilson 1995, Carlsen 1997). The period of greatest ritual and agricultural activity closes at the Cross-/Mid-Quarter day of August, when the agriculturalists shift their concern from growing crops to halting the rain of the Wet season to permit harvest. In late July and August,–rains cease during the period called the *canícula* (Figure 2). The canícula lasts from a few weeks to more than a month and anticipates the entry of the full Dry season after a brief

resumption of rains. The weather of recent years raised worries because climate changes have increased the length of the rainy period and also increased unpredictability.

3. CONCLUSIONS

Several points are important: First and primarily, the Hot-Cold and Wet-Dry seasons are not congruent but off by a one-half quarter, resulting in disarticulation. Second, the Cross-/Mid-Quarter days and Equinoxes are transition points of these seasons. Third, festivals mark the non-congruity of the year, and they associate the agricultural needs and activities with them. Such ritual activities express the underlying cosmology of the Vegetative Metaphor of Maya life. *K'in Santo* closes the period of agricultural activity opened by the February pilgrimages and carnival, and reviews in its activities an expression of Tojol-ab'al being: This is when the village enacts that metaphor most fully. The community invites the souls of its deceased members to visit their former homes and be at one again with their living relatives. The living also feed their ancestors, and visit their graves, which they clean and decorate. K'in Santo recognizes that we, like the fruits that have been harvested, are ourselves at the end of this life a part of a harvest too. What lives on is the community itself in its re-creation though the repopulation (and rebirth of souls) from formerly living members. Thus the life-giving agricultural activity of the 260 days is opened by antiphonal public theater near the time of the Cross-Quarter day of February, and it is closed by antiphonal public theater during the major festival of K'in Santo at the time of the November Cross-Quarter day. During both festivals, villagers affirm community and commitment to its health. At K'in Santo the community draws its dead back into its midst once again, voices its oneness, and prepares its living to look to the time when they, like their corn crop and their ancestors, will themselves dry, harden with condensed power, and fall as seeds, to await rebirth as souls to their replacements among the village newborn.

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REFERENCES

Adams, W.R. (2005) Las prácticas religiosas en el Sureste de Chiapas, *Anuario de Estudios Indígenas*, Vol. 10, pp. 93-113.

Aramoni Calderón, D. (2005) Visitas religiosas entre los pueblos de San Bartolomé de los Llanos y Socoltenango en el siglo XIX, *Anuario de Estudios Indígenas*, Vol. 10, pp. 49-73.

Aveni, A.F., Calnek, E.E., Hartung, H. (1988) Myth, environment, and the orientation of the Templo Mayor of Tenochtitlan, *American Antiquity*, Vol. 53 (2), pp. 287-309.

Bassie-Sweet, K. (1996) *At the Edge of the World*, Norman: University of Oklahoma Press.

Bayles, B.P. (2002) *The Belly Wants Its Heat*. Ph.D. diss., Department of Anthropology, Univ. of Missouri.

Bricker, V.R.. (1982) Origin of the Maya solar calendar, *Current Anthropology*, Vol. 22 (1), pp. 101-103.

Bricker, V.R., Bricker, H.M. (1988) The Seasonal table of the Dresden Codex and related almanacs, *Archaeoastronomy*, Vol. 12, pp. 1-62.

Brown, P., Levinson, S.C. (1993) 'Uphill' and 'Downhill' in Tzeltal, *J. Linguistic Anthropology,* Vol.2, pp. 46-74.

Carlson, R.S. (1997) *War for the Heart & Soul of a Highland Maya Town*, Austin, University of Texas Press.

Carlson, R.S., Prechtel M. (1991) The Flowering of the dead, *Man* 9(ns), Vol. 26, 23-42.

Chavarochette, C. (2004) Le pèlerinage des indiens Tojolabal (Chiapas-Mexique) à San Mateo Ixtatán (Guatemala), *Cahiers des Amériques latines*, Paris, 4e trimestre, IHEAL.

GómezHernández, A.(2000) Encuentro de los padres eternos *Anuario Estudios Indígenas*, Vol. 8, pp.213-59.

GómezHernández, A. (2012) Santos y deidades y el ciclo ritual de petición de lluvia, *Anuario de Estudios Indígenas*, Vol.16, pp. 49-74.

Gossen, G.H. (ed.) (1999) *Tzotzil Identities in Modern Mexico*, London, Routledge.

Gossen, G.H. (1974) *Chamulas in the World of the Sun*. Cambridge, MA, Harvard University Press.

Hopkins, N.A. (1980) Chuj Animal names & their classification. *Journal of Mayan Linguistics*, Vol. 2: pp. 13-39.

Hopkins, N.A., Josserand, J.K.. (2001) *Directions and partitions in Maya world view.*

www.famsi.org/research/hopkins/DirectionalPartitions.pdf
Hutton, R. (1996) *The Stations of the Sun*. Oxford, Oxford University Press.
Iwaniszewski, S. (2013) The length of the year in Maya calendar and astronomy, In I. Sprajc & P. Pehani, Editors *Ancient Cosmologies & Modern Prophets, Proceedings 20th SEAC.*, Ljubljana (Slovenia) *Anthropological Notebooks,* Vol. 19, Suppl., pp. 287-304.
Lenkersdorf, C. (2001) Equinoccio. *B'omak'umal/Kastiya–Tojol'ab'al*, Mexico City, Editorial Nuestro Tiempo.
Malmström, V.(1978) Reconstruction Mesoamerican calendrical systems, *Journal of the History of Astronomy,* Vol. 9, pp. 105-16.
McCluskey, S. (1989) The Mid-quarter days and the historical survival of British folk astronomy, *Archaeoastronomy (suppl.), Journal of the History of Astronomy*, Vol. 20, 13, pp. S1-S19.
Schele, L., Freidel. D. (1990) *A Forest of Kings*, New York, William Morrow.
Sprajc, I. (2010) Astronomy in Ancient Mesoamerica: An Overview, *Journal of Cosmology, Vol.* 9: 2041-2051.
Sprajc, I., SánchezNava, P.F. (2013) Equinoxes in Mesoamerican architectural alignments. In I. Sprajc & P. Pehani, Editors *Ancient Cosmologies & Modern Prophets, Proceedings 20th SEAC*, Ljubljana (Slovenia) *Anthropological Notebooks,* Vol. 19, Suppl., pp. 287-304.
Tate, C. (1986) Summer solstice ceremonies performed by Bird Jaguar III of Yaxchilan, Chiapas, Mexico, *Estudios de Cultura Maya,* Vol. 16, pp. 85-112.
Tate, C. (1992) *Yaxchilan: The Design of a Maya Ceremonial City,* Austin, University of Texas Press.
Tedlock, B. (1992) *Time and the Highland Maya*, Albuquerque, University of New Mexico Press.
Vogt, E.Z. (1997) Zinacanteco Astronomy, *Mexicon*, Vol. 19 (6), pp. 110-117.
Wilson, R. (1995) *Maya Resurgence in Guatemala*, Norman, Univ. of Oklahoma Press.