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# The Flow of Nectar and Blood: Maya Philosophy and World Vision

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***The Flow of Nectar and Blood:***  
***Maya Philosophy and World Vision***

**Selected Chapters**

**Juan Ferret**

## Chapter One – Introduction

In 1511, a Spanish caravel traveling from Darién in Panama to Santo Domingo ran aground near the coast of Jamaica during a Caribbean storm. The survivors were able to drift into Yucatan shores but were taken captive by the Maya. A friar in training, Gerónimo de Aguilar, and a professional soldier, Gonzalo Guerrero, reported that the captain, Juan de Valdivia, and a few other sailors were immediately sacrificed in a bloody ritual. After surviving the initial ordeal Gerónimo and Gonzalo knew their time for sacrifice was near, for the Maya seemed to be preparing for an important festival. Not willing to accept their fate, they escaped and their tale is now part of history.<sup>1</sup>

Their paths, however, differed significantly. Gerónimo was captured and enslaved for seven years until he crossed the path of Hernán Cortés. Gerónimo had learned Yucatec during his captivity and became one of the two translators in Cortés's expedition against the Mexicas. The other translator was Malitzin who, with her knowledge of Nahuatl and Maya, became an invaluable addition to the Spanish expedition. Her story is now both fable and history as *La Malinche*. Together they offered Cortés a window into the Mexica universe. Gerónimo's choice was clear and he

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<sup>1</sup> Henderson, John. *The World of the Ancient Maya*. 2<sup>nd</sup> Edition. Ithaca: Cornell University Press, 1997: p. 9-10.

eagerly rejoined his compatriots when the opportunity came.<sup>2</sup> Gerónimo remained a Spaniard until the end.

After his escape, Gonzalo Guerrero arrived at Chetumal where he adopted the Maya customs, married, fathered three sons, and became a feared warrior for the Cakchikel Nachan Ka'an. When the summons from Cortés arrived he either ignored or refused them and chose a life with the Maya. In 1536 when Spain was trying to pacify and control the trade routes in Honduras, they confronted Chetumal and its domination of the routes. After a bloody battle the victorious Spanish soldiers were baffled at finding the pierced, tattooed, and lifeless body of their countryman. Gonzalo Guerrero had lived as a Maya and fought for Chetumal until the end.<sup>3</sup>

This was a remarkable moment in history. It was not only the first significant encounter between Europeans and the Maya, but the path to the devastation of two of the most advanced civilizations of the Americas. Gerónimo's vision into the Maya world contributed to the conquest of the Mexica empire thanks to his knowledge of the language and customs. The contrast between the two men who got stranded together is also worth some reflection. History teaches us that people often face similar scenarios and choices when cultures meet. Clearly the Americas were transformed by the invasion of Europeans and to a different degree so was Europe by the Americas. Like our two protagonists, when cultures meet they inform and transformed each other. Between the

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<sup>2</sup> Tzvetan Todorov argues in *The Conquest of America: the Question of the Other* that the ability to read the signs of the Mexica culture via this dual translation was the key factor (besides disease, of course) for Cortes' ability for easily conquering of the Mexica empire.

<sup>3</sup> Henderson, John. *The World of the Ancient Maya. 2<sup>nd</sup> Edition*. Ithaca: Cornell University Press, 1997: p. 10.

extremes of full rejection or obliteration and full transformation into and adoption of the culture, lie the myriad of paths that we take when faced with this type of encounter.

What is less clear is the choices cultures or individuals control in this transformation.

Similarly, when learning about a new culture either *in situ* or from afar, we are faced with choices on how to learn from the culture and to what degree we must engage it and be transformed by it. To know deeply or be transformed there is no substitute than living in and becoming immersed in the culture, but from afar, the next best option is to learn the deep beliefs and ideas that form the culture. This manuscript presents a philosophical analysis of some of the most fundamental ideas of the Maya. Some of these ideas are not totally foreign to our conceptions of the world, but some certainly are. The Maya scholar John Henderson acknowledges that “[i]n a deeper sense, the fuller our understanding of the ancient Maya becomes, the more we can appreciate the enormous gulf that separates their culture from any in the European tradition. Nowhere are these differences more apparent than in the Maya philosophy and world view, in which time and space, the physical world and the supernatural universe, are continuous: interconnected facets of a single, seamless reality.”<sup>4</sup>

The central goal of this manuscript is to examine the metaphysical and epistemological implications of the classic Maya world view and philosophy even though our knowledge of the Maya is far from being as clear as it will certainly be, thanks to future scholars, their studies, and new discoveries. Ever since the work of León-Portilla there has been a significant void in the philosophical treatment of the Maya worldview.

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<sup>4</sup> Henderson, John. *The World of the Ancient Maya*. 2<sup>nd</sup> Edition. Ithaca: Cornell University Press, 1997: p. 2.

Many Latin American philosophers do not regard the Maya, or any culture of the Americas, as having developed a tradition of philosophy. This text is set to remedy this void and besides trying to offer a coherent picture of key ideas of Maya philosophy, will offer some serious suggestions on how those ideas can help our current examination of metaphysics, primarily with the concept of spacetime and identity.

In sum, when confronted by the Maya world Gerónimo chose to remain a Spaniard while Gonzalo chose a Maya existence. We cannot see with full clarity the choices of Gerónimo and Gonzalo for history only reveals partial answers.<sup>5</sup> Yet, the choices these two personages made are analogous to the choices that the European culture faced in large, when confronted by the Maya and other indigenous cultures of the Americas. Europe, as a visitor to these lands, had the choice between the extremes of adopting the customs of the new culture or rejecting them. In between full acceptance and full rejection there are many possibilities, so there are many responses when being confronted by a distinct culture. Some would claim that the Europeans imposed their superior culture on the less sophisticated and barbarous indigenous Americans therefore choosing to ignore them. Others may suggest that the Maya merged fully into the new European order offering some influence into the colonial period. While others may suggest that there was a missed opportunity to get to know and understand the American civilizations, as often occurs in human history when a culture conquers another. Full vision on how the merging of these cultures occurred is a complex historical,

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<sup>5</sup> In 1998 there was an international conference where participants debated the possible motivations of the choices made by Gerónimo and Gonzalo. Among the supported arguments and speculations some scholars suggested that Gonzalo may have been a converted Jew while others that he was a gypsie.

archaeological, anthropological, linguistic, and philosophical question. Ultimately, the complex choice of being confronted by a new culture is also a simple one. Once more: do we choose, both as a culture and as individuals, to embrace it or do we reject it? What parts will you adopt and which ones will you reject? Do we choose to learn from it or do we deem it inferior *a priori*?

This text cannot and does not want to attempt to figure out or resolve the question of how the European culture merged with the indigenous cultures of the Americas. What it will do is offer a glimpse into the philosophical background of Maya culture before the conquest. Doing so will provide a small contribution to the understanding of Maya culture then as well as today and offer us a chance to redeem the missed opportunities of the past.

Some scholars of philosophy and humanities would scoff at the idea of the Maya having more than a general rudimentary intellectual tradition. They may indicate the lack of texts, or contributing authors, or evidence of a clear line of critical inquiry, or a lack of abstract formulations, or a set of schools of philosophical learning, or signs of criticism of the culture are a lack of philosophical engagement. Recent scholars have avoided, with few exceptions, the investigation of the philosophical contributions of the Maya. This may have to do with two main circumstances. First, early scholars of Maya culture Eduard Seler and Eric Thomson, for instance, argued without full epigraphic and anthropological evidence that the Maya had been a complex philosophical culture. They were philosophers of time. Even though these scholars are still giants in the field of Maya studies, were well intended and roughly speculated in the right direction, their work romanticized Maya philosophical contributions and has now been superseded by a

new wave of authors who have deciphered and interpreted the Maya glyphic texts with greater accuracy but have restrained from speculating on the philosophical insight to the Maya.<sup>6</sup> Second, some philosophers, like Susana Nuccetelli, have offered brief investigations of Maya culture and concluded that they lacked a complex systematic rational philosophical approach.<sup>7</sup> In her view, the Maya did not do philosophy and thus are not worth studying for philosophical insight. While a few will boldly assert without proper inquiry that the Maya did or did not have original philosophical contributions, the aim of this text is to dispel the philosophical worth of Maya culture by a careful examination of their texts. Let's now turn to a brief examination of the Maya world and the extant texts to set up our inquiry into Maya philosophy.

When the Europeans arrived to the Americas most of the splendid civic centers of the Maya laid already in ruins, with the exception of a few smaller inhabited cities like Tulum. In spite of this fact, the 16<sup>th</sup> century Maya still lived and thrived in a significant portion of Mesoamerica. Their territories, then and during the golden classic era of the civilization, comprised most parts of the actual nations of El Salvador, Honduras, Guatemala, Belize, and Southern Mexico. Today, Maya culture is still alive and dotting

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<sup>6</sup> Coe, Michael. *Breaking the Maya Code*. Thames and Hudson, 1999. Linda Schele was not afraid to give philosophical credit to the Maya, but she never provided an examination of those philosophical contributions. León-Portilla has been one of the very few scholars to attempt an investigation of Maya epistemology and metaphysics. This text is a continuation of León-Portilla's work, taking into consideration the new epigraphical research, as well as the new texts that have become available.

<sup>7</sup> Nuccetelli, Susana. *Latin American Thought: Philosophical Problems and Arguments*. Oxford: Westview Press, 2002

the same landscape they have occupied for thousands of years. Who are and who were these people that now we call the Maya?

The Maya were and are a heterogeneous group of people that lived in the area of Mesoamerica from 7000 BCE until this day. Before the arrival of the Spanish this area of Mesoamerica was predominantly Maya. But the Maya were not alone. With the Olmec to the West and the Nicas to the south, the Maya groups existed in the midst of several other cultures. So what distinguishes the Maya from other Mesoamerican groups? The most distinctive difference is the languages that they spoke. Originating in a proto-Mayan language developed around 2500 BCE in the highlands, two main roots developed; one forming Huastec and Chicomultec and another larger branch eventually developing into the more than thirty Maya languages of today: Yucatec, Tzotzil, Tzetzal, Mam, Quiché, Chol, among others. The linguistic picture, currently and historically, is quite diverse.

The culture of the Maya is as diverse as the languages they speak. So to talk of a single Maya culture is a generalization that must be used with care. This text will speak of a Maya culture and will focus on the examination of certain ideas that most Maya groups shared. For instance, we will discuss the meaning and significance of the concepts of blood-nectar and day-flower, and the use of the ritual and solar calendar in unison. Among other shared cultural practices, the game of pelota stands out. As a matter of fact, it was played throughout Mesoamerica to reenact the creation of the world and humanity. Different Maya groups had their own idiosyncratic way of playing the game, while some used hips and knees only, others allowed the use of elbows and wrists. The purpose and celebratory aspects of the games also varied significantly from locale to locale sometimes

just a few miles apart. Examination of these differences across Maya groups would help color and refine the ideas presented in this text, but a complete differentiation falls outside the scope and intention of the book.

The most fecund era of Maya civilization occurred between 200 BCE to 900 AD, an era known as the Classic Period. It was at this time that the marvelous pyramids and buildings of Tikal and Palenque were build. During this era Maya culture reached an apogee of precision with their astronomical measurements and calendrical computations. During this time the Maya had several calendars in use, including the Tzolkin, the Haab, and the Long Count. This Classic era was also the most prolific in the creation of artifacts, stelas, documents, and historical accounts.

Scholars nowadays, however, have found that there was also great cultural and economic development during the Pre-Classic (1800-200BCE) and the Post-Classic (900-1500 AD). The main question that still puzzles mayanists today is the seemingly sudden departure of the Maya from the great civic centers in the 9<sup>th</sup> and 10<sup>th</sup> century. Was it war that destroyed and forced the abandonment of the sites? Was it an ecological disaster or famine? Was it disease? Although several scholars have emphasized the ecological changes, it is clear that war and other factors were also involved.

Yet some raise another puzzling question: since they Maya survived the changes of the 10<sup>th</sup> century, why did they not return to the great civic centers they had built? Linda Schele postulates that the answer to this question lies, not just in historical, economical or ecological reasons, but in the Maya metaphysical worldview as well.<sup>8</sup> For

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<sup>8</sup> Schele, Linda and David Freidel. *A Forest of Kings: The Untold Story of the Ancient Maya*. New York: William Morrow Co., 1990, pp. 73-74.

them, the civic centers were a locus of power and connection with the divine in the sense that it would allow them to investigate the secrets of the cycles of nature so they could learn to control them. For instance, the detailed investigation and knowledge of the rotation of moon, stars, and planets was applied to controlling the cycles of planting corn every season. If there were a series of years where the rituals and astronomical information failed to ensure good food production leading to difficult periods, it may have persuaded them to abandon the cities. The sacred sites had lost power and they were spent. People of those cities often moved elsewhere, sometimes to nearby locations, as a way to find new sacred locations that ensured better crops and existence.

This explanation does not take away from other reasons as to why the classic Maya's left their urban centers. War, change of climate, and ecological destruction are often cited as possible reasons for the classic Maya demise. The continual warring among nation states or an invading group from the north may have destabilized the cities to a breaking point. Scientists also have determined that a long persistent drought may have contributed to a weakening of the agricultural system of production. Furthermore, the majority of Maya lands in the lowlands had a thin layer of productive soil that could be easily exhausted after a few years. Sometimes these fields needed and still need long periods of rest before they could be cultivated again.



Figure 1 - Map of the extent of Maya culture with some Classical period cities superimposed on current political boundaries.

The geographical area considered part of the classical and postclassical Maya world is similar to the current cultural and ethnic boundaries of the modern Maya world. The different contours of the geography serve as designators for the different Maya cultures that emerged. There are three main areas of Maya culture: the Northern lowlands of the Yucatan peninsula, the Southern lowlands of Campeche and Northern

Guatemala, and the highlands of Chiapas and Southern Guatemala.

The Northern low-lying area of the peninsula of Yucatan is a subtropical area where fresh water is hard to find during the dry season and the Maya often resorted to cenotes<sup>9</sup> for fresh water. Water, for these Maya, was of great periodic significance, since a late rainy season could be a great disaster. It is no surprise, then, to find Chac, the god of rain and storms, to be one of the most worshipped and observed deities among the Yucatec. The soils of this area are very thin and prone to becoming barren if proper agrarian practices are not observed. This is the area of major development during the Post-classic period: Chichen Itza, Mayapan, Tulum and Uxmal are some of the most renowned civic centers.

The Southern lowlands begin the transition from the Northern drier lowlands to the wet highlands. This intermediate lowland area offers the visitor great diversity of flora and fauna. Adding to the rich flora and fauna, the highlands contained a great density of peoples during the classical period. Cities like Yaxchilán, Bonampak, Piedras Negras, Uaxactún, Tikal and many more dot the landscape at short intervals.

The highlands offer a completely different spectacle with lush forests and an eternal mist hovering over the canopies of trees. Precipitation is more common and the soil is rich and abundant. Copán and Quiriguá were great cities of the Pre-classic period. Bordering the southern lowlands, Palenque is a recognized civic center of the Classic period.

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<sup>9</sup> Cenotes are sink holes that opened up due to erosion from the many underground rivers of the Yucatan peninsula.

Much has been lost, however, so the re-composition of the complex ideas of the Maya about time and space demands careful interpretative analysis of the extant texts. So what legacy did the pre-colonial Maya leave behind? What are the texts of the Maya? The Maya “texts” can be separated into four categories: (1) the Precolonial codices,<sup>10</sup> (2) the texts in stones and murals, (3) the postcolonial indigenous narratives and transcriptions, (4) the accounts of Europeans of the Maya during the conquest.

(1) Codices are painted glyphic texts on folded flattened bark in accordion style. At one point there were hundreds or thousands of these painted books all over the Maya world. They were records of astronomical measurements and predictions as well as accounts of the metaphysical considerations and interpretations of those measurements. There were also narratives of Creation and expository of the complex theology of the Maya. In 1562, however, most of these texts were lost to humanity. The Franciscan priest, soon to become Bishop of Yucatan, Diego de Landa, found these texts to be the source of the metaphysical and religious foundation of the Maya, deemed them “lies of the devil” (Tozzer 169) and burned a great number of them. Only four codices, written primarily in Yucatec Maya, survived and remain extant: The Dresden Codex, the Madrid Codex, the Paris Codex and the Grolier Codex. They are named after the place where they surfaced and are now kept.

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<sup>10</sup> There are some great resources about the codices on the web. For instance: <http://pages.prodigy.net/gbonline/awmayac.html> & <http://www.famsi.org/mayawriting/codices/> among others.

The Dresden Codex, the most complete of the pre-Hispanic codices, was found in 1739 when the director of the Royal Library of Dresden purchased it from a private collection in Vienna. It wasn't, however, until 1810 when Alexander von Humboldt discovered it in the Royal Library and reproduced part of the manuscript in his *Vues de cordilleras et monument des peuples indigenes de l'Amérique*. During the heavy bombardment of Dresden by Allied forces in World War II the original document was damaged. Scholars believe that the codex was written in Chichén Itzá in Northern Yucatan around the turn of the first millennia. The text is an astronomical, calendrical, and agricultural almanac that includes calculations of solar eclipses and careful computations of the synodic period of Venus.



Figure 2 - Dresden Codex

Part of the Madrid codex was in the hands of Juan de Tro y Ortolano when in 1860 it was studied and published by Brasseur de Bourbourg. In appreciation for lending the manuscript for study, Brasseur named it the Tro Codex. A few years later another part of this codex appeared at the hands of José Ignacio Miró who sold it the Archaeological Museum of Madrid. Curators of the museum thought this was a manuscript associated with Cortés and they baptized it Cortesiano. Now this codex is also known as Tro-Cortesiano or Madrid.

Besides being the longest and better-preserved manuscript, the text includes rites of Itzamná, practices of cultivation and associated divinities, precise account of the calendar round of 52 years.



Figure 3 -Sample page of the Madrid codex

The Paris Codex was found by Léon de Rosny in 1859 in a very odd place: a garbage bin in the Imperial Library in Paris. After such fortunate recovery, Rosny analyzed the text and found it to be about Maya rituals about cycles of the *katuns*. Scholars speculate that it could have been written in Palenque around the 13<sup>th</sup> century.



Figure 4 - Sample page of the Paris Codex

(<http://digital.library.northwestern.edu/codex/page6.html>)

The Grolier codex was bought in 1965 by a private Mexican collector, José Saenz, after he was flown to a secret location in the Mexican jungle by illegal artifact diggers. They had supposedly found it in inside a cave in the mountains of Chiapas.

After buying the manuscript he took it to the Grolier club in New York for examination.  
It now resides in Mexico City.

It is the manuscript in worse shape, but is of great interest for it is of Toltec-Maya style from around the 13<sup>th</sup> century.

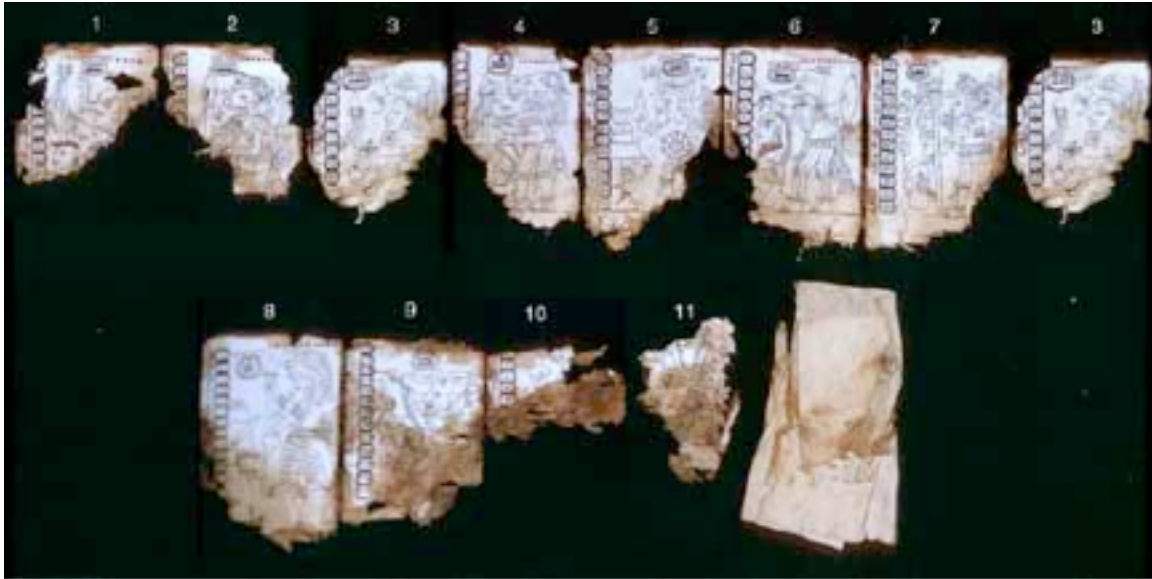


Figure 5 - Grolier Codex (<http://www.mayavase.com/grol/grolier.html>)

(2) Luckily, the Maya did not restrict their scriptures to bark paper. Scattered around the valleys and mountains of Mesoamerica stone stelae and architectural constructions carry on their surfaces full texts of the historical, calendrical, astronomical, and metaphysical considerations of the Maya. These texts range from short calendrical notations of the ascension of a king of Piedras Negras to extensive political and metaphysical justifications for the change of dynasty, as in the case of the inscriptions of Pacal and

Chan Balum in Palenque. Only in the past 30 years, the ideas behind these glyphic texts have begun to be transcribed and interpreted.<sup>11</sup>



Figure 6 - Maya stelae with glyphs in Guatemala

(3) After the conquest, Maya scribes and scholars began to reproduce the oral and written traditions that were in peril of being lost. These accounts were often written in Maya but transcribed into the Latin alphabet. From the Chilam Balam of Northern Yucatan<sup>12</sup> to the Popol Vuh of the Quiché Maya, these texts contain stories, calendrical accounts, agricultural advice, meteorological warnings, and metaphysical speculations. Some scholars feel that these texts are heavily “tainted” by the Spanish influence and

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<sup>11</sup> Ibid.

<sup>12</sup> <http://www.sacred-texts.com/nam/maya/cbc/>

should not be examined as part of the investigation of pre-colonial Maya. Some others, however, feel that these texts, although written to include some of the teachings of Christianity, reflect a clear indigenous worldview that cannot be ignored. The metaphysical accounts of these texts often resonate with the pre-colonial codices and stone texts.

(4) Another source of texts and information on the Maya comes from the European colonial administrators, religious figures, advocates and historians who for different reasons, wanted to chronicle the Maya culture and their beliefs. Almost ironically, Diego de Landa is a great source of pre-colonial Maya thought for he put together a detailed account of their calendrical, astronomical, cultural, and linguistic contributions. In his *Relación de las cosas de Yucatán*, Landa transcribes information from indigenous Maya sources about the culture, language and customs of the Yucatec Maya. His text has been an invaluable resource for epigraphers and linguists for it offers one of the few sources of information on the meaning and interpretation of the Maya glyphs.

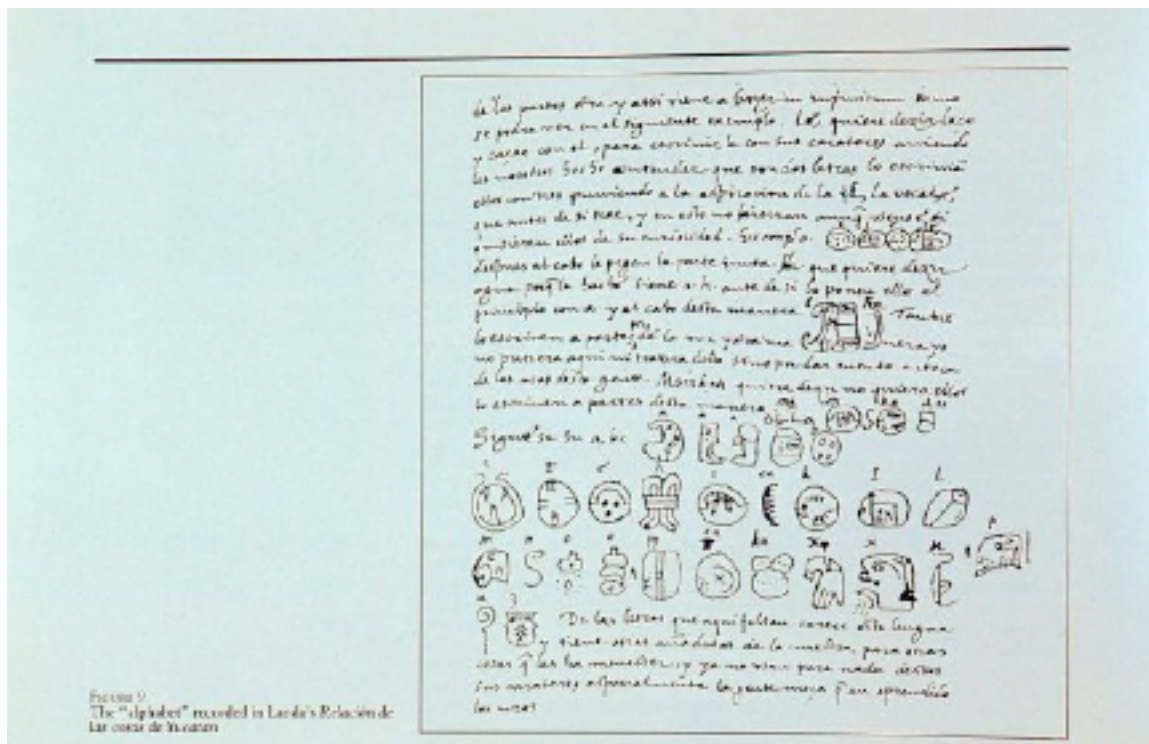


Figure 7 - Copy of a page of Landa's Relación de las cosas de Yucatan

Chapter Two will be an examination of Maya mathematics, the complex calendar system and an introduction to the most fundamental concept making part of the calendar and their understanding of life's cycles. Chapter Three will be an examination of the Maya notions of *k'in* (sun-day-cycles), flowers (*nik*), and nectar (*itz*) and their role in sacrifice and ritual as well as in Maya cosmology and metaphysics. Chapter Four will investigate the conception of organic spacetime that emerges from analyses of textual accounts. Chapter Five constructs the metaphysical picture of the Maya notion of identity and brings together the different insights from previous chapters.

Good websites to visit:

<http://www.famsi.org/> - Foundation for the Advancement of Mesoamerican Studies

[http://www.d.umn.edu/cla/faculty/troufs/anth3618/ma\\_timeline.html](http://www.d.umn.edu/cla/faculty/troufs/anth3618/ma_timeline.html) - Good overall time line

<http://www.mesoweb.com/welcome.html> - Great site on Mesoamerica and the Maya

Further links:

<http://www.art-and-archaeology.com/timelines/mesoamer/meso.html>

# *The Flow of Nectar and Blood:*

## *Maya Philosophy and World Vision*

### **Chapter Two – Mathematics, Calendars, and K'in**

#### The Creation of the World

In the Quiché Maya Council Book of Vision, the *Popol Vuh*,<sup>13</sup> the dawn of creation finds the sky and a pool of water at rest in the universe. In the water there is *Gucumatz*, Heart of Earth, the plumed serpent whose body is covered with quetzal feathers, and in the sky there is *Tepeu*, Heart of Sky, whose name is also Hurricane. “They are great knowers, great thinkers in their very being.”<sup>14</sup> *Gucumatz* and *Tepeu* talked, meditated, and united their thoughts in the night and agreed that the world should come into existence. They discussed who would be in charge of light and darkness, life and death, sustenance and nurture. They created the mountains, valleys, and rivers first. Then they created the trees and bushes on those mountains and valleys followed by animals that would have a voice, so the deer and birds were created next. *Gucumatz* and *Tepeu* asked the animals to praise them for having been created, but they only squawked and howled.

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<sup>13</sup> The *Popol Vuh* or council book of the Quiché Maya was written in Santa Cruz Quiché Maya around 1550-55 in Quiché Maya using the Latin alphabet. It is a historical, theological, metaphysical, astronomical, agricultural, literary, ethical text designed to give vision and knowledge to the highland Maya of the Quiché area.

<sup>14</sup> Tedlock, Dennis. *Popol Vuh: The Definite Edition of the Mayan Book of the Dawn of Life and the Glories of God and Kings*. New York: Touchstone Books, 1996: p. 64.

They were displeased for their creations were not able to speak properly. *Gucumatz* and *Tepeu* said: ““You will simply have to be transformed. Since it hasn’t turned out well and you haven’t spoken, we have changed our word: what you feed on, what you eat, the places where you sleep, the places where you stay, whatever is yours will remain in the canyons, the forests. Although it turned out that our days were not kept, nor did you pray to us, there may be strength in the keeper of the days, the giver of praise whom we have yet to make.””<sup>15</sup>

The dawn of creation begins with a universe of water and sky already in place and at rest. The Maya gods attempt to craft a universe where creatures will aim at counting of the days of creation and worship the creators. The counting of the days entail, as we will see, seeking knowledge of all the cycles of creation. Right away, in the origin story, we notice that a divine ordinance is placed on the aim and actions of human beings. Not being able to become keeper of the days will be tantamount to the initial failed creation. This teleological imposition suggests that what will be a mark for humanity: the ability and actual achievement of keeping track of the relevant cycles of existence.

After their initial attempt *Gucumatz* and *Tepeu* experimented with the creation of a being that would be a keeper of the count of the days which would praise the creator gods, but they made beings of mud who could not turn their heads, would easily crumble, and could not keep count of the days. They asked: ““What is there for us to make that would turn out well, that would succeed in keeping our days and praying to us?””<sup>16</sup> Then they invoked Grandfather of Day and Grandmother of Light, *Xpiyacoc* and *Xmucane*, to

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<sup>15</sup> Tedlock, Dennis. *Popol Vuh: The Definite Edition of the Mayan Book of the Dawn of Life and the Glories of God and Kings*. New York: Touchstone Books, 1996: p. 68.

<sup>16</sup> Ibid. p. 69.

be the daykeepers and to design humans that would glorify the Lords of Creation as well as keeping track of the days. *Xpiyacoc*, the divine matchmaker, and *Xmucane*, the divine midwife, made beings out of wood that resembled carvings. But these beings also failed to keep track of the days to deliver timely worship and were thus destroyed by *Gucumatz* and *Tepeu* with floods from the sky, with animals tearing their flesh, and even the wooden and stone utensils they had once used turning against them and destroying their faces. They became the monkeys of today.

In their next attempt to make beings that would keep track of the days and worship, *Xmucane* was told by fox, parrot, crow, and coyote of a place where corn grew. She mixed grounded corn and water to create human flesh and blood. Humans were crafted on the divine *metate* out of white and yellow maize. The first four androgynous humans, aptly named “mother-fathers” received the names *Jaguar Quitzé*, *Jaguar Night*, *Not Right Now*, and *Dark Jaguar*. This time the gods did things so well, that the humans worshipped at the right time and kept track of the cycles of existence with perfect vision. This full knowledge obtained from keeping track of the days in the calendars made the gods worry that they had created beings too divine, too knowledgeable, so *Tepeu* and *Gucumatz* decided to blur their vision. “They [the four humans] were blinded as the face of a mirror is breathed upon. Their vision flickered. Now it was only from close up that they could see what was there with any clarity. And such was the loss of the means of understanding, along with the means of knowing everything, by the four humans. The root was implanted.”<sup>17</sup> Humans do not have perfect vision, but their divine ordinance is

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<sup>17</sup> Tedlock, Dennis. *Popol Vuh: The Definite Edition of the Mayan Book of the Dawn of Life and the Glories of God and Kings*. New York: Touchstone Books, 1996: p. 148.

to have us seek this vision through the counting of the days. This is why humans long for knowledge and understanding sought through the keeping of the days and cycles of existence.<sup>18</sup> The emphasis seems to be on the journey of discovery and the struggle to obtain better vision of the present and future. To ‘count’ the cycles of existence and their interconnections will not only fulfill the mandate of the gods, but will allow for a more successful existence since humans will learn when to plant crops, when to expect recurrent patterns in nature and, ideally, how to control the future.

The gods intended to have humans work to obtain the knowledge of the passing of the days and that knowledge came through the use of symbols to help them classify, compute, and anticipate the patterns of existence. It is already in the early lines of the *Popol Vuh* that divine wisdom sets humans on a path to discover, through mathematical manipulation of signs, the cycles of existence. Mathematics became a divine ordinance that would enable human organism to know, anticipate, and control the cycles of existence.

### Part One – Mathematics

It is no surprise then that the Maya developed a mathematics that allowed them to calculate physical events in the cosmos with outstanding precision. This mathematical system included a vigesimal number system,<sup>19</sup> arithmetic,<sup>20</sup> and geometrical

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<sup>18</sup> Tedlock, Dennis. *Popol Vuh: The Definite Edition of the Mayan Book of the Dawn of Life and the Glories of God and Kings*. New York: Touchstone Books, 1996: p. 145-151.

<sup>19</sup> Lambert, Joseph B.; Ownbey-McLaughlin, Barbara and McLaughlin, Charles D. Maya arithmetic. *Amer. Sci.* **68** (1980), no. 3, 249--255.

<sup>20</sup> Ifrah, G. *A Universal History of Numbers: From Prehistory to the Invention of the Computer*. London, 1991. Ifrah points out that even though there is only evidence for the

considerations.<sup>21</sup> Their fascination with knowing and controlling relevant cycles of existence, including terrestrial cycles and the recurring movements of the sun, the moon, the planets, and the stars, moved them to construct a base twenty numeral system to facilitate the record keeping and calculation of these cycles. During the classic Maya period, for instance, Maya scientists had calculated the tropical year to be 365.2420 day cycles. Current calculations of the tropical year by modern astronomy place it at 365.2422 days. Such accurate computation indicates that Maya had studied the movements of the sun across the sky for generations, critically, and with great diligence.

Soon they probably observed that there were correlations among these cycles. The cycle of the sun matches with the cycles of rains and dry spells. The human gestation cycle matches pretty closely the gestation cycles of corn, around 260 days. These correlations prompted them to investigate different cycles and their interconnections. As we will see shortly, the Maya not only created a series of calendars that kept track of the more significant cycles, but they investigated the mathematical and physical connections between them. This pursuit of the cycles and their correlations led them to become interested in understanding, anticipating, and attempting to control the connections of the cycles of existence.

The Maya's desire to know and calculate the different agricultural, meteorological, divine, and physiological cycles merged with the desire to control these cycles. Maya astronomy, then, developed making use of this competent mathematical

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360 model of counting instead of the 400, it would be reasonable to assume that merchants may have used this simpler model.

<sup>21</sup> Pitracho Díaz, Rogelio. "The Mathematics of Nature: The Canmayté Quadrivertex" in *International Study Group on Ethnomathematics (ISGEm) Newsletter*, Volume 11, Number 1, December 1995.

system with the purpose to know and have power over these cycles. Knowing with precision the recurring weather patterns or the best time to plant a crop during the year are crucial elements that the Maya thought to control and anticipate. Ritual and mathematics were intertwined to find the proper mix of knowledge of cycles and worship with the aim to seek help from the divinities. Hence, the desire to know and control these cycles was the force behind the Maya number system and, in turn, the mathematics they developed allowed them to further their inquiries into the cycles.

The Maya used an economical three symbols in their base 20 numeral system:<sup>22</sup> For zero they used several symbols, but the shell glyph or the half-flower are two of the most common:



For units a dot, which stood as a representation of a cacao bean:



For groups of five units as a bar or a branch or five compressed cacao beans:



After five, they combined dots and bars to form the numbers up to nineteen.

The number seven was written:




and number sixteen:





<sup>22</sup> This maya notation gifs are borrowed from <http://www.michielb.nl/maya/math.html>. 28





In their vigesimal system, the Maya also created place values on top or in front after the number nineteen in the same way that in the decimal system we require a new place value for multiples of ten after number nine. So the number twenty, was written:

	$1 \times (\text{twenty}) = 20$	
	$0 \times (\text{units}) = 0$	adds to 20

Twenty-one is:



	$1 \times (\text{twenty}) = 20$	
	$1 \times (\text{units}) = 1$	adds to 21

Three hundred forty-two is:

	$17 \times (\text{twenty}) = 340$	
	$2 \times (\text{units}) = 2$	adds to 342

So we would expect then that larger numbers would demand another place value multiple of twenty in the same way that after 99 we need another place value to create 100. What happens, however, is that since the mathematical system is supposed to serve as a map of the cycles in time and since the most important cycle of existence is the sun, the Maya

felt that the solar cycle had to be reflected in their arithmetic.<sup>23</sup> The second place setting (multiples of 20) does not go beyond 360, for 360 (plus five unlucky days) is the number of days it takes for the sun to return to the same location in the sky (approximately, since they knew that it actually takes 365.2420 days). The number 360 would be written as:

●	$1 \times (20 \times 18 = 360) = 360$
	$0 \times (20) = 0$
	$0 \times (\text{units}) = 0$

With larger numbers, this modification of the limit of the second place value to numbers no larger than 17, implies that larger place settings will be modified as well. So we will start at the bottom with multiples of units until we reach 19. At the second place setting, the multiples of 20 will go up until they reach 359 ( $17 \times 20 + 19 \times 1$ ). The third place setting, above the second place setting (as in the previous example) will go up until it reaches 7199 ( $19 \times 360 + 17 \times 20 + 19 \times 1$ ).

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<sup>23</sup> It is postulated that Maya merchants probably used the more mathematically coherent 400's place value instead of 360, yet the extant records shows us the 360-day calendrical mapping onto the number system.

The number 16,804 will be:

● ●	$2 \times 7200 = 14400$
●	$6 \times 360 = 2160$
—	
● ●	$12 \times 20 = 240$
==	
● ● ● ●	$4 \times 1 = 4$

(which adds to 16,804).\\

Thus, Maya arithmetic came to utilize this vigesimal system of place values with the natural need for the symbol and concept of zero (as in the example of number twenty) to indicate that a particular place value is unoccupied. As we will see, the Maya understood this concept of zero, not as the absence of value, but as the completion of a cycle. Most of the knowledge we have from the Maya use of numerals come from their calendrical measurements and recordings. So, twenty days of a calendar designated a month and a new cycle for when the month was completed.

Refer to Appendix A for some more information, examples and exercises.

## Part Two – The Calendars

The Maya's fascination with the cycles of time led them to attempt a rigorous, complex, and practical mapping of the significant cycles of existence. The Maya knew that the sun's motions around the earth were not limited, for instance, to the tropical year cycle. They observed variations and cycles associated with the tropical year. That is, the

Maya knew about and calculated the precession of the earth on its axis by observing the slight changes of the sun's location in the sky from year to year.

Although the Maya recognized the sun's movement as the most significant cycle of existence, they were not satisfied with a calendar system that would just map the sun's revolution. They calculated and computed the cycles of other objects of existence, like the moon and Venus, and crafted other calendars to run concurrently with the solar year calendar. In our own Gregorian calendar we have different sets of cycles within the main calendar. We have the cycles of the hours, days, weeks, months, trimesters, and years. Beyond the years, we use our decimal system to designate the cycles of ten years (decades) and centuries. But all these cycles occur within the solar year calendar of 365 days. Similarly, the Maya also had several recurring cycles of days and months in the solar calendar. In the classic period of Maya civilization, the Maya were using three main calendars simultaneously along with several other minor calendars that mapped the cycles of the moon, of Venus, and Mars.

### The Solar Year Calendar

Sometimes referred to as the civil calendar or the vague year calendar, the solar year calendar or *Haab*<sup>24</sup> (in Yucatec Maya) was a 365 day cycle of 18 months of 20 days plus five unlucky or nameless days called the *uayeb*. Each of the 18 months had a distinct month-glyph<sup>25</sup> (see Figure 2) and a number representing each day. The calendar

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<sup>24</sup> The Quiché Maya speak of the *Macewal k'ij* instead.

<sup>25</sup> There are several variants and names for each glyph depending on the particular Maya group. But even within a particular group, there were several glyphic and god-head representations of the months and days.

would begin with 1-Pop, followed by 2-Pop, 3-Pop, and so on until 19-Pop. Then the month of Pop would end its cycle the same day that the next month, Uo, would begin. That day was called the seating of Uo, 0-Uo. This zero day was a convergence of the influence of the terminating month of Pop (20<sup>th</sup> day) and the beginning of the month of Uo. (see Figure 1)

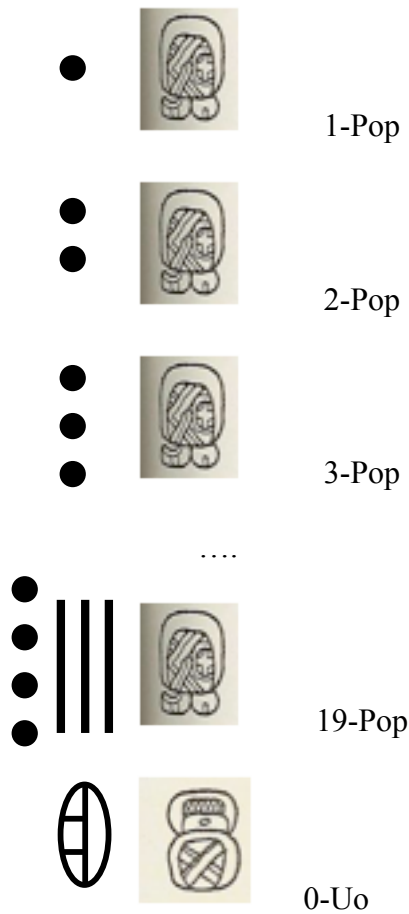


Figure 1. Notice in the day-month signs above, that the numbers are turned to their sides in comparison to the way we wrote them in the previous chapter. 0-Uo is called the seating of Uo and corresponds also to the last day of Pop.

This way of counting the passing days would indicate that there was a deep interconnection between the waning days of one month and the origins of the new monthly cycle. The influences of the month coming to fulfillment bled into the incoming month as a passing of the torch of time. The days and months were seen as carriers of the burden of time.

Each day begins at noon and ends twenty four hours later when the sun reaches its zenith in the sky. Each day, or *k'in*, is a cycle of the sun going around the earth from zenith to zenith. After twenty *k'in* a new cycle or month would begin. These twenty-day periods were known as *uinals* and eighteen *uinals* formed another cycle, the *tun* or the 360-day year. After a *tun* cycle would be completed, with 18 cycles of *uinals* and 360 cycles of *k'in*, the five days of the *uayeb* would follow. This last short cycle completing the cycle of the *haab* was under the influence of the Lords of the Earth. Most Maya groups, but especially the Yucatec, deemed this short “month” or cycle that ended the solar year as unlucky. This was a time where political and religious powers were transferred and where people had to refrain from many activities. The Yucatec during this five-day period, for instance, would refrain from sexual practices, from eating certain kinds of foods, and from most social relations. This is an indication of how seriously the Maya took the calendar and its precepts. The *haab* was not only a method for keeping track of the cycles of both the daily and yearly cycles of the sun, but a system for ensuring that earthly events cohere with celestial ones.

Since there are several significant celestial and terrestrial cycles, the Maya felt that one calendar was not sufficient for accounting for the cycles of time. As León-Portilla observes, “[n]o other ancient culture was able to formulate, as they did, such a

number of units of measurement and categories or so many mathematical relations for framing, with a tireless desire for exactitude, the cyclic reality of time.”<sup>26</sup>

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<sup>26</sup> León-Portilla, Miguel. *Time and Reality in the Thought of the Maya*. Norman: University of Oklahoma Press, 1988: p. 13.

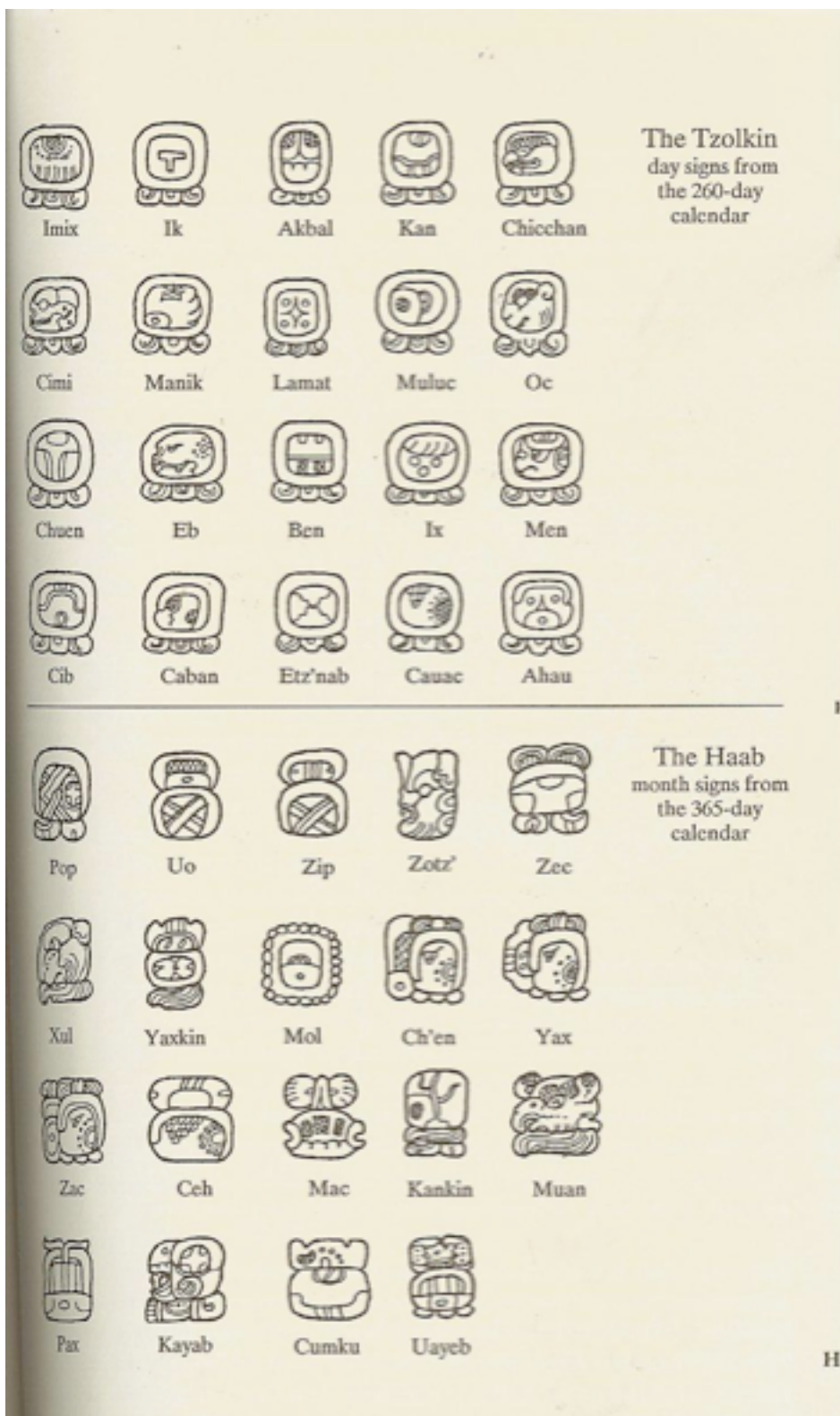


Figure 2

### The Ritual Calendar

Another significant calendar was the ritual or “counting of the days” calendar, the *tzolkin*. This calendar was composed of thirteen numbers combined with twenty days each. Each day had a corresponding day glyph sign (see Figure 2). The calendar begins with 1-Imix, followed by 2-Ik’, 3-Akbal until 13-Ben where, then, we begin the cycles of 13 numbers all over again but continuing with the order of the day signs. After 13-Ben we have 1-Ix, 2-Men, 3-Cib, and so on. Once we reach 8-Ahau, the last day sign, we begin a new cycle of day signs but continuing with the order of the numbers. Thus, after 8-Ahau we have 9-Imix, 10-Ik, and so on. (Figure 3)



1-Imix



2-Ik’



3-Akbal

....



13-Ben

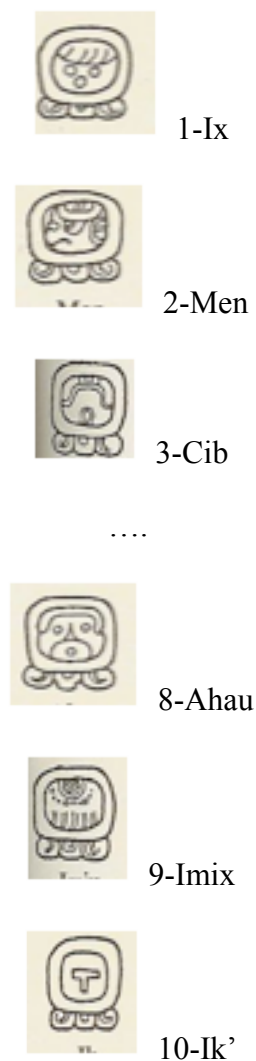


Figure 3.

After 260 days (13x20) we return to the original 1-Imix, fulfilling the cycle of the *tzolkin*. The use of this calendar was widespread across Mesoamerica and still in use today in several Maya communities.<sup>27</sup>

Although scholars disagree about the reasons for the creation of this calendar<sup>28</sup> a few of the reasons are compelling. First, some scholars claim, the 260-day calendar is

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<sup>27</sup> Barbara Tedlock's *Time and the Highland Maya*. Albuquerque: New Mexico University Press, 1992.

composed of thirteen 20-day cycles where 20 is the important base number for calendrical computations and 13 is the number of levels of the heavens and Xibalbá (the Maya underworld) as well as the number of the original gods of creation and the gods of the night. A second compelling reason is that 260 closely approximates the gestation cycles of both maize and human beings.<sup>29</sup> Although it would be difficult to argue that the *tzolkin* was used as a calendar to calculate and control the agricultural crop cycles of maize, the Maya did closely associate the birth of maize with the birth of humans and they often tried to seek connections between human events and the calendars. Since the Maya's diet and overall existence depended heavily on the observance of maize, they used the ritual and solar calendar to map different types of ceremonies and events throughout the year. León-Portilla observes: "This 260-day count directed the norms applicable to all important acts in life."<sup>30</sup> Even today, many Maya communities continue to follow the instructions of the *tzolkin* and quite a bit of Maya art pursues this theme of the interconnection between maize and humans.

### Calendar Round

These two main calendars were not separate means of calculating and controlling the cycles of existence. The Maya kept concurrent count of both calendars and they

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<sup>28</sup> Barbara Tedlock's *Time and the Highland Maya*. Albuquerque: New Mexico University Press, 1992: p. 93.

<sup>29</sup> Some scholars suggest this view because of their personal experiences with the Maya (Duncan Earl, for instance), but some argue vehemently against this interpretation for the calendar and the gestations obviously do not match, since the calendar cycle is recurring without intervals while the gestations vary from when they start (see Henderson p. 50).

<sup>30</sup> León-Portilla, Miguel. *Time and Reality in the Thought of the Maya*. Norman: University of Oklahoma Press, 1988: p. 10.

interlocked their cycles. For instance, most scholars agree that the Maya origin of the current era occurred on 4-Ahau, 8-Cumkú. 4-Ahau corresponds, of course, to the *tzolkin* and 8-Cumkú to the *haab*. The combination of these two calendars leads to the creation of a new cycle, namely the time it would take for the original date of 4-Ahau, 8-Cumkú to recur. It would take 18,980 days for the same date in both calendars to recur, which is every 52 solar or *haab* years.

As you can see in Figure 4, you can picture the cycles of the *tzolkin*, which itself has two interlocking cycles of 13 numbers and 20 day-sings, concatenated with the cycles of the *haab*, which it has interlocking cycles of 18 months of 20 days each.

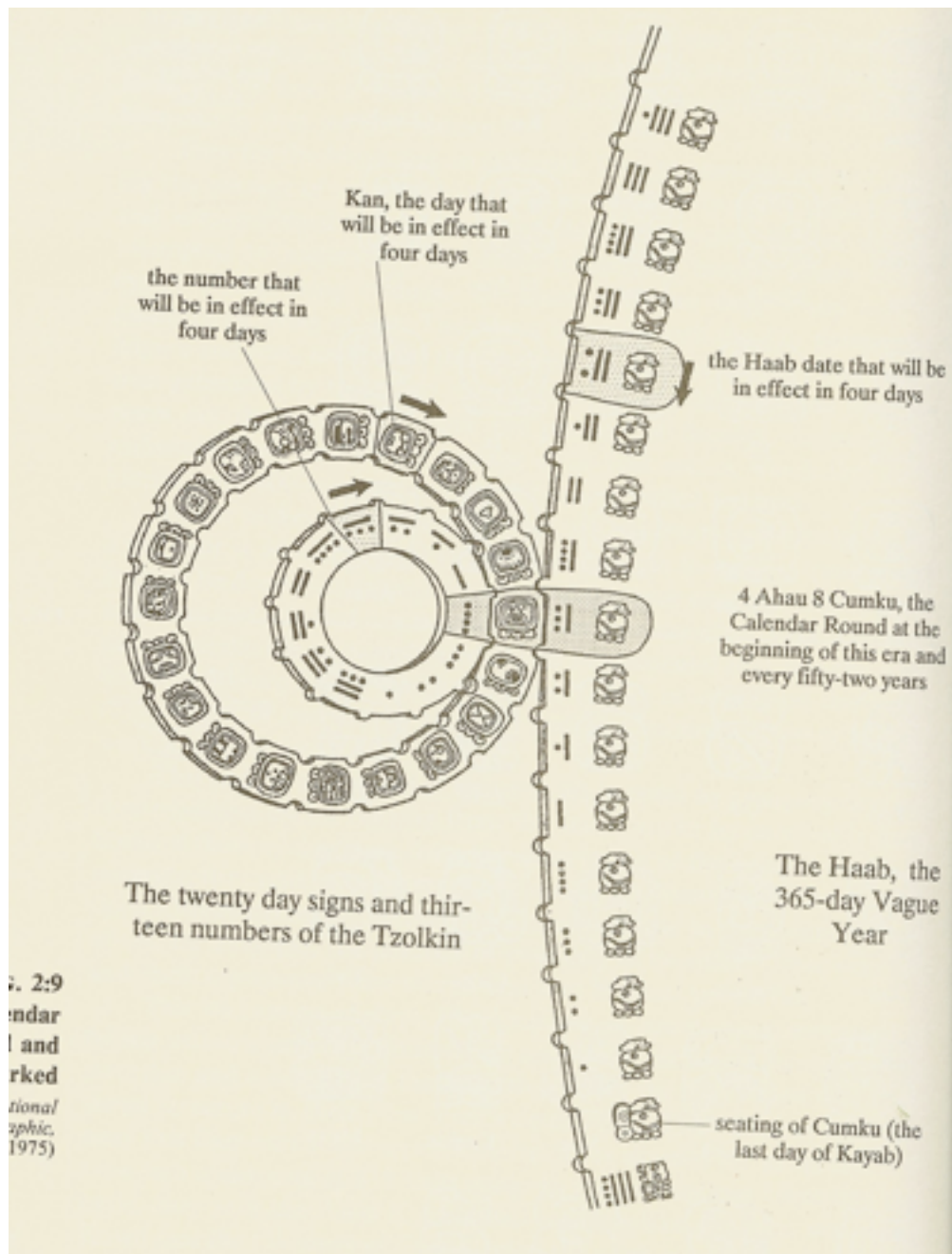


Figure 4. The Calendar Round, formed by the two interlocking cycles of the *tzolkin* and the *haab*.

(Courtesy of National Geographic, 1975)

The Calendar Round becomes a new calendar that cycles through approximately 52 *haab* years that keeps track of both current calendars and gives vision to a new set of cycles previously not available. Their belief was that knowledge of the recurrences in the calendars would give them vision over a large range of events, at least cyclical ones. This power offered by computation applied to calendars matched the command of the creator deities and offered them the opportunity to gain control over their lives.

### Long Count

The Maya had yet another significant calendar for keeping track of events on a large time-scale. As with the *tzolkin* and *haab*, the basic unit of the calendar was the day cycle or *k'in*. Every twenty *k'in* would form a cycle of a month or *uinal*<sup>31</sup> and eighteen *uinal* cycles would form a *tun*, a 360-day year (18x20) just like with the *haab*. Twenty *tun*, in addition, made up a *katun* or a cycle of twenty 360-day years. Twenty *katun* composed a *baktun* or 400 *tun*. Twenty *baktun* or 8,000 *tun* was a *pictun*. This count could potentially go up to infinity. Maya scholars call this calendar, the Long Count. The mathematical system that the Maya utilized in the Classic period was developed to facilitate calculations of the Long Count.

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<sup>31</sup> The term *uinal* comes from *uinic*, which means human being. Linda Schele argues that humans lend the names to the 20-day months because we have 20 digits in our extremities. Tedlock (1992), p. 81.

The Maya believed that the current era began on August 13th 3114 BC which in the Long Count would be written: 0 baktun, 0 katun, 0 tun, 0 uinal, 0 k'in (4-Ahau in the *tzolkin* and 8-Cumku in the *haab*).<sup>32</sup> They also believed that the end of this era would arrive on 13 baktun, 0 katun, 0 tun, 0 uinal, 0 k'in which will land approximately on December 21, 2012 in our Gregorian calendar. This creates another cycle of approximately 5125 solar years, which the Maya believed represented the life cycle of a human epoch.

The Long Count is a unique device of the Maya calendrical system. Unfortunately, it fell into disuse in the Post-classic period and no extant Maya culture utilized the Long Count when the Europeans arrived. Thus, our knowledge of how the Maya used this calendar is limited to the archaeological and textual remains. In spite of these difficulties, this count was used and correlated alongside the *tzolkin* and the *haab* calendars. Archaeologists have discovered many stone monuments, called stelae, with calendrical inscriptions that include the Long Count date, the *tzolkin* date, the *haab* date, the lunar cycle, the Venus cycle, and the Mars cycle. Such complete attention to the calendrical cycles indicates their dedication and desire for knowledge of those cycles. Below is a partial representation of the calendrical date found on Stela C of Quirigua:



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<sup>32</sup> This is the date for one of the possible correlations (GMT), but there are other plausible correlations which differ from two days to a whole year. I chose to use the traditional correlation, but it could turn out to be inaccurate. There is a generally held belief among most Maya scholars that the 13 baktun cycle was considered a cycle of importance for the Maya. The year zero (0.0.0.0.0) can be equivalently written as (13.0.0.0.0).

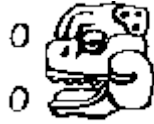
Introductory Glyph



9-baktun



16-katun



0-tun



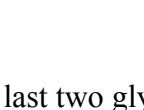
2-uinal



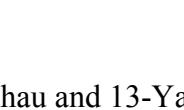
0-k'in



3-Ahau



12-yaxk'in



Notice that the last two glyphs of 3-Ahau and 13-Yaxk'in are the dates for the *tzolkin* and *haab*, respectively.

### Part Three – The Cycles of *K'in*

The basic unit of the three main calendars is the day cycle of 24 hours: *k'in*. Each of the subsequent cycles of the Long Count, *tzolkin*, and *haab* are based on this initial cycle of the sun's movement across the sky. The uinal is 20 cycles of *k'in*, the tun is 360 cycles of *k'in*, the *katun* is 7200 cycles of *k'in*. Furthermore, *k'in* is the basis for the turning of 13 days and the 20-day signs of the *tzolkin*. Since *k'in* is part of all the calendrical cycles of the Maya and the calendrical cycles are created to map the cycles

of the universe, *k'in* becomes the fundamental unit of measurement of the calendar and, consequently, of existence.

The Maya treated *k'in* as the most significant and fundamental cycle and each of the day cycles of *k'in* had to be attended and examined properly. Each *k'in* is a particular manifestation of the human and cosmic cycles and had to be measured and represented with precision. One calendar cycle was not sufficient to account for all the complexity of *k'in* and, as we have seen in the previous section, several calendars were needed to make each *k'in* unique. Just combining the *tzokin* and the *haab*, forming the new cycle of the Calendar Round, we find that each day is uniquely characterized for a 52 solar year period. A certain day of the Calendar Round would not recur until 52 years later. If we were to include the Long Count, we would obtain a completely unique day every 5125 years in each cycle of the *baktun*. Thus, any single *k'in* would be part of a recurring cycle and an interminable unique count. Obviously the cycles of the *tzolkin*, *haab* and thus the Calendar Round would go on recurring without limit, but the addition of the Long Count, with its reference point of the year zero (in the same way that we have in the Gregorian calendar), anchor the counting of time to a particular earthly event, thus allowing for the recurring Long Count to serve as a tool to map uniquely the cycles of *k'in* infinitely into the past and the future.

Each *k'in* would have its unique character, never to be repeated, even though cyclical repetition would inform and color each day with knowledge from the past. The calendar provided a way to have such precise vision into each day. The Maya added so many possible calendrical mappings to each *k'in* to come to understand and control the cycles of existence. Knowledge of the cycles of *k'in* implies knowledge of the universe.

If this is the case, the symbol *k'in* becomes the fundamental epistemic tool of the Maya. As Linda Schele indicates, “[t]his particular glyph [the glyph of the sun representing *k'in*] is a powerful symbol, representing the sun in transition between life and death, poised on the brink of the Otherworld.”<sup>33</sup> The symbols of *k'in* are symbols of epistemic power.

According to León-Portilla *k'in* is a variation of a Maya term that primarily means *sun* in the proto-Maya and classic Maya languages.<sup>34</sup> *K'in* is therefore a term that can be considered properly Mayan since variations can be found in the different Maya languages. Most importantly, however, is that the term connotes and denotes similar ideas throughout the different Maya groups.

The fact that this term is present—not only at the time of the Conquest, but in our own time in the vocabulary of such separated groups as the Yucatec Maya as compared to the Quiché, Cakchiquel, Mam, Pocomán, and others of the Highlands of Guatemala as well as the Tzotzil and Tzeltal of Chiapas, themselves groups considerably different from the Maya communities of Honduras—is proof of the ancient origin of the semantic complex “sun-day-time” connoted by *k'in*.<sup>35</sup>

*K'in*, furthermore, is a pluralistic term when it comes to its associated meanings. Besides meaning *sun*, *k'in* means *day*. The movement of the sun, as it rises (*lak-k-kin*) through the celestial abode making things visible and it sets (*chi-kin*), constitutes the visible presence of the sun. The daylight part of day is the visible part of *k'in*. But *k'in* also designates the full complete cycle of the movement of the sun through the dark hours

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<sup>33</sup> Schele, Linda and David Freidel. *A Forest of Kings: The Untold Story of the Ancient Maya*. New York: William Morrow Co., 1990, pp. 226.

<sup>34</sup> Following the work of the linguist Norman McQuown Miguel León-Portilla adopts the spelling *kinh* instead of the Yucatec *kin* and the Quiché *kih*. *Yet, to be consistent I have used my preferred spelling k'in*. León-Portilla 1988, 17.

<sup>35</sup> León-Portilla 1988, 17

when it travels through the underworld, coming to a full circle. This complete cyclical movement is also designated as *k'in*: a day cycle. Since, as we have seen, the days are the fundamental units of the calendars and of the keeping of time, *k'in* also came to signify the movements of all the cycles of time themselves.

*K'in*, then, primarily represents the concept of all cycles. León-Portilla gives ample evidence for this in *Time and Reality in the Thought of the Maya* so there is no need to repeat it here.<sup>36</sup> What is remarkable is that *k'in* is, not only one of the most frequent glyphs throughout the Maya kingdoms, but a term that became associated with the Maya divinities.<sup>37</sup>

...in the case of *k'in*, the concept itself was firmly embedded in Maya mythology and world view. Apart from secondary aspects, the variants of the *k'in* hieroglyph point at the symbolism proper to the solar deity, among others that known [sic.] as *God G*...when treating of the figures of the gods that appear as 'bearers of the burdens of time', there will be seen the consistent relationship between the deities and each distinct period or cycle.<sup>38</sup>

As Thompson, Seler, and León-Portilla point out, the many different divine figures become carriers of the burden of time. This means that different divinities would come into prominence during a certain cycle that could be determined by the sages from previous experiences and close examination of past histories. These divinities would be the divinities that had to be worshiped during that particular cycle. At the end of the

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<sup>36</sup> A main difference, however, is that León Portilla prefers to refer to what I call all cycles, the abstract notion of *time*. I do not see any evidence that the Maya had conceived of time as a separate entity/concept. Rather, I will argue that the Maya understood all cycles to be interconnected and to be represented best by the symbol of *k'in* and not necessarily by a separate concept of time.

<sup>37</sup> Thomson 1960, 22 and 142.

<sup>38</sup> León-Portilla 1988, 24.

cycle another would substitute the divine being and a new cycle would begin. Taking care of *k'in* during the cycle became the responsibility of that divinity. The divine being would have to carry *k'in* to fruition; that is, the particular divinity would have to make sure that the cycle was properly fulfilled so life would continue. The continuation of existence would become a burden for the different divinities carrying *k'in*. “Throughout the cosmic ages life was reborn thanks to *k'in*. Man recognized and thus approached the gods as bearers of the different periods: their faces were living portraits of time.”<sup>39</sup> The gods were the carriers of the burden of all cycles, *k'in*.

This association of *k'in* with the divine indicated that *k'in* was not just merely an abstract concept that would aid the understanding of the different cycles of existence. Rather, *k'in* was a concept that denoted the most profound elements of existence from the minute cycles of earthly things to the divine. León-Portilla says: “*K'in*—sun-day-time—was not an abstract entity but a reality enmeshed in the world of myths, a divine being, origin of the cycles which govern all existing things.”<sup>40</sup> This suggest that it is best to think of *k'in* as a symbol representing the idea of all cycles in existence, both in their recurrence and in their linear progress (this is what we and León-Portilla calls time).

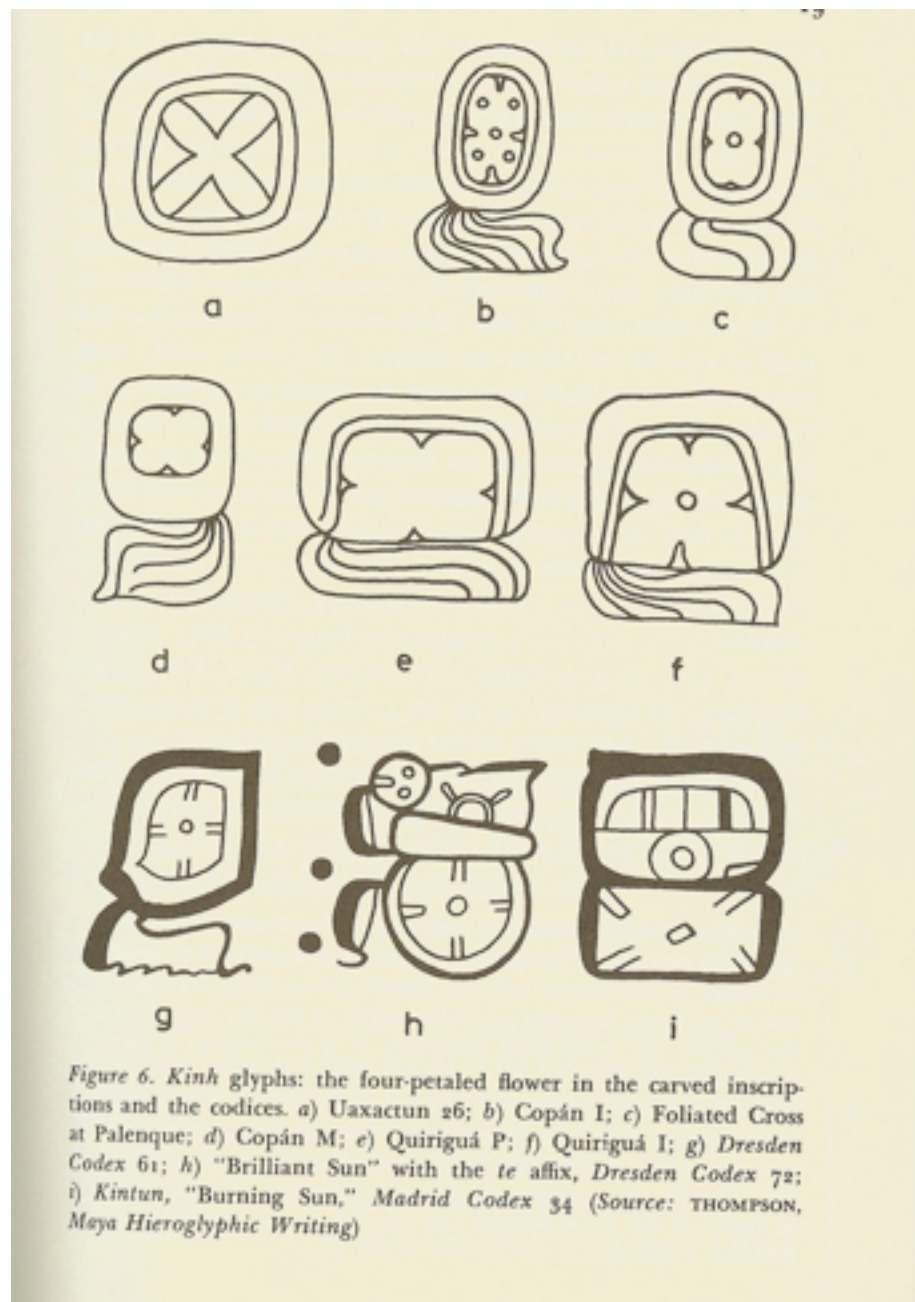
There are many representations for *k'in* but the most common is a glyph image of a four-petaled flower. Eric Thomson says: “The glyph resembles, and in all probability represents, a four-petaled flower. It seems very probable that this is a conventionalized picture of some species of plumeria.”<sup>41</sup> (see Figure below)

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<sup>39</sup> León-Portilla 1988, 37.

<sup>40</sup> León-Portilla 1988, 33.

<sup>41</sup> Thomson 1960, 142.

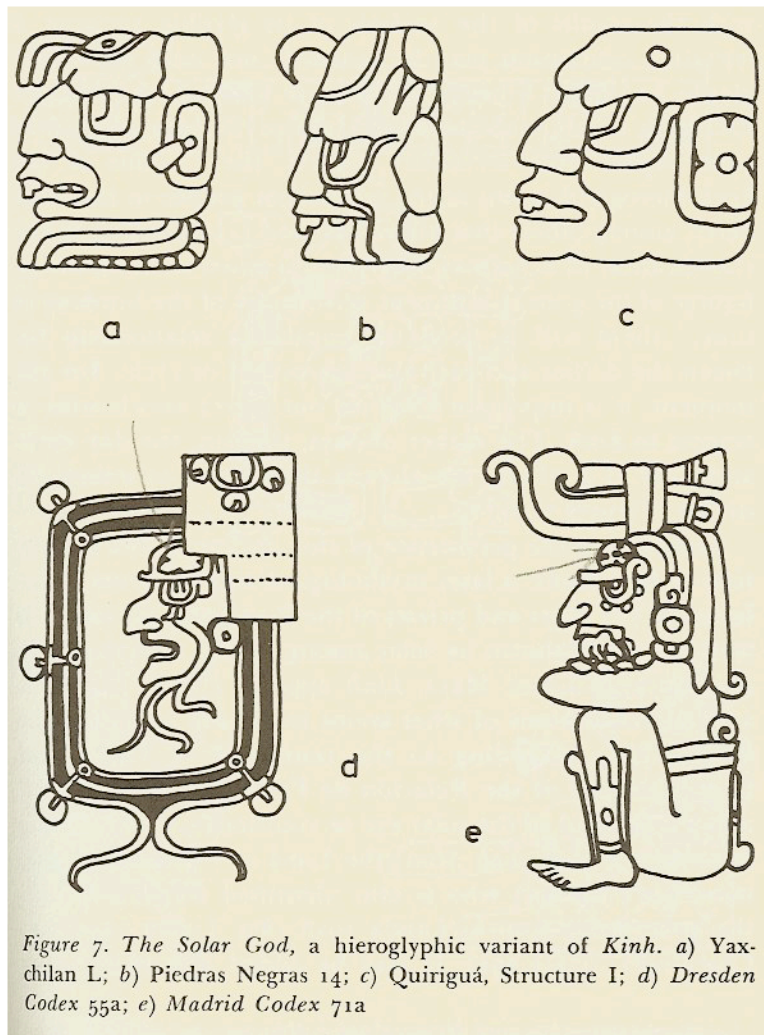


Why use a flower to represent more complex concepts like sun, day, and time? Although it may seem intellectually petty, thinking through the life of a flower may show why this may be. A flower grows thanks to the appearance of the sun. Even some flowers are able to follow the daily cycle by opening its petals in the morning, following the circling

movement of the sun, and closing its bloom when the sun gets devoured by the earth monster as it continues its cycle through the underworld. A flower also follows the other cycles of the sun pretty attentively. It grows when it's time and returns back in death into the earth to replenish and regenerate new flowers. A flower shares of the movement of the sun and, like the sun, it has a life above ground and a life below ground, the roots. Like the sun and the gods, it has the power to help regenerate and aid procreation. Thompson writes: "The plumeria is a symbol of procreation..."<sup>42</sup> Paying attention to a flower (or some flowers at least), furthermore, shows a mirror image of the movements of the sun like the days, months, and years. So a flower would be a good representative image of the sun here on earth. No wonder then that a flower becomes the premier symbol for *k'in* and can be found in the backs or foreheads of many of the divinities that carry the burden of time. (See figure below)

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<sup>42</sup> Thomson 1960, 142.



Having such a significant role in the conceptualization of the most prominent celestial body, the essential cycles, and time, flowering *k'in* becomes the most significant element or tool for understanding existence. The Maya sages or *ah kinob* (meaning “they of the sun” or “they that know the cycles” in Yucatec Maya) calculated with great precision, given their instruments, the cycles vital for existence and tried to establish connections across these cycles and their relevance for existence. Some of the influential aspects of these cycles for existence were obvious. For instance, the daily appearance of

the sun is fundamental for the development of life and for having light for vision. Some other aspects of these cycles were more complicated and the sages compiled texts, like the codices and the *Popol Vuh* (or book of vision of the Quiché Maya), where complex interconnections among cycles are explained. For instance, Tedlock tells us, the *Popol Vuh* explains how to anticipate the coming of the hurricane season by paying attention to the location of a certain constellation as it ‘falls into the ground’. As the constellation disappears into the night’s horizon, the Maya would know that the time for hurricanes was upon them. The job of the *ah kinob* was then to understand the different cycles and their relevance for human existence. From knowing which divinity was carrying the burden of time so the proper celebrations and sacrifices could be carried out, to knowing the cycles of the stars that indicated the coming of severe weather patterns, the *ah kinob* paid close attention to the movement of *k’in*. León-Portilla writes: “*K’in*, sun-day-time, is a primary reality, divine and limitless. *K’in* embraces all cycles and all the cosmic ages.”<sup>43</sup> Further, he emphasizes how important *k’in* is to the existence of reality itself: “In the absence of time-cycles, there is no life, nothing happens, not even death. The colored regions [of space], divorced from *k’in*, sun-day-time, would become utter darkness devoid of all meaning...Life and reality exist thanks to the toil of *k’in*, sun, day, and time deified”<sup>44</sup> Knowledge of *k’in*, therefore, requires not only understanding of the sun, its cycles and the complexity of time, but how sun-day-time affected existence and humans. Thus, knowledge of *k’in* entails knowledge of things of existence.

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<sup>43</sup> León-Portilla 1988, 54.

<sup>44</sup> León-Portilla 1988, 86 and 90.

But what is *k'in*'s precise epistemic role? Can human beings fully understand *k'in*? Could human beings have a certain amount of control of the movement of *k'in*? Can *k'in* give further knowledge? It is clear from the intimate connection of *k'in* with the divine that those that possess *k'in* possess knowledge. It is unclear, however, what was the precise epistemic role of *k'in* in Classic Maya society or the extent the *ah kinob* explored these philosophical questions. What is clear from the preceding exposition is that the sages came to knowledge of the cycles by paying close attention to the different elements involved in the calendrical cycles and their connection to earthly events. From the initial pages of the *Popol Vuh*, however, we know that knowledge of all cycles and their complex interconnections escapes human vision. It is only for the gods to grasp the full set of interconnections. So full comprehension of *k'in* is not humanly possible, but humans can get quite good at grasping the most significant cycles and interconnections. Since knowing existence is tantamount to knowing *k'in* and its movements, then to have knowledge is tantamount to grasping *k'in*. Hence, the Maya concept of *k'in*, sun-day-time, becomes closely associated with knowledge.<sup>45</sup>

In many cultures, including the Maya, the sun has been the eminent symbol for knowledge for without the sun we cannot use one of our primary senses very well. Vision is often preeminently associated with knowledge and therefore knowledge is associated with the sun. Sun gives knowledge. Sun is knowledge. The Maya probably shared this idea.<sup>46</sup> Further, the Maya were obsessed with knowledge of the cycles of days

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<sup>45</sup> More would need to be offered in terms of evidence to make this claim truly convincing, but there is no room to do so in this short essay.

<sup>46</sup> We only have indirect evidence for this. For instance, when Tedlock interprets the meaning of the origin of the *Popol Vuh* as a text of vision we can draw from this that the

and were able to calculate many days far into the past and into the future. Such obsession with clear vision of the days and their many cycles is evidence of their desire to understand *k'in*.

Moreover, the appreciation for flora goes beyond the mere need of sustenance or beauty. As we will see in chapter 3, certain flowering trees, like the ceiba tree, were primordial for their understanding of space-time and were the foundation of the human plane of existence. The ceiba tree reached for the heavens but also reached, with its roots, to the underworld as it shared existence in this horizontal plane. That is, trees and flowers share, like the gods, of all levels of existence. This is unlike humans who can only really live in the horizontal plane. Flowers and flowering trees became a symbol for *k'in* because they shared the vision and existence of the gods.

Epistemologically then, it makes a lot of sense for the Maya to represent *k'in* as a flower, for it shares many aspects of existence with humans, but it goes beyond human vision and shares of divine vision which humans long but cannot fully acquire. *K'in* is what humans aspire but cannot quite reach; but a flower mimics the movement of *k'in* and shares the organic wisdom of the gods. Flowering *k'in* is then also a symbol for knowledge. The sages, the *ah kinob*, could then be also translated as “they who have *k'in*” or “they who have knowledge of flowery events.”<sup>47</sup>

#### Part Four – The Burden of *K'in*

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Maya viewed their creation and astronomical accounts as epistemic devices. A text containing the mapping of the cycles of *k'in* can give vision to humans

<sup>47</sup> Although this interpretation of *kinh* is speculative to some degree it is based on connecting the different associations of *kinh* and does not seem too far-fetched although I presume some may feel uncomfortable.

*K'in* is a concept designating sun, day, and time and the Maya envisioned the gods as carriers of all cycles of time. The gods had the burden of ensuring that the cycles of existence were completed. The gods were, therefore, carriers of the burden of *k'in*. To understand what this burden entailed and to explore Maya metaphysical views, let's briefly examine the stories of creation of the Quiché, the Yucatec, and Lacandón Maya.

At the outset of this chapter we saw how at the origin of creation *Gucumatz* and *Tepeu* conversed and decided to create humans that could 'count the days' and give them worship. After repeated attempts, *Gucumatz* and *Tepeu* succeeded in the creation, but too well, in fact, so their creations no longer needed to seek knowledge of the days since they could immediately anticipate the future. So humans could seek the patterns and cycles of what forms the days, *Gucumatz* and *Tepeu* blurred the vision of their creations. In the Quiché Maya creation story, full knowledge is for divine beings solely. Humans desire knowledge they once had and now long for precise understanding of the many cycles of existence. But humans have to work with great diligence to have even a glimpse of knowledge of the cycles of existence. It is through sacrifice, the *Popol Vuh* continues to tell us, that human beings ensure that the cycles continue. The sacrifice of the toil of the land to ensure that the maize crops are successful; the sacrifice of the time and effort it takes to know the cycles of time; the sacrifice that humans must endure in the birthing and raising of their own offspring; the sacrifice that humans must ritually conduct to worship the gods to make sure the gods carry the burden of time on their backs.

Knowledge of the cycles of time, the counting of the days, is embedded at the outset of creation. The gods are the keepers of these cycles in the figures of *Xmucane*

and *Xpicayoc*. Humans must attempt to reach the gods' knowledge and the counting of time's many cycles. This constitutes the primordial human activity. Worship and sacrifice are there to ensure that the gods work with and for us to sustain the life they have created. Worship is to support our search for *k'in* and knowledge. If we were to fail in our pursuit, we would fail our humanity. Hence, our identity as humans is tied to our search for knowledge. Tedlock declares that "[i]n theory, if we who presently claim to be human were to forget our efforts to find the traces of divine movement in our own actions, our fate should be something like that of the wooden people in the *Popol Vuh*. For them, the forgotten force of divinity reasserted itself by inhabiting their own tools and utensils, which rose up against them and drove them from their homes. Today they are swinging through the trees."<sup>48</sup>

Later in the story of the *Popol Vuh*, *Xpiyacoc* and *Xmucane* gave birth to twins *Hun Hunahpu* and *Vucub Hunahpu* (One Blowgun and Seven Blowgun) who raised the ire of the Lords of Xibalbá *Hun Came* and *Vucub Came* (One Death and Seven Death)<sup>49</sup> by playing a game of *pelota*. After being tricked by the Lords of the Underworld, they were sacrificed and their bodies destroyed. *Hun Hunahpu's* head, however, found its way to a calabash tree. When Blood Moon, daughter of the Lords of Xibalbá, walked nearby *Hun Hunahpu's* head spat on her hand and she conceived twins: *Hunahpu* and *Xbalanque*.

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<sup>48</sup> Tedlock, Dennis. *Popol Vuh: The Definite Edition of the Mayan Book of the Dawn of Life and the Glories of God and Kings*. New York: Touchstone Books, 1996: p. 60.

<sup>49</sup> Notice the parallelism in the numbers. This is a feature common in the *Popol Vuh* (see Christenson's translation) and in Maya stories and culture. This repetition, I will argue, is there to mimic the repetition of cycles in existence and show the depth of the idea that repeating cycles play in the life and thought of the Maya.

The first adventure of *Hunahpu* and *Xbalanque* have to do with a father and two sons who had upset Heart of Earth and Heart of Sky by pretending to be the sun-moon, maker, and destroyer of mountains. The father, *Seven Macaw*, gets shot down from his tree while eating a meal, breaks a jaw and falls down to earth. According to Tedlock, Seven Macaw “remains as the seven stars of the Big Dipper, and his wife, Chimalmat, corresponds to a circle of northern stars that includes the arc of the Little Dipper. In mid-July, when he is already falling from his tree as the night begins, he opens the hurricane season, and in mid-October, when he almost gets back up the tree before morning, he closes it.”<sup>50</sup> This story becomes a mnemonic for remembering when to plant and reap crops and as a warning for the incoming inclement weather. “In mid-July, when he [Seven Macaw] is already falling from his tree as the night begins, he opens the hurricane season, and in mid-October, when he almost gets back up the tree before morning, he closes it.”<sup>51</sup>

These stories in the *Popol Vuh* encapsulate several different meanings. Besides the story of the twins, the storyteller would be informing us of the time of planting and reaping, of the calendrical cycles of crops, of the movement of the divinities, of the times for rituals and festivals, the cyclical movements of celestial bodies, and how those cycles map here on earth. When the Quiché would tell these stories, they would inform the listeners about theology, about creation stories, about human responsibilities to their environments, about calendrical cycles, about ethics, about metaphysics, and about astronomical movements. These stories are multiple narratives in one. The trained

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<sup>50</sup> Tedlock, Dennis. *Popol Vuh: The Definite Edition of the Mayan Book of the Dawn of Life and the Glories of God and Kings*. New York: Touchstone Books, 1996: p. 34.

<sup>51</sup> Ibid.

listener/reader would recognize these different threads and would use this knowledge to ensure that the cycles of time were attended to.

*Hunahpu* and *Xbalanque*, the Hero Twins, after several adventures on Earth, decided to avenge their fathers' deaths (it turns out that they were co engendered by both *Hunahpu* and *Vucub Hunahpu*). Unlike their fathers, they were able to trick the Lords of Xibalbá and sacrificed them to ensure that human beings could have a more pleasant existence on earth.

The adventures of the Hero Twins, as well as their fathers', occur in a recurring pattern of being above in the terrestrial plane and below in the Underworld. Their comings and goings symbolize the movement of the sun, the moon, and even Venus, so it is no surprise to find the Hero Twins rewarded by being made into the Sun and the Moon. *Hunahpu* becomes the sun and *Xbalenque* the moon. Their stories map the movement of these celestial bodies and allow for calendrical mappings and calculations by forming a mnemonic narrative that can help remembrance, understanding, and the teaching of the astronomical and agricultural knowledge of these cycles.

Tedlock offers several examples of how the calendars follow the coming and goings of the pair of twins. "Retold from a calendrical point of view, the story so far is that Venus rose as the morning star on a day named Hunahpu, corresponding to the ball playing of Xmucane's sons, One and Seven Hunahpu, in the east; then, after being out of sight in Xibalbá, Venus reappeared as the evening star on a day named Death [Came],

corresponding to the defeat of her sons by One and Seven Death and the placement of One Hunahpu's head in a tree in the west.”<sup>52</sup>

For the Quiché Maya, the Popol Vuh is the story of *k'in*. It helps the reader and listener map the cycles of the heavens with the cycles here on earth; it allows for all the *k'in* cycles to be studied and understood in all their multiplicity. The text not only teaches about the cycles of the heavens, but the cycles of plants here on earth as we learn when to plant the corn to be most successful. The Book of Vision reveals further, that there are certain theological implications for human existence; the divine Twins sacrifice themselves and risked their lives to give humans light and life. Now humans must give back in turn to ensure that the cycles (adventures, really) of the twins continue daily. Every day is a recreation of the story of the Hero Twins and how they went back to Xibalbá, defeated the Lords of the Underworld, only to appear again every morning as the Sun. The story of the Hero Twins is the story of *k'in*. The Popol Vuh is the Book of Vision and Knowledge; it is the Book of *k'in*.

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<sup>52</sup> Tedlock, Dennis. *Popol Vuh: The Definite Edition of the Mayan Book of the Dawn of Life and the Glories of God and Kings*. New York: Touchstone Books, 1996: p. 37.

## CHAPTER THREE

### The Implications of the Cycles of *K'in*

Now that we have been introduced to the mathematical, calendrical, and conceptual basis of Maya thought centered around the idea of *k'in* we can embark in a more detailed analysis of certain of its most significant aspects. In this chapter we will continue to develop the connection between the concepts of *k'in* (sun-day cycle) with *nik* (flower) in the extant texts. In subsequent chapters we will examine how the idea of the flow of the sun is connected to the flow of precious liquids: water, nectar, and blood.

#### Part One – *K'in* as the Ruler of Time-and-Space

In *Star Gods of the Maya* Susan Milbrath argues for the central importance of the sun in Maya metaphysics. “Maya solar imagery features the sun as the ruler of time and space.”<sup>53</sup> This statement echoes what we have learned in the previous chapter about the central importance of the sun as a concept in Maya thought, particularly regarding its role in the calendars. *K'in* means sun and what the sun does, which implies all the motions the sun makes: the east to west cycle that makes the day and the north-south cycle

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<sup>53</sup> Milbrath, Susan. *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars*. Austin: University of Texas Press, 1999, p. 58.

pointing to the equinoxes and solstices.<sup>54</sup> These motions of the sun against the background of the horizon make it a perfect tool for marking the structure of space (Figure 1).

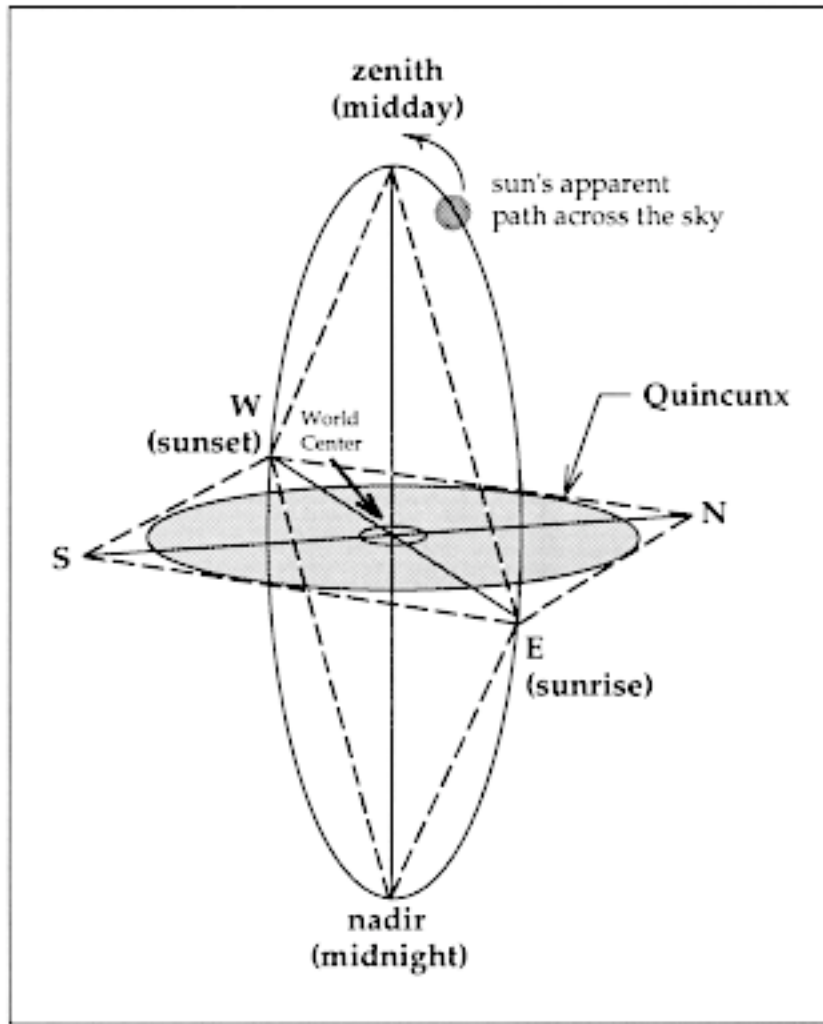


Figure 1 – Motion of the sun forming space. Some Mayanist argue that since current Maya groups consider the zenith the start of the day, this was probably the same for the Ancient Maya. So, in this diagram the zenith should be designated as the start of *k'in*'s motion.

<sup>54</sup> There is some debate as to whether the Maya knew or could have known about the precession of the earth axis that gives rise to a further change in the solar motion. Susan Milbrath does not think it was possible, while other Mayanists try to argue for it.

The most obvious mapping of the sun's motion is the east-west direction marking at sunrise the east as a point in space and west at sunset. At its zenith the Maya recognized the sun as flying over the world's center and thus marking the midway point between east and west.<sup>55</sup> This zenith transformed into the nadir in *Xibalba*. Glyphs analyses point clearly to this interpretation of the sun as designator of space and Milbrath confirms it: "Glyphs for the four directions painted on an Early Classic period tomb at Rio Azul show that east and west clearly refer to horizon positions of the sun."<sup>56</sup>

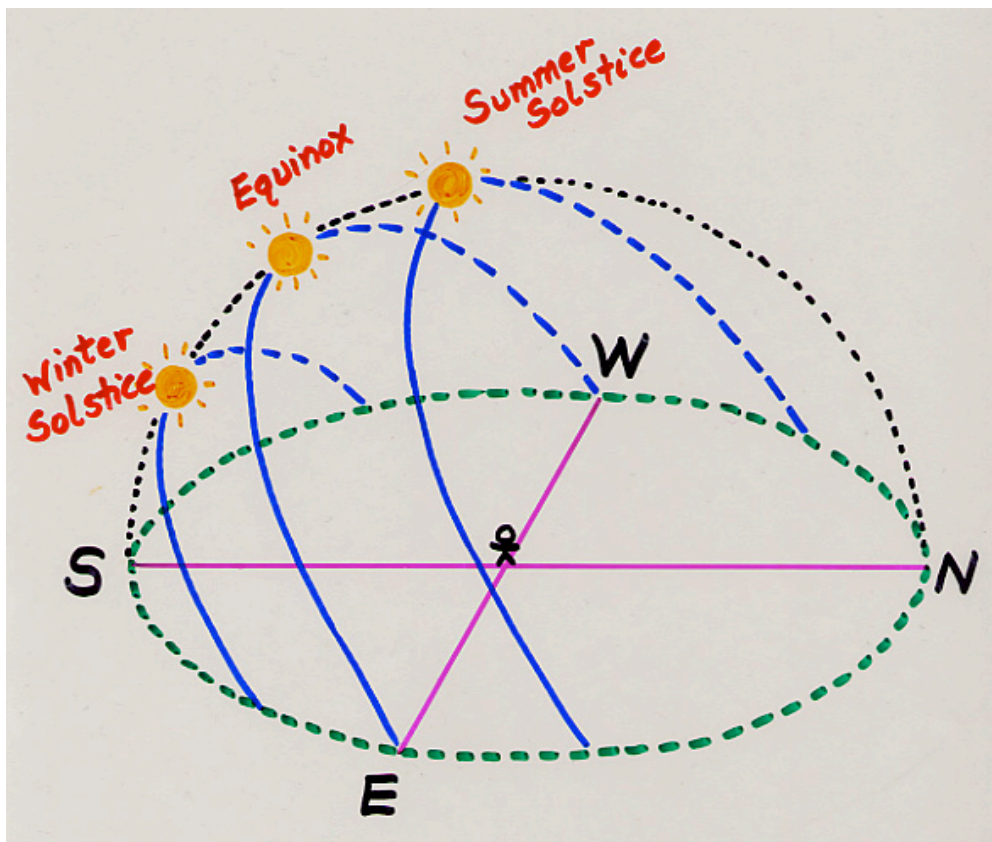


Figure 2 – The Solstices and equinoxes mark the north-south motion of the sun.

<sup>55</sup> Although the lands occupied by the Maya were not close to the equator, where the sun's zenith most closely marks the center, it still represented a good approximation.

<sup>56</sup> Milbrath, Susan. *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars*. Austin: University of Texas Press, 1999, p. 73.

Similarly the north-south direction is marked by the sun's motion perpendicular to the east-west motion and swinging from solstice to solstice as it passes through the equinoxes in its yearly seasonal cycle. (Figure 2) The ecliptic, the motion the sun apparently makes against the cosmic background throughout the year, becomes an important representation in Maya codices and murals and is often represented by a cosmic cord which some identify as the cosmic *umbilicus*.<sup>57</sup> Milbrath elaborates that the sun's function is clearly defined by the role of architecture in Maya cities and serves to map out the crucial cosmological directions of space: "Solar orientations in architecture emphasize certain seasonal positions of the sun, especially equinoxes, solstices, and solar zeniths."<sup>58</sup> Analyses of glyphs and codices further confirm the role of the sun's motion as the premier mapping of space for the Maya. The Madrid Codex contains one of the most striking images of this mapping of the sun's motion in space and in relation to the calendar (Figure 3).

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<sup>57</sup> Schele, Linda et al. *Maya Cosmos: Three Thousand Years on the Shaman's Path*. New York: W. Morrow Co., 1993, Chapter 3.

<sup>58</sup> Milbrath, Susan. *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars*. Austin: University of Texas Press, 1999, p. 103.

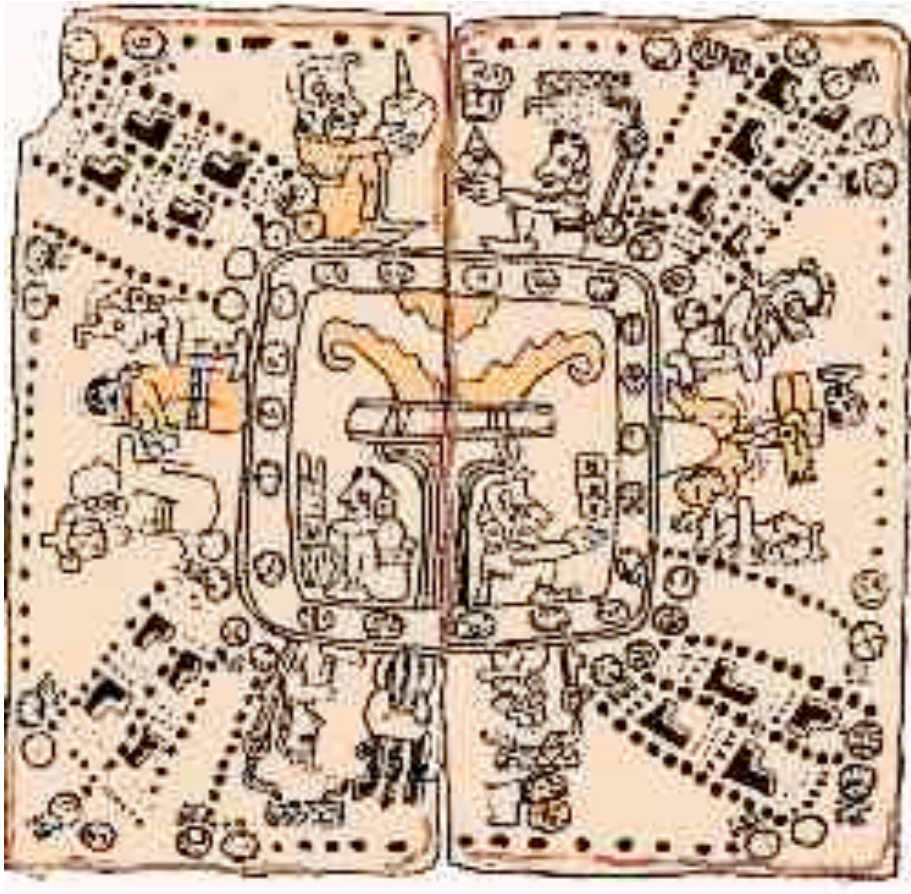


Figure 3 – Cosmic Diagram with Tzolkin day signs. Madrid Codex p. 75-76

In the previous chapter we also discussed how *k'in* was (and is) the basic unit of measuring cycles and thus became the most fundamental element of all the calendars. To keep track of the moon and Venus cycle, for instance, the Maya used *k'in* as the fundamental unit ‘to count the days’ of those cycles.<sup>59</sup> Hence, *k'in* became the principal way to keep track of the days mandated by the creator gods. Moreover, as we will see in the next chapter, *k'in* lies rooted at the center of the cosmos, represented by the cosmic flowering tree, and is portrayed by a principal divinity from which all things exist. In

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<sup>59</sup> This is very similar in the way we count orbits of planets. We use our 24-hour day as the basic unit of measurement.

connection with the four directions mapped by the motion of the sun, this common idea that the sun's motion marks the movement of time establishes that the sun maps time and space jointly. Thus it is conceptually appropriate to conceive of Maya time-and-space<sup>60</sup> as integrated, rather than separate notions of time and of space, since evidence points to this close link between the two.<sup>61</sup>

The sun's motions map the cosmos and its motions *of* time-and-space. This integration reflects a concept of time that is neither absolute nor separate from considerations of events in space and that space and time form and necessitate each other. This view partly arises from the Maya belief that the anchoring of the sun's motions in particular spots in the horizon and sky implies a regular ordering of these motions that are not guaranteed to keep occurring. Rather the motions of the sun need to be fed and supported, by sacrifice, to ensure the continuation of the proper time-and-space cycles. Hence, for the Maya time-and-space does not exist *a priori*—it does not exist prior and independently to the existence of things—rather needs to be maintained and fed through sacrifice of both gods and humans. In the initial act of creation of *Gucumatz* and *Tepeu* it may appear that time-and-space already existed, but each creation is a reordering of the cosmic space and of the dynamic recurring elements that are part of it. As we will see, the Hero Twins need to overcome great odds to become the primary dynamic elements of space. Time-and-space are reconstructed in each act of creation.

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<sup>60</sup> I choose the term 'time-and-space' to avoid misleading the reader to make undue connections to the idea of spacetime that emerged from Special Relativity and later General Relativity (even though there are some important points of connection that I will later elaborate) and, more importantly, to stress that the dynamic aspect of existence was more central to their metaphysics than the aspect of location or individuation.

<sup>61</sup> The rest of this chapter and the following chapter will also provide further justification for this point.

In addition, time-and-space is not guaranteed to exist independently of the actions of humans and gods. The *Popol Vuh* reflects this view. The gods fail at the first few creations because the creatures they created cannot properly keep count of the days and give the gods the proper 'prayer' sustenance they need. In the third creation, *Vucub Caquix* (7 Macaw), who arrogantly pretends to be the sun and the moon, leads the wood people with great pretension but little vision to their failure. Their demise resulted from not enabling the effective motions of the sun. This is the initial story of *Vucub Caquix's* demise:

AND HERE IS THE SHOOTING OF SEVEN MACAW BY THE TWO BOYS. We shall explain the defeat of each one of those who engaged in self-magnification. This is the great tree of Seven Macaw, a nance, and this is the food of Seven Macaw. In order to eat the fruit of the nance he goes up the tree every day. Since Hunahpu and Xbalanque have seen where he feeds, they are now hiding beneath the tree of Seven Macaw, they are keeping quiet here, the two boys are in the leaves of the tree. THEY ARE NOW HIDING BENEATH THE TREE OF SEVEN MACAW: In this classic Maya vase painting from the lowlands, Seven Macaw is shown perched in the top of a fruit tree. The tree itself is portrayed as animate, with a face and ears at its base. Hidden behind the tree is Xbalanque, whose paw-like hand protrudes above the tree's left ear. Crouching at the right is Hunahpu, in the act of shooting Seven Macaw with his blowgun. The presence of a scorpion beneath the tree remains unexplained.) And when Seven Macaw arrived, perching over his meal, the nance, it was then that he was shot by Hunahpu. The blowgun shot went right to his jaw, breaking his mouth. Then he went up over the tree and fell flat on the ground.<sup>62</sup>

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<sup>62</sup> Tedlock, Dennis. *Popol Vuh: The Definite Edition of the Mayan Book of the Dawn of Life and the Glories of God and Kings*. New York: Touchstone Books, 1996: p. 78.

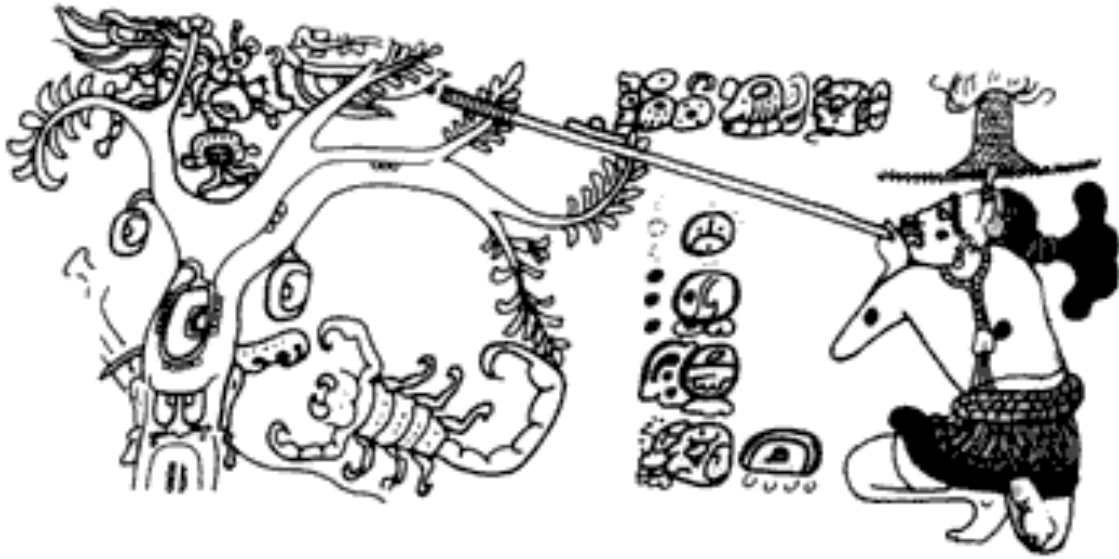


Figure 4 – Vase depiction of the demise of *Vucub Caquix* from the nance tree at the hands of Hunahpu and Xbalanque

*Vucub Caquix* presented himself as the sun. But he was a fake. He was false. Even though his face looked like the sun, he could not sustain the actual movements of a sun and for this had to be defeated. *Vucub Caquix* was clearly a powerful figure who ruled at the time of the wooden people. But his failure was to think that he was the sun by simply holding his powerful position at the top of the nance tree. The piercing blowgun shot of *Hunahpu* send him crashing down from his perch to his proper place. His pretension was not about power, for he had it, but about the fact that he was the sun, for he could not act like it. In the same way that the wood people could not ‘count the days’ so *Vucub Caquix* could not keep the sun’s motions and therefore failed to become the sun. He *appeared* to be the sun with his static presence but, inadequately supported by the wood’s people lack of sacrifice and knowledge, *Vucub Caquix* could not *become* the sun. Instead, as we have seen, in his defeat he represents the Big Dipper and his fall

announces the beginning of a brief agricultural season in late July as well as the start of the Hurricane season, according to Tedlock.<sup>63</sup> The piercing shot represents the sacrifice that he could not carry out and was performed by the Hero Twins, who will, in fact, replace *Vucub Caquix* as the sun and the moon of our current creation. To be the sun a god must bring the sun's motion into effect via sacrifice aided by the sacrifice of humanity.

As we will see, the act and ritual of sacrifice of both gods and humans produces the nourishment that enables the continued functioning and progression of the sun and of all other related cycles. To be the sun is to be the sun-in-motion and humans are an integral part of the effort to keep the sun in its proper cycle. It should not surprise us then that the concept and glyph symbols of *k'in* signify the cycles of the sun and all other associated cycles in existence, since the sun-in-motion is what gives rise to every single cycle in creation. Without the motion of the sun (time) there can be no life (space), so in the Maya metaphysical view time and space are intimately woven together and intrinsically tied to the workings of gods and humans.

The final part of Seven Macaw's demise is also quite telling about these ideas.

Meanwhile Hunahpu and Xbalanque were thinking. And then they invoked a grandfather, a truly white-haired grandfather, and a grandmother, a truly humble grandmother- just bent-over, elderly people. Great White Peccary is the name of the grandfather, and Great White Tapir is the name of the grandmother. The boys said to the grandmother and grandfather: "Please travel with us when we go to get our arm from Seven Macaw; we'll just follow right behind you. You'll tell him: 'Do forgive us our grandchildren, who travel with us. Their mother and father are dead, and so they follow along there, behind us. Perhaps we should give them away, since all we do is pull worms out of teeth.' So we'll seem like children to Seven Macaw, even though we're giving you the

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<sup>63</sup> Tedlock, Dennis. *Popol Vuh: The Definite Edition of the Mayan Book of the Dawn of Life and the Glories of God and Kings*. New York: Touchstone Books, 1996: p. 34.

instructions," the two boys told them. "Very well," they replied. After that they approached the place where Seven Macaw was in front of his home. When the grandmother and grandfather passed by, the two boys were romping along behind them. When they passed below the lord's house, Seven Macaw was yelling his mouth off because of his teeth. And when Seven Macaw saw the grandfather and grandmother traveling with them: "Where are you headed, our grandfather?" said the lord. "We're just making our living, your lordship," they replied. "Why are you working for a living? Aren't those your children traveling with you?" "No, they're not, your lordship. They're our grandchildren, our descendants, but it is nevertheless we who take pity on them. The bit of food they get is the portion we give them, your lordship," replied the grandmother and grandfather. Since the lord is getting done in by the pain in his teeth, it is only with great effort that he speaks again: "I implore you, please take pity on me! What sweets can you make, what poisons can you cure?" said the lord. "We just pull the worms out of teeth, and we just cure eyes. We just set bones, your lordship," they replied. "Very well, please cure my teeth. They really ache, every day. It's insufferable! I get no sleep because of them- and my eyes. They just shot me, those two tricksters! Ever since it started I haven't eaten because of it. Therefore take pity on me! Perhaps it's because my teeth are loose now." "Very well, your lordship. It's a worm, gnawing at the bone. It's merely a matter of putting in a replacement and taking the teeth out, sir." "But perhaps it's not good for my teeth to come out- since I am, after all, a lord. My finery is in my teeth and my eyes." "But then we'll put in a replacement. Ground bone will be put back in." And this is the "ground bone": it's only white corn. "Very well. Yank them out! Give me some help here!" he replied. And when the teeth of Seven Macaw came out, it was only white corn that went in as a replacement for his teeth- just a coating shining white, that corn in his mouth. His face fell at once, he no longer looked like a lord. The last of his teeth came out, the jewels that had stood out blue from his mouth. And then the eyes of Seven Macaw were cured. When his eyes were trimmed back\*(124) the last of his metal came out. Still he felt no pain; he just looked on while the last of his greatness left him. It was just as Hunahpu and Xbalanque had intended. And when Seven Macaw died, Hunahpu got back his arm. And Chimalmat, the wife of Seven Macaw, also died. Such was the loss of the riches of Seven Macaw: only the doctors got the jewels and gems that had made him arrogant, here on the face of the earth. The genius of the grandmother, the genius of the grandfather did its work when they took back their arm: it was implanted and the break got well again. Just as they had wished the death of Seven Macaw, so they brought it about. They had seen evil in his self-magnification. After this the two boys went on again. What they

did was simply the word of the Heart of Sky.<sup>64</sup>

*Vucub Caquix* dies at the hands of the Great White Peccary (*Xpiyacoc*) and Great White Tapir (*Xmucane*) when the jewels that form his face, giving him the appearance of power and of the sun, are stripped away. His power resided in shallow, easily removed, appearances. The twins choose wisely in sending Great Grandfather Light and Great Grandmother Day to trick the false sun into giving up his power since he could not deal with the pain of the piercing of his mouth. The Twins lack of arrogance and avoidance of self-magnification, by the very fact that they give the power of the final blow to the ones that gave birth and will give birth to creation, ensures that they will not be like *Vucub Caquix* and his sons (who also will be defeated because of their ignorance and lack of vision). Being a god does not automatically give one power to rule over the sun, to be the sun. One has to work and sacrifice in humble remembrance that the universe has come into being by the sacrifice and as a learning process for the original creator gods. *Vucub Caquix* forgot this lesson (or never learnt it) and alongside the wood people, who could not turn their heads and neglected the imposition of ‘counting of the days’, were destroyed, to be replaced by the real sun-in-motion and not just its mere appearance. The sun and its motion, creating time-and-space, need to be maintained by both gods and humans. This will be the task that the Hero Twins have to learn and will earn by avoiding the errors of his progenitors *Hun Hunahpu* and *Vucub Hunahpu*.

After the demise of *Vucub Caquix* the story of the *Popol Vuh* continues by recounting the defeat of his sons *Zipacna* and *Cabracan*. Then asynchronously we are

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<sup>64</sup> Tedlock, Dennis. *Popol Vuh: The Definite Edition of the Mayan Book of the Dawn of Life and the Glories of God and Kings*. New York: Touchstone Books, 1996: p. 79-81. 70

told of how *Hun Hunahpu* and *Vucub Hunahpu* are summoned to *Xibalba* (underworld) and defeated by its Lords. From their sacrifice, however, the possibility of a new generation emerges. The head of *Hun Hunahpu* hangs from the calabash tree and spits on the hand of the daughter of one of the Lords of *Xibalba*, Blood Moon. This is how she becomes impregnated with *Hunahpu* and *Xbalanque*. They are the fruit of the sacrifice of their father and a princess of the dark and deadly Underworld. Soon they are also summoned down to *Xibalba* like their fathers before them. The *Popol Vuh* tells us in detail how they avoided being tricked by the Lords of *Xibalba* and instead tricked the Lords. Their final defeat at the hand of the Hero Twins comes when they tricked the Lords of *Xibalba* to commit to a ritual sacrifice with the expectation to be brought back to life. The Hero Twins, however, do not bring them back and thus defeat the Lords of *Xibalba* since they showed better vision about events.

They did whatever they were instructed to do, going through all the dangers, the troubles that were made for them, but they did not die from the tests of *Xibalba*, nor were they defeated by all the voracious animals that inhabit *Xibalba*. After that, they summoned two midmost seers, similar to readers. Here are their names: Xulu, Pacam, both knowers. "Perhaps there will be questions from the lords of *Xibalba* about our death. They are thinking about how to overcome us because we haven't died, nor have we been defeated. We've exhausted all their tests. Not even the animals got us. So this is the sign, here in our hearts: their instrument for our death will be a stone oven. All the *Xibalbans* have gathered together. Isn't our death inevitable? So this is your plan, here we shall name it: if you come to be questioned by them about our death, once we've been burned, what will you say, Xulu and Pacam? If they ask you: 'Wouldn't it be good if we dumped their bones in the canyon?' 'Perhaps it wouldn't be good, since they would only come back to life again,' you will say. 'Perhaps this would be good: we'll just hang them up in a tree,' they'll say to you next. 'Certainly that's no good, since you would see their faces,' you will say, and then they'll speak to you for the third time: 'Well, here's the only good thing: we'll just dump their bones in the river.' If

that's what they ask you next: 'This is a good death for them, and it would also be good to grind their bones on a stone, just as corn is refined into flour, and refine each of them separately, and then: Spill them into the river, sprinkle them on the water's way, among the mountains, small and great,' you will say, and then you will have carried out the instructions we've named for you," said Hunahpu and Xbalanque. When they gave these instructions they already knew they would die...After that they summoned Xulu and Pacam, who kept their word: the bones went just where the boys had wanted them. Once the Xibalbans had done the divination, the bones were ground and spilled in the river, but they didn't go far- they just sank to the bottom of the water. They became handsome boys; they looked just the same as before when they reappeared. AND ON THE FIFTH DAY THEY REAPPEARED. They were seen in the water by the people. The two of them looked like channel catfish when their faces were seen by Xibalba. And having germinated in the waters, they appeared the day after that as two vagabonds, with rags before and rags behind, and rags all over too. They seemed unrefined when they were examined by Xibalba; they acted differently now. It was only the Dance of the Poor will, the Dance of the Weasel, only Armadillos they danced. Only Swallowing Swords, only Walking on Stilts now they danced. They performed many miracles now. They would set fire to a house, as if they were really burning it, and suddenly bring it back again. Now Xibalba was full of admiration. Next they would sacrifice themselves, one of them dying for the other, stretched out as if in death. First they would kill themselves, but then they would suddenly look alive again. The Xibalbans could only admire what they did. Everything they did now was already the groundwork for their defeat of Xibalba.<sup>65</sup>

This defeat is the triumph of the vision of the Hero Twins over darkness and the conquering of the full motion of the sun as it travels above and below (*Xibalba*) the terrestrial plane. This accomplishment entitles *Hun Hunahpu* to be transformed into the sun and *Xbalanque* into its close associate the moon. They accomplish this because of their vision (predicting the future, thus counting of the days), the collaboration with

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<sup>65</sup> Tedlock, Dennis. *Popol Vuh: The Definite Edition of the Mayan Book of the Dawn of Life and the Glories of God and Kings*. New York: Touchstone Books, 1996: p. 130-138<sup>72</sup>

others—the two midmost seers<sup>66</sup> and the many animal forms that assist them in their quests—their a lack of arrogance, their willingness to sacrifice themselves, and their attention to the motions of the cycles around them. In fact, the story of the Hero Twins can be read as a mirror for the motion of the sun across the sky in its daily and yearly cycles. This pattern begins with *Hun Hunahpu* and *Vucub Hunahpu*, who in sacrifice, provide the maize seed of regeneration that sprouts up to give new maize plant and seeds that will form the real possibility and flesh of the current fourth creation: humans. The entering into and emerging from *Xibalba* represents the motion of the sun and the movement of those things on earth that most closely resemble the motion of the sun: flowers (particularly that of maize). Linda Schele and David Freidel recognize *Hun Hunahpu* as the First Father, the maize god and his death in *Xibalba* represents the first planting of maize and the beginning of the life process (Figure 5).

By combining the Maya Conquest-period stories of First Father [Hun Hunahpu-Vucub Hunahpu] given in the Popol Vuh with textual evidence and images from the Classic period, we can say that this maize tree symbolizes the original act of creation, sacrifice, and rebirth. First Father was also the Maize God, *Hun-Nal-Ye*, “One-Maize-Revealed,” and was depicted both in his human form and as this tree. After First Father’s defeat and sacrifice by the Lords of Death in *Xibalba*, he was reborn as maize, the staple sustenance of humanity and the stuff from which the gods created human beings.<sup>67</sup>

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<sup>66</sup> These seers echo the help they received from *Xpiyacoc* and *Xmucane* as diviniers and keepers of *k’in*.

<sup>67</sup> Schele, Linda et al. *Maya Cosmos: Three Thousand Years on the Shaman’s Path*. New York: W. Morrow Co., 1993, p. 53-55.

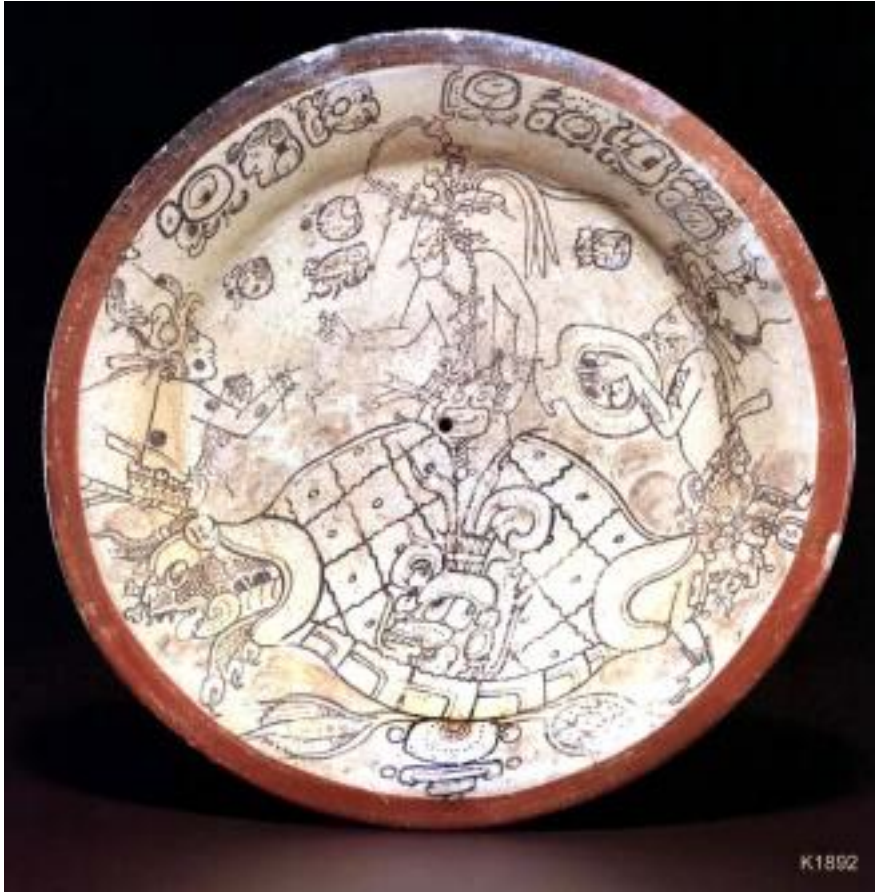


Figure 5 - *Hun-Nal-Ye (Hunahpu)* emerging from the turtle carapace/maize seed from *Xibalba* into the visible world overcoming death in rebirth and regeneration. K1892

Expressing the general themes that their analyses of the Classic Maya reveals Schele and Freidel affirm that “the creation of the cosmos; the ordering of the world of people, and of the gods ancestor of the Otherworld; the triumph of the ancestral humans over the forces of death, decay, and disease through cunning and trickery; the miracle of true rebirth out of sacrifice; and the origins of maize as the substance of the Maya body

and soul. All of these themes are expressed in the Popol Vuh...”<sup>68</sup> Hence, the story of the Hero Twins defeat of *Xibalba* and their progenitors initial failed attempt is a map or mirror of the most fundamental cycles of creation: primarily the sun and, its mirror image on earth that provides humans with flesh and sustenance, maize. But also includes, as scholars argue: a map of human evolution, both individual and societal; a map of the skies and the motion of the cosmos; a guide for agriculture in general; a mirror for meteorological events, particularly the coming and going of the rains; a blueprint for the role of architecture and city planning to provide future vision of the cycles; a template for human conduct and collaboration; and the dynamic map of the interconnection of all of these cycles.

In the previous chapter we saw how the gods are to carry the burden of the sun in their backs. In some representations the gods designated to carry the cycles have a glyph of *k'in* on their backs, foreheads, or at the back of the head. In Figure 6 we find the glyph for *kan/chan* (meaning snake, sky, or the number 4) with an infix of *k'in* at the back of the head of the god. This designates this god as the sun god and its responsibility then is to bring the sun-in-motion to fruition.



Figure 6 – Chan/Kan glyph representing the sun god *Itzamna* with infix glyph T544

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<sup>68</sup> Schele, Linda et al. *Maya Cosmos: Three Thousand Years on the Shaman's Path*. New York: W. Morrow Co., 1993, p. 43.

One way that the gods carry the sun is thanks to a sky cord or cosmic umbilical cord that emerges from the navel of the gods and connects with all of creation until it links them to the pivot point of the celestial sphere (what now is the north star Polaris). Again Milbrath has studied the images and texts and states that “sky ropes or cords in Colonial period accounts link heaven and earth, and it seems that the cord defines the sun’s movement. A cord ties the womb of heaven and the womb of earth in the Popol Vuh, which records the ancient creation legend of the Quiché.”<sup>69</sup> (Figure 7) In consonance with the argument that the sun-in-motion maps the time-and-space, Milbrath argues that the celestial umbilicus points to the solstices, the extremes of the north-to-south motion of the sun. “The cord in the Madrid Codex” she adds “perforates the penises of five gods. Consequently it is both a path for the sun and a conduit for feeding blood to the sun.”<sup>70</sup>

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<sup>69</sup> Milbrath, Susan. *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars*. Austin: University of Texas Press, 1999, p. 74.

<sup>70</sup> Milbrath, Susan. *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars*. Austin: University of Texas Press, 1999, p. 76.

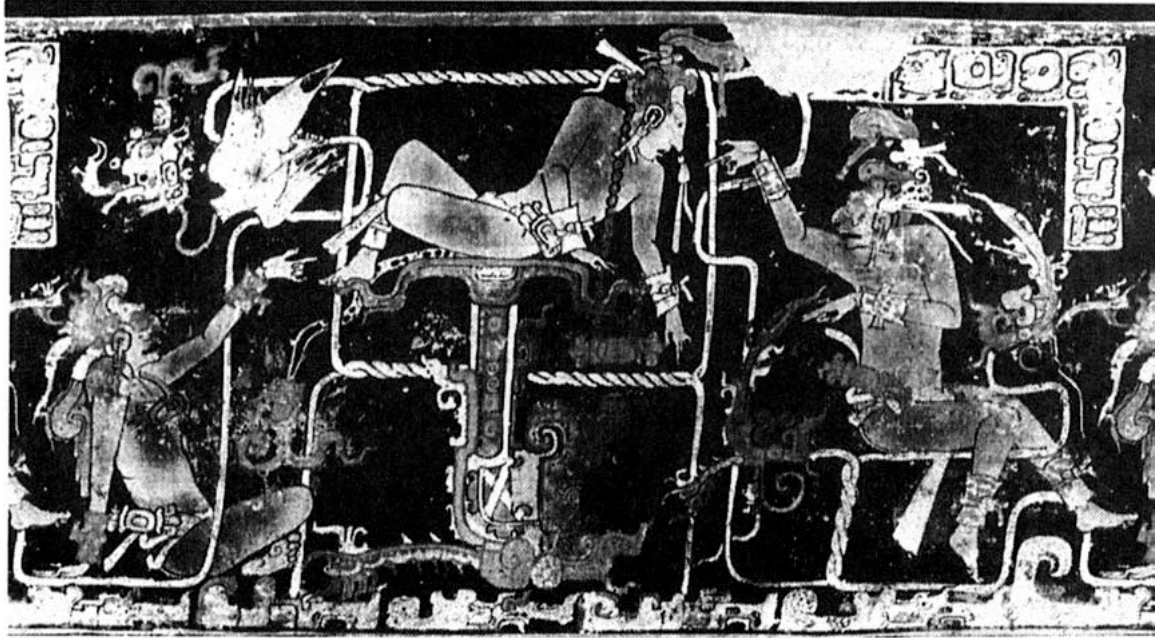


Figure 7 – A depiction of the sky umbilicus wrapping around the gods from a Late Classic vase

In similar ways, the sun's motion is represented by a series of animal forms: a twisting serpent, a celestial precious bird, a jaguar/puma particularly at night, and a spider monkey. This connects the cycle of the sun with the lives of the creatures that populate, like humans, the space between *Xibalba* and the heavens. In the *Popol Vuh*, *Hunahpu* becomes the sun and *Xbalanque* (the name derives from *balam*, jaguar) becomes the moon. The divinities have associated animal forms that support the effort to keep their cycles in motion. In the same way that the animals aided *Xmucane* find the maize that was going to form humans and the way that animals aided the vision of the Hero twins in the defeat of the Lords of *Xibalba*, the animals now help the gods carry the burden of the sun.

The effort of creation is for gods, humans, animals, and plants to perform and mirror in their fundamental practices. In the same way that time and space elements are

deeply interrelated, so are the roles of gods and their creations. The different earthly cycles, in other words, mimic the larger cosmic cycle of creation and the goal of humans is to study and record these interrelated cycles. To study this cycles with care one must pay close and critical attention at how they do perform their cyclical motions, and the goal of the sage or shaman is to develop the vision for this counting. The *Popol Vuh* is the book of vision for this reason. It gives the attentive reader the vision of hundreds of years of cosmic, agricultural, meteorological and human cycles tested by previous generations, so that current ones can survive and have the means to further the knowledge of the cycles of creation by contributing further information about the cycles.

The epistemic attitude of the Maya was not to pursue knowledge for knowledge sake, but to keep with the duties established at creation, the counting of the days, and to improve the precision of that counting implemented into all the most pressing relevant cycles that will ensure a successful life experience. Improving the mapping of cosmic cycles of the sun with the coming of rains would improve their chances of survival of communities by planting at the right time, for instance. Knowledge is not something that one conquers, rather it is a process that improves one's vision. The creator gods blurred our vision to force us to work to gain it back to ensure the continued successful dynamic existence of the cosmos. The most effective tool to deal with this myopia and to reach for more precise knowledge will be to turn for help to another part of creation that coevolves and is codependent with us, and that its fruits offer us vision (in more than one way): flowers.

## Part Two – Flowery *K'in*

When speaking of the representation of the sun by glyphs Galbraith accepts that one of the most common is the symbol of a flower. “Animals and plants could represent the sun in certain contexts. The sun glyph itself symbolized a flower, most probably the *Plumeria rubra*.”<sup>71</sup> She also adds that “[t]he T544 Kin glyph of the Classic period places the quadripartite design on a diagonal axis with cutout areas at the cardinal positions. The quadripartite design of Kin glyphs evokes the cosmic diagram, but it also resembles a four-petaled flower” (Figure 6).<sup>72</sup>

This resemblance would not be more than a passing curiosity except that other analyses of sources reveal the deep connection (as we have begun to see between *Hun Hunahpu* as the maize god) between the concept of *k'in*, sun-in-motion and the concept of flower, *nik*. The reader may immediately notice the connection that appears in Yucatec maya as an asymmetrical mapping of the sounds of the words *k'in* and *nik*. These types of playful connections and *difrasismos* between words and phrases are common in Mayan languages.<sup>73</sup> Milbrath agrees: “It [*k'in*] seems to be linguistically connected with flowers, for T646 is interpreted as *nicte* [*nik* or *nic*, flower + *te*, tree], “meaning flower.”<sup>74</sup> (Figure 8)

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<sup>71</sup> Milbrath, Susan. *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars*. Austin: University of Texas Press, 1999, p. 58.

<sup>72</sup> Milbrath, Susan. *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars*. Austin: University of Texas Press, 1999, p. 78.

<sup>73</sup> The standard is to refer to the languages as ‘Mayan’ and leave ‘Maya’ to refer to the people and the culture.

<sup>74</sup> Milbrath, Susan. *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars*. Austin: University of Texas Press, 1999, p. 78.



Figure 8 – Glyph T646, interpreted as *k'in* and *nik* or *nicte*

In addition, a flower's birth occurs beneath the surface of the space occupied by humans and sprouts into the world moving straight towards the sky. Some flowering organisms will tower firmly rooted on the ground way beyond the human reach. The Maya understood these abilities of flower organisms as connected to the divine movement of the sun god from the celestial abode to the depths of *Xibalba*. Flowers live in both worlds and, unlike humans, are naturally able to link both skies and underworld. Further, a flower's birth from seed mimics the defeat of the lords of *Xibalba* by being able to emerge victorious to face the sun, just like Hun Hunahpu did (Figure 5). This bridging property of flowers becomes an essential trait of the power of flower organisms. Some flowers are able to even mimic the motion of the sun as it speeds its way across the sky. Milbrath concurs with this insight: "Kin also alludes to a solar flower (*Plumeria rubra?*), a natural connection, since many flowers turn their faces toward the sun."<sup>75</sup> Hence, a flower maps the sun-in-motion here on earth better than anything else and becomes the symbol for the regenerative power and epistemic vision of Maya society.

Most mayanists accept this connection between *k'in* and *nik*, between the sun-in-motion and flowers or flowering trees, and more importantly between the power of keeping the cycles in motion with what keeps human life in motion (via the sustenance

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<sup>75</sup> Milbrath, Susan. *Star Gods of the Maya: Astronomy in Art, Folklore, and Calendars*. Austin: University of Texas Press, 1999, p. 79.

that the flowers and its fruits offer us). Albert Davletshin asserts "... the flower was considered as a symbol of the supernatural power and vitality of the soul so necessary for beginning a new life." And he adds in a note to this remark that "the reading **NIK** for the 'Flower Glyph' is uncertain, but highly probable, I believe. The fact that this glyph refers to a word 'flower' is beyond question."<sup>76</sup> Although many readings of glyphs are still being fine-tuned, or even disputed in some cases, the reading of *k'in* as flower seems to be settled among scholars. There are always surprises even when consensus in interpretation is achieved, so to press the point of connection between *k'in* and flowers, but more significantly to make the connection more precise, I will continue this development a bit further. It is a significant anecdote that the different Maya groups of today have kept most of the connections between the idea of flower and *k'in*.

The Lacandón Maya story of creation begins with *K'akoch*<sup>77</sup> creating all things including the sun and the earth. He next created a flower, the *bak nikte'* (plumeria rubra). From this flower the other Lacandón divinities were born. The *bak nikte'* is a plumeria flower (the same flower some scholars think is represented in the symbols of *k'in*) with great beautiful leaves and white four-petaled flowers.<sup>78</sup> The gods of the Lacandón that

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<sup>76</sup> Davletshin, Albert. 2003. "Glyph for Stingray Spine" at Mesoweb: [www.mesoweb.com/features/davletshin/Spine.pdf](http://www.mesoweb.com/features/davletshin/Spine.pdf) p. 2.

<sup>77</sup> *Xpiyacoc* in the Popol Vuh and *Hunab Ku* for the Yucatec Maya.

<sup>78</sup> For an image of a *plumeria rubra*, go to <http://www.killerplants.com/goodies/plumeria.asp>. The Mexica referred to this highly praised flower as *cacaloxochitl*. A flower that was a divine symbol of regenerative immortality and could not be picked or even smelled by mere commoners. "Roys/Bac/124: Sac-nicte ("white nicte"). *Plumeria alba*, L. Prescribed for throat complaints, aching bones, convulsions, and as a charm for flatulence. The chac-("red") nicte and the sac-("white") nicte were considered to be the father and mother of the head of the Lacandón pantheon (Roys, *Ethno-Botany*, 306; Tozzer, *A comparative Study of* 81

dealt with human affairs and were the carriers of time were born from this flower. These divinities went forth and created animals and humans, who were supposed to praise the gods. Since a plumeria gave birth to these gods, it became a symbol of regenerative power of immortality. For the Lacandón, the *bak nikte'* is a symbol of divine knowledge, immortality, life, and power.<sup>79</sup>

For the Yucatec Maya, *Hunab Ku* was the primordial fleshless entity that gave birth to the gods. The most important divinity dealing with human affairs, however, was *Itzamná* depicted often times as an old man carrying the sun on his back or his forehead. (Figure 6) *Itzamná* is the old sun-god, the one that carries the burden of the cycles of the sun and time on his back. He is the one that gave humans vision and the arts of astronomy and writing. He taught humans how to count the days and how to keep records of these cycles, to improve human knowledge of things of earth. *Itzamná* is the god of knowledge and wisdom and he has the symbol of *k'in* indelibly imprinted on his forehead or back. His wife, *Ix Chel*, co-creator of the human race is the Moon Goddess who watches on the reproductive aspects of experience, including birth and agriculture. Their son, *Kinich Ahau*,<sup>80</sup> is the Lord of the Face of the Sun and is represented as a young Sun god. He is the image we see in the sky as the sun moves in its cyclical path around the earth.

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the Mayas and the Lacandóns, 93). The sac-nicte is cited in an incantation for erotic-seizure (MS p. 31).” <http://www.famsi.org/reports/96072/zdic1.htm>

<sup>79</sup> As we will see in the next section, the Earth Monster that holds the world plain of creation is sometimes referred to as the Water Lily Monster, *nik te' ha*.

<sup>80</sup> In some version *Itzamná* is himself his son as *Kinich Ahau Itzamná*. In some representations *Kinich Ahau Itzamná* is a young man while in other he is depicted as an old man. Some interpret this as two different entities, a son and a father, while other interpret (like León Portilla) this as different representations of the same divine being.

In several of the Maya texts that survived the Conquest but written shortly after the conquest, the *Chilam Balams*, *Itzamná* is represented as carrying the burden of time on his face or back. This divine being carries the cycles of time to fruition and our worshiping and sacrifice ensures that his toil comes to success. León-Portilla declares that “in the first prophetic wheel of the as series of *katuns*, [a shortened version of the Long Count] which appears consistently in several of the books of the *Chilam Balam*, the solar deity bears the title “Countenance of the Sun, Fire Macaw” (*Kinich Kak Moo*), presiding over and governing the period of time of a 6-*Ahau katun*... The face of the sun, *kin ich*, in the role of *kak moo*, Fire Macaw, bears the inherent reality and destiny of 6-*Ahau katun* in its burden of time.”<sup>81</sup> *Itzamná* and his many representations are entrusted with carrying the cycles of time. Different divinities take turns carrying this burden of the cycles. León-Portilla continues

Many are the faces of *kinh*, but its essence is always divine. Time permeates all and is limitless.

Thus, the priests [the *ah kin’ob*] computed millions years into the past and as many others into the future. Time is...an attribute of the gods: they carry it on their backs. In a word, *kinh* appears, as the heart of all change, filled with lucky and unlucky destinies within the cyclic reality of the universe and most probably inherent to the essence of divinity itself.<sup>82</sup>

Thus, “[*k*]*inh*—sun-day-time—was not an abstract entity but a reality enmeshed in the world of myths, a divine being, origin of the cycles which govern all existing things.”<sup>83</sup>

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<sup>81</sup> León-Portilla 1988, 30.

<sup>82</sup> León-Portilla 1988, 33.

<sup>83</sup> León-Portilla 1988, 33.

From these stories of creation we gather that the gods teach humans knowledge of the counting of the days while they themselves carry the burden of the counting of the cycles of time by bringing existence to fruition. The gods are carriers of the cycles of time represented by *k'in*, sun-day-time, symbolized by a plumeria flower. Hence, a flower is a symbol for what the gods try to bring: knowledge of the counting of the cycles to humans and the continued existence of the cycles themselves. For the Maya, a flower is a representation and a concept denoting significant epistemological and metaphysical aspects. A flower is the symbol for the immortal regenerative cycles of existence and attention to their movements give us knowledge of these cycles.

As you may recall from the previous chapter, the days, *k'in*, bear the attributes of the corresponding gods. The last day of the *Tzolkin* calendar, *Ahau*, for instance, is “the embodiment of the radiant presence of the sun, [and this] confirms that *kinh* is not only a divine countenance but that he himself is the Lord who encompasses the cycles of time.”<sup>84</sup> The first day of the *Tzolkin*, *Imix*, symbolizes the Earth Monster from which the sun, the main cycle of existence from which all others depend, arises. The numbers are also connoting divine power. *Lahun*, ten, for instance, represents the Lord of Xibalbá, Death. The number four, *can*, is a representation of the Sun God *Itzamná* carrying the sun on its forehead. Similarly in the *Haab* months: *Pop*, the first month, is represented by a kingly jaguar who is the carrier of the sun (sun-moon) in the underworld; *Yaxkin*, the seventh month of the *Haab* is associated with *Itzamná* and was often thought as a period

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<sup>84</sup> León-Portilla 1988, 41-42.

of droughts.<sup>85</sup> A particular deity carries every single day and cycle of the calendar. The divine responsibility was to bring that particular cycle to completion. Thus every moment in time was richly colored by a great variety of cycles (mapped by the calendars) and their corresponding divinities responsible for their successful completion. The divine burden was to ensure the continuation of the incessant coming and going of the cycles. The Maya gods are primarily carriers of the burden of *k'in*. “Throughout the cosmic ages life was reborn thanks to *kinh* [another spelling for *k'in*]. Man recognized and thus approached the gods as bearers of the different periods: their faces were the living portraits of time.”<sup>86</sup>

As you may also recall from the calendars, the zero day constitutes the seating for the next month cycle. At zero-*k'in*, the divinity responsible for that cycle relinquishes his or her burden to the next divinity who will then take up the burden of carrying time. This overlap or exchange happens because the gods get tired of carrying their burden and need to pass it on to others.<sup>87</sup> The ends of cycles are at the same time beginnings of new cycles.

León-Portilla states:

The Maya strove, by means of their computations, to foresee the nature of these presences and the resultant of their various influences at specified moments. Since *kinh* is essentially cyclic, it is most important to know the past in order to understand the present and predict the future...The faces of time, mystical reality prompting the Maya obsession, are the object of veneration. They determine

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<sup>85</sup> After the Earth Monster devours the Sun at sunset, *Kinich Ahau* relinquishes that part of the cycle and *Balam*, Jaguar, takes the burden of carrying the Sun through Xibalbá. These two divinities, hence, share the responsibility of completing the primordial daily cycle of *k'in*.

<sup>86</sup> León-Portilla 1988, 37.

<sup>87</sup> The Maya term is *lub*, which means “to become tired,” “weariness,” and “completion” according to León-Portilla (Ibid., p.51)

and govern all activities. Thanks to them man knows the norms for agricultural labors, cycles of festivals, everything in life.<sup>88</sup>

The gods, however, cannot carry this heavy burden by themselves. The responsibility of keeping the gods to fulfill the cycles of creation also falls with humanity. We are after all responsible for keeping count of the days, keeping the days flowing, keeping existence going. This was achieved mainly through a precise practice of ritual, particularly of sacrificial rituals.

In sum, *k'in* (sun-in-motion) maps the movement of the sun on earth and of all the other interconnected cycles. Since the flowers map these motions particularly well they become the principal symbol for the sun-in-motion here on earth. The gods carry in their backs the burden of this motion and the rest of creation, but particularly humans, must observe the cycles and sacrifice accordingly to nourish and bring the cycles to a successful end. The planting, tending, and reaping of maize is the most vivid example of this life sustaining ritual, and will be the center of investigation of the next chapter. There we will also examine how organisms interact with other organisms to create new cycles for existence. The important secretions and fluids that emanate from organisms will turn out to be central to the understanding of how the Maya thought the cycles of creation interlocked and functioned.

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<sup>88</sup> León-Portilla 1988, 54-5.

#### Some Websites of Interest

<http://www.sacred-texts.com/nam/maya/pvgm/>

<http://www.geocities.com/RainForest/3134/lacgods.html> (Lacandón)

<http://www.uweb.ucsb.edu/~jce2/popol.html> (Popol Vuh – Spanish)

<http://www.sacred-texts.com/nam/maya/cbc/> (Chilam Balam of Chumayel)

<http://myweb.cableone.net/subru/Chilam.html#anchor1410915> (Flower Katun)

## CHAPTER FOUR

### The Nectar of Sacrifice

“This particular glyph [*k'in*] is a powerful symbol, representing the sun in transition between life and death, poised on the brink of the Otherworld.”

--Schele & Freidel, *A Forest of Kings*, 226

The sun represented and conceptualized as the sun-in-motion implies an essential dynamic property of all things that mirror its cycle. All entities of the cosmos are tied to the sun-in-motion and are themselves cyclically interconnected with each other. The events sparked at the outset of creation led to the creation of humans who quest to gain vision and control over the cycles of creation. But this necessary dynamism does not happen for free. There is a steep price for effecting the continuation of the flow of the cycles. This chapter analyzes what this price is and what it implies for the fundamental Maya world-view. The result will be an account of the cosmos and human identity that is constantly in the process of creation and transformation, guided by the proper cycles of events past and future.

A casual observer of history could note that the European conquest of the Americas was, for the most part, a replacement of the less advanced civilizations by the more advanced. That is what the conquering Europeans thought. This viewpoint has

now, however, been shown to be a product of the partial victor's perspective and lacking of the richer cultural entanglement and development of what really occurred. Some dispute still exists about the extent of the cultural transformation of Europe by this encounter and to what extent the Conquista provided a fundamental transformation of the civilizations populating the Americas. What is clear and beyond dispute is that the transformation occurred and it meshed ancestral Maya concepts with European ones. One of the most visible and still lasting concepts and symbols of this transformation was the tree at the center of the Maya cosmos which the Spanish misconstrued as their preferred theological symbol of the cross: the *Wacah Chan*, raised up sky. "Perhaps the most dramatic example of this kind of transformation is embodied in the Maya's adaptation of the Cross of Christ, the central symbol of European domination. The Maya promptly appropriated and reinterpreted this most Christian of all symbols by merging it with the World Tree of the Center, the *yax che'il kab*, as the Conquest period Yucatek Maya called it. The Christian cross became, quite liberally, the pivot and pillar of their cosmos, just as the World Tree had been before."<sup>89</sup>

The *Wacah Chan*, known in the literature as the World Tree or Cosmic Tree, has many representations and its tightly woven associated concepts form the basis for the Maya cosmos, its representation, and the key to its control. "The hieroglyphic name of the bejeweled and bemirrored World Tree was *wakah-chan*. It was written with the number six prefixed to the phonetic sign *ah* and the glyph for 'sky,' because the sounds of *wak*, the word for 'six,' and *ah*, are homophonous with the word *wakah*, meaning

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<sup>89</sup> Schele, Linda et al. *Maya Cosmos: Three Thousand Years on the Shaman's Path*. New York: W. Morrow Co., 1993, p. 39.

‘raised up.’ The name of the tree literally meant “raised-up sky.”<sup>90</sup> The tree stands at the center of the Maya universe and forms the connection between the underworld of *Xibalba*, the human earthly plane, and the heavens. It also becomes the placement for the marking of the four corners of the earthly plane and ensures the continued development and advance of Maya communities. The *Wacah Chan* is an organic entity that ensures the flow of precious liquids throughout the Maya universe and becomes the provider of nourishment for all of those involved in the preservation and making of the cosmos: the gods, humans, creatures and plants of creation.

“The Classic texts at Palenque tell us that the central axis of the cosmos was called the “raised-up sky” because First Father [the creator gods] had raised it at the beginning of creation in order to separate the sky from earth. Each World Tree [and presumably each Maya city had its own] was, therefore, a representation of the axis of creation.”<sup>91</sup> The tree at the center of creation stands for the opportunity for continued re-creation and improvement of the world made by the beings that inhabit it. Rather than having an already made universe that happens to have an asymmetrical external flow of time, the Maya conceived of the tree at the center of creation as an image of time itself. For the Maya the concept that time is inherently part of every creature and entity of the universe whereby its proper mapping via the calendars enables humans to control the shape of the universe in the same way that, to some extent, we can control and shape its evolution and growth. Some falls out of our control, yet we desire to have power over it and we aim to do so. The Maya understood that some control already occurred, as when

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<sup>90</sup> Schele, Linda et al. *Maya Cosmos: Three Thousand Years on the Shaman's Path*. New York: W. Morrow Co., 1993, p. 53.

<sup>91</sup> Schele, Linda et al. *Maya Cosmos: Three Thousand Years on the Shaman's Path*. New York: W. Morrow Co., 1993, p. 53.

the Hero Twins learned to control the sacrifice of their fathers in the cultivation of maize. “First Father was also the Maize God, *Hun-Nal-Ye* [or also known as *Hun Hunahpu*], ‘One-Maize-Revealed,’ and was depicted both in his human form and as this tree. After the First Father’s defeat and sacrifice by the Lords of Death in Xibalba, he was reborn as maize, the staple sustenance of humanity and the stuff from which the gods created human beings.”<sup>92</sup> But continued and improved control was to be the primary aim of any Maya society. The sages and kings aimed at controlling the fate of their city states, usually in the form of warfare against their enemies, but also in the control of the staples of the life of the community: water, food, and space. The *Wacah Chan* becomes the premier symbol for this success and attempt at control of the cycles of the universe and is represented as a tree transformed into a maize plant offering maize and the human fruits of creation. This reaffirms that maize and its cycle has been controlled and becomes an aspect of the continued recreation and evolution of human societies, thus clearly forming part and adding to the growth of the Cosmic tree. The *Popol Vuh* can be read as a retelling of this evolutionary story of creation and recreation of individuals and communities.

Let’s now show that this is indeed the case by analysis of some of the texts inscribed in stone. The examples come from the city of Palenque and from three associated structures, known as the cross group, build by the same king *Chan Bahlum* to justify his succession to the throne and to clarify the expectations of his leadership.

(Figure 1)

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<sup>92</sup> Schele, Linda et al. *Maya Cosmos: Three Thousand Years on the Shaman’s Path*. New York: W. Morrow Co., 1993, p. 55.



Figure 1 – The architectural cross group of Palenque in the background

Following his father's footsteps, *Chan-Bahlum* built to justify his right of rule and to assert the metaphysical origins of his power. He is known for being the creative impulse behind the construction of the Group of the Cross, which include the Temple of the Cross, the Temple of the Foliated Cross, and the Temple of the Sun. These three buildings contain texts in stone of great historical, archaeological, cultural and metaphysical interest. As Schele and Freidel indicate, Chan-Bahlum appears to use these texts in stone as an affirmation of his lineage and as a powerful consecration of his

political and theological legitimacy. “He divided his pictorial and textual treatise into three temples, thus recalling the triadic arrangement of primordial Late Preclassic royal architecture.”<sup>93</sup> This triadic theme persists in the architecture of the buildings and on the representations of the buildings themselves. “In each temple, three doors pierce the front wall of an interior which is divided into an antechamber and three rear sanctums.”<sup>94</sup>

There is also evidence that the architecture of these three buildings were to emulate the surrounding mountainous landscape of Palenque and the buildings themselves were thought of as mountains whereby the ritual of entering the insides of the temple represented the entrance into *Xibalbá*. “Into these underground houses in the heart of the mountains the king would tread, alone and stripped of earthly trappings, to meet his father and his ancestors in Xibalbá.”<sup>95</sup> Just like the Hero Twins, *Hunahpu* and *Xbalanque*, *Chan-Bahlum*’s power rested on his ability to reach into the entrails of the world and offer life and well being for the community of Palenque. The stone murals inside of the temple symbolize this attainment of power via a symbolic journey to the underworld whereby he could offer the fruits of the earth as a reward.

### The Temple of the Cross

At the center of the bas relief at the top of the Temple of the Cross resides the Cosmic tree misidentified by early explorers as a cross (Figure 2). It is resting on the head of the Earth Monster, who symbolizes not only the earth but the entrance to the

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<sup>93</sup> Schele & Freidel, *A Forest of Kings*, 237.

<sup>94</sup> Schele & Freidel, *A Forest of Kings*, 238.

<sup>95</sup> Schele & Freidel, *A Forest of Kings*, 238.

underworld and is often seen as a symbol of the power of regeneration of the sun (several depictions offer the earth monster devouring and regurgitating the sun). It is flanked at its right by *Chan Bahlum* and at its left by his father the great king *Pakal*. The figure of *Chan Bahlum* is much larger than his father and holds the symbol of succession in his arms, the *k'awil* which represents also creation with one leg replaced by lightning just like *Huracan*, the maker of life. Father and son face the Cosmic tree presenting the coming sacrifice of *Chan Bahlum* as an offering to the cosmos. *Pakal* has died, but in death still represents a great source of power and clearly the key to the successful transition of that power into his son. He is clothed in garments that designate his deceased state and holds in his hands the piercing scepter *k'awil* with blood flowing from his body onto the ground. His sacrifice is done, his blood spilled for the well being of the city. He appropriately stands on the glyph of death as to indicate his entry into *Xibalba*. From his headdress plants emerge to indicate the regenerative power he still holds in death.

The much larger figure of *Chan Bahlum* stands simply dressed in front of a similar scepter, as prepared to continued the sacrifice of his father, as leader of Palenque. From his headdress a budding flowering plant indicating the beginning of his organic sacrificial reign. He appears to offer the *k'awil* directly to the *Cosmic Bird deity* or *muan* bird sitting a top of the tree in similar ways that *Vucuc Caquix* once sat on top of the nance tree. The Cosmic bird represents *Itzamná* and the sun-in-motion in the celestial abode. His perching, however, indicates the deep connection it has with the tree.

The manikin scepter or *k'awil* embodies the power of creation and regeneration. It stands for the creative lighting power of the creation gods and they key for a successful

transition of power from *Pakal* to his son. This transition is not only observed by the *k'awil* but the 'creation' of the new king has to be brought forth via the same power that brought forth creation. In short, *k'awil* symbolizes the link between creation and the kings of Palenque as well as the link between *Chan-Bahlum* and his father. In his hand the king-to-be holds the precious power of transition and regeneration. The transition entails that his father gives his fluid of power to his son and that he in turns receives this fruit of sacrifice to have the power to continue the successful reign of his ancestors. "In Yucatek, *k'awil* means "sustenance" or "alms"—any precious substance, usually some type of plant or body fluid like blood or sap, given freely as thanks for the sustenance provided by the divine. The Popol Vuh records that the gods wanted to create beings who could reciprocate their love and care by returning nourishment to their creators...K'awil as 'substance' conveys the idea of the magical [itz] transformative cycle that changes food (maize) into the flesh of gods and humans, and then back again into food (blood or its equivalent)." <sup>96</sup> The *k'awil* or manikin scepter, as it is sometimes called, stand for the means of connecting with the divine. It offers a path through sacrifice of connecting the heavens with the underworld. This scepter of the one legged god is also itself the perforating or piercing instrument for the sacrifice. It is the instrument that sheds the precious liquid for regeneration essential for the transition.

[Transition-Lub-Zero-Completion paragraph]

The Cosmic tree grows from the head of the earth monster or mountain (*witz*) earth. The symbol of *k'in* clearly visible on the forehead of the earth monster indicates the power of the sun already at play in the making of the tree and the formation of the

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<sup>96</sup> Schele, Linda et al. *Maya Cosmos: Three Thousand Years on the Shaman's Path*. New York: W. Morrow Co., 1993, p. 194-5.

spatial directions. Three symbols sit on top of the head of the earth monster, providing the connection between it and the trunk of the tree: a shell, a phallic-shaped cutting stone, and a *kan* symbol (Venus) of organic regeneration. From these the tree grows at the center of all creation providing the support for the very thing that gives it life. Freidel, Schele, and Parker state further “When all of this is put together, it tells us that the souls of human beings were created when First Father raised the great tree. We are the blossoms of that tree. All that remained was to shape human flesh from maize and create the host for these flower souls. Very probably this maize came from the First-Tree-Precious depicted in the Temple of the Foliated Cross at Palenque, the tree that rises from the three stones of Creation [the symbol for creation and hearths] in Orion.”<sup>97</sup> The Tree at the center of Palenque stands for the very community it shades and feeds. We are the tree of life, we are the creators and sustainers of the cosmos. Yet, rather than becoming an arrogant statement about our condition at the center of the cosmos, this represents the essential responsibilities for humans to continue of sacrificial rite of creation in our very own flesh and at all level of our existence. Alone our duties are modest, as communities our duties are to sustain the cosmos. The kings lead the community in this sacrifice. Success entails the continuation of cycles of existence with increased knowledge and vision. Failure means death and decay.

The tree at the center of Palenque spreads two branches connecting the son and father. At the end of the branches a flower-like opening reveals the open jaws of two reptilian monsters who signify the horizontal plane of existence. From these jaws precious liquid flows upward to feed creation. Perpendicular to both the trunk and the

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<sup>97</sup> Schele, Linda et al. *Maya Cosmos: Three Thousand Years on the Shaman's Path*. New York: W. Morrow Co., 1993, p. 183.

branches is a chord of precious nectar or *itz* emblematic of the cosmic umbilical chord.

This chord wraps around the tree and collects the blood sacrifice. Atop the tree another flowering opening becomes the perch of the Cosmic bird and creates the connection between the skies and the underworld.

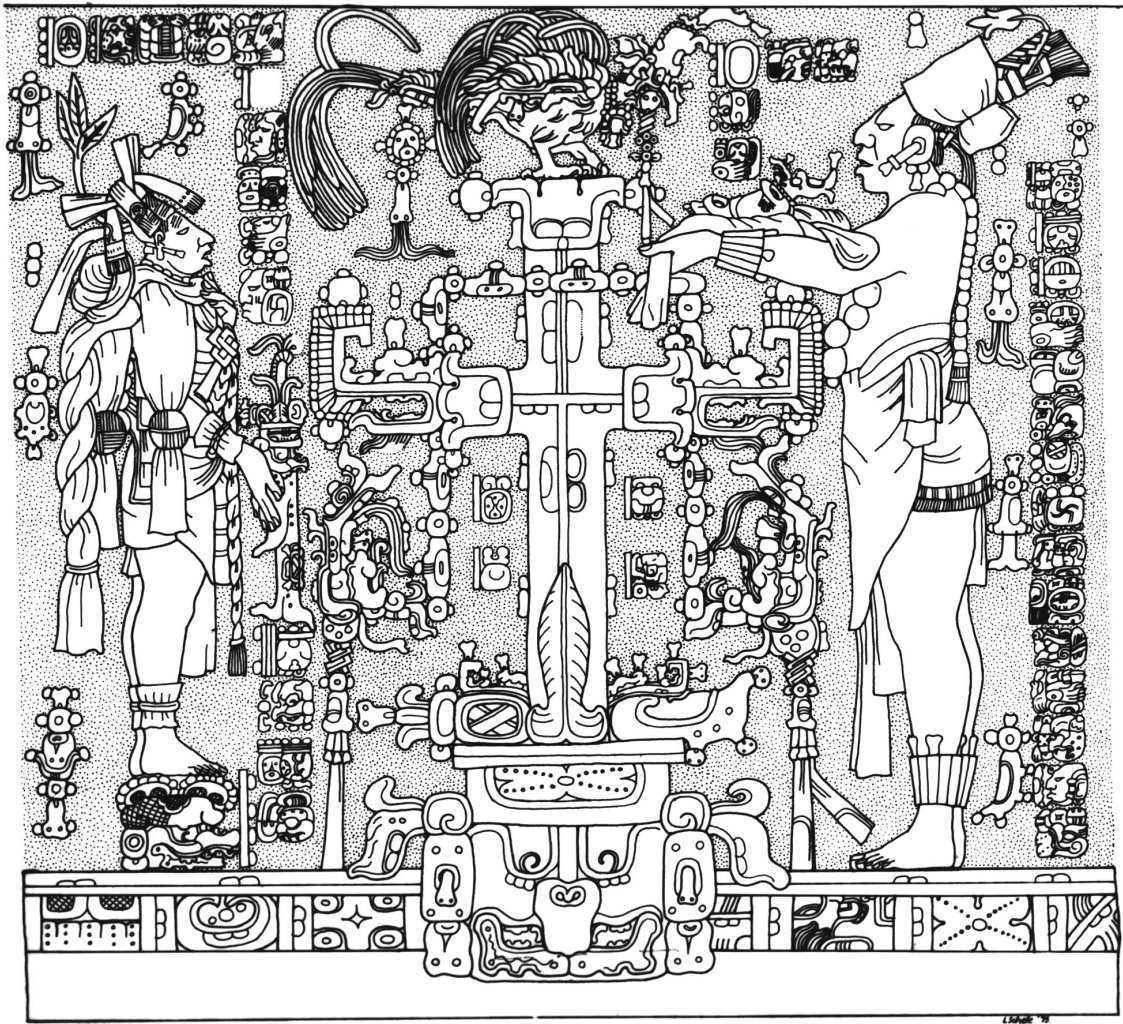


Figure 2 – Center relief of the Temple of the Cross (Linda Schele Drawing, FAMSI #170)

The sacrifice of the kings feeds the cosmic tree, which grows to produce precious nectar or energy to keep the terrestrial and celestial cycles in motion. Notice how the precious

liquid flows from the piercing phallic stone upward to feed the flowering branches and the sun (the cosmic bird) itself. The cycle of creation is perpetuating. The sun and its motion gives the potential to create precious liquids which through sacrifice need to be directed back into the sustenance of the sun. Interruption of this cycle is disastrous, so the Maya, from the initial divine command stated in the *Popol Vuh* seek to ‘count the days’ or control the cycles of creation to ensure that the city and the cosmos itself can progress.

### Temple of the Foliated Cross

A few yards away from the Temple of the cross sits another temple and its stone texts are remarkably similar. (Figure 3) Linda Schele and others have discussed the possible meaning of this remarkable set up with exposition of the similarities and differences and it is worth examining in its own right. Here, however, I rather emphasize the meaning of the images and texts have for the fundamental concepts of Maya thought and so that a clear picture of the epistemological and metaphysical reality can be drafted.

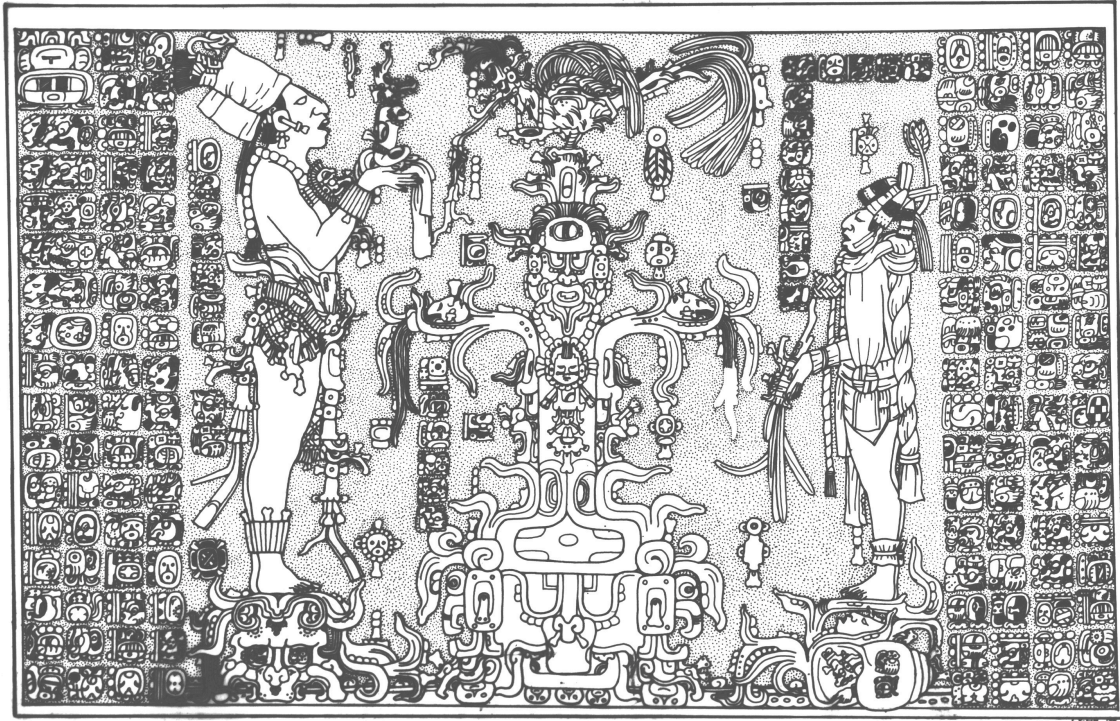


Figure 3 – Relief of the Temple of the Foliated Cross (Linda Schele Drawing, FAMSI #172)

*Chan Bahlum* stands, still larger than his father to the left of a different more organic and andromorphic central tree. *Pakal*, bundled up in preparation for burial, now to the right, still stands smaller and holding the ritualistic piercing staff or *k'awil*. This time, however, the dead king stands on a maize glyph image (apparently with the Maize God *Hun Hunahpu's* head emerging from it). *Pakal* stands literally in the threshold between life and death. His death in sacrifice provides life via regeneration of the precious organic entities that feed from him. “Classic artisans and lords also depicted the World Tree as a luxuriant maize plant heavy with ripe ears of corn, often depicted in personified form as the face of the Maize God.”<sup>98</sup>

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<sup>98</sup> Schele, Linda et al. *Maya Cosmos: Three Thousand Years on the Shaman's Path*. New York: W. Morrow Co., 1993, p. 53.

Defying death and sitting on a defeated skull, *Chan Bahlum* stands ready to take the throne and sign of this is his holding of the god of succession, the *kawil* who will empower him to lead Palenque in the successful process of ‘counting of the days’. His loincloth has morphed into the very tool of sacrifice and in turn implies the power of regeneration of his flesh (often the loincloth is associated with that which it covers, the male regenerative member, the penis). It carries symbols of *itz* the precious nectar that will enable the regeneration of the lineage and stands metaphorically for his power to regenerate all aspects of the community.

The flow of regeneration from both *Pakal* and *Chan Bahlum* feed the earth monster who is once again the basis for the tree (the ‘foliated cross’). The forehead of the earth monster prominently displays the glyph of *k’in*, the four-petaled flower, source of all the power of regeneration (the sun and its motion). This time the glyph itself morphs into foliage that sprouts the trunk of the tree. The tree grows two foliated branches of maize stalks that give off its fruit: the head of *Hun Hunahpu*. The tree grows the flesh of maize and of humans. It represents the sustenance of maize and our own.

The tree ends in a human or godlike head with beaded sun-shield medallion around its ‘neck’ signifying the divine status of the tree and reveals its intimate relation with the sun. The tree is transformed or grows into the sun. From the top of its head, the tree continues and as in the Temple of the Cross, we find the cosmic bird perched once again facing the would be king as to symbolize that the whole of the cosmos rests now on *Chan Bahlum*. He looks confident in this role and disposed to partake of the sacrificial nature of the nurturing of the world tree and his community. “Moreover, the Temple of the Foliated Cross tells us what happens to this white-flower soul [*sak nikte*] when its

owner dies. On the main panel, the personification of the flower soul appears in the mouth of a huge conch shell where it is shown pulling in a maize plant.”<sup>99</sup> This story is not just the original story of creation recreated by the lords of Palenque to justify their reign, but stands as an image of what it is to be human. The tree, therefore, stands for an image of the soul (*ch’uel*) which flows to connect us with all the cycles that make our life and identity possible. The tree is personified because it is us. We are the link between the heavens and the underworld. We are the makers of the cosmos and can become the reason for its destruction.

### The Temple of the Sun

At first sight, this relief may appear to be missing the key central ingredient of both previous texts: the tree seems nowhere to be found. A closer look reveals it to be there in different form. (Figure 4)

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<sup>99</sup> Schele, Linda et al. *Maya Cosmos: Three Thousand Years on the Shaman’s Path*. New York: W. Morrow Co., 1993, p. 184.

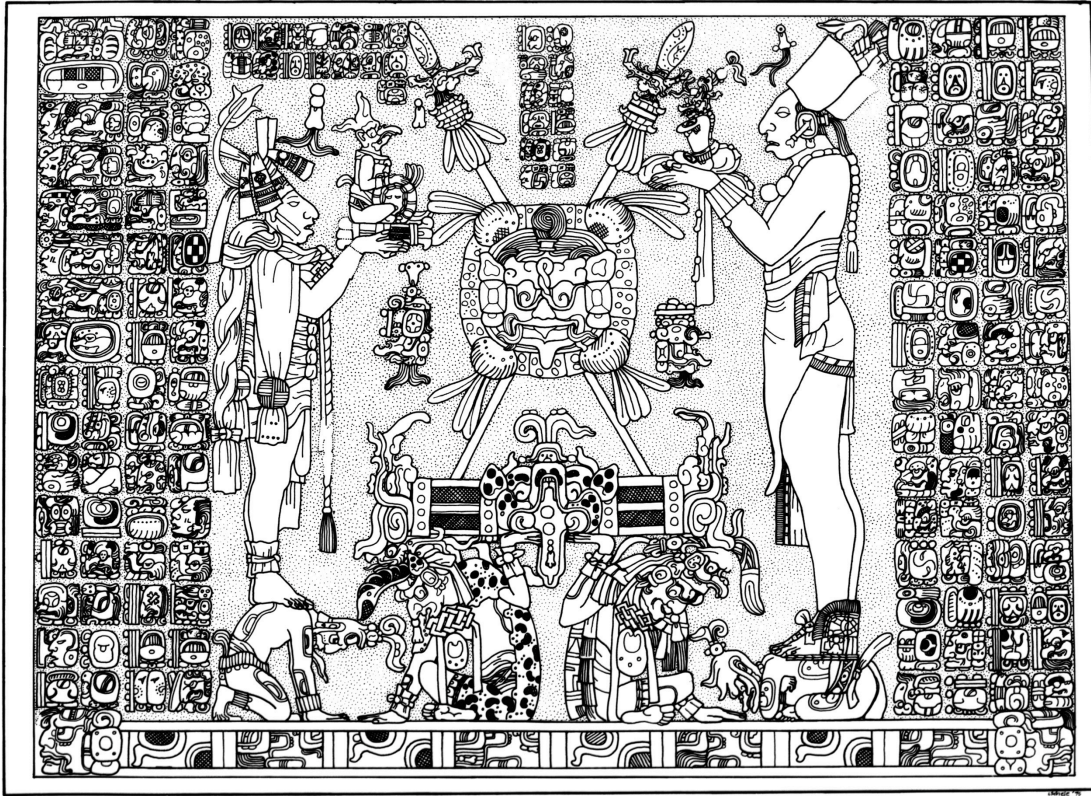


Figure 4 – Relief of the Temple of the Sun (Linda Schele Drawing, FAMSI # 171)

*Chan Bahlum* is again larger and to the right of the center and the deceased *Pakal*, a bit more animated, smaller and to the left. Both now hold up *k'awil* statuette offerings of the precious liquid of renewal, indicating the key point of transition of powers. They both stand on defeated enemies that support their reigns.

In the center at bottom stand two figures holding the cosmic band. Before this was the branches of the trees. Now fully stylized it indicates the cosmos as traced by the movement of the sun. At the center of the band a phallic looking symbol represents what earlier was the earth monster, the symbol of regenerative power and connection to the earth. The two figures have been identified as the divine hero twins or the original gods

of creation, holding their creation and the cosmos on their backs as part of the ultimate sacrifice in the same way that they sacrificed themselves to give this new era life.

Above the skyband stands two crossed spears with a shield in the middle. The shield carries the zoomorphic depiction of the sun or *Itzamna*. In the Temple of the Foliated Cross the shield was the head of the tree with the shield-sun as its medallion. Now the medallion or shield takes centerpiece, indicating the important role of warfare as part of the sacrificial ritual of the shedding of blood. War is clearly the central sacrifice for the continued sustenance of the sun. War is the sacrifice that will replenish the precious liquid, blood, for the regeneration of communities. War then becomes a ritual for the cycle of life.

### Sacrifice and *Itz*

The *Wacah Chan* constitutes the body of the cosmos and the means of interconnection of all cycles. It can grow and be controlled by the flow of precious liquids that nourish it and the king's primary role is to ensure that the Cosmic Tree is nourished. The cosmos and its structure is a living organism that needs to be supported and tended. The universe is made by the sacrifice and accumulation of knowledge (the counting of the days) of humans aided by the gods' own burden and sacrifice.

The *itz* or precious flowing liquids like nectar, water, blood, juice, and sweat is the link or umbilicus between the cycles of existence. This flow of nourishment is what keeps the cycles in motion and keeping existence in flow. The universe is not a given or a spatiotemporal locale where creatures can exist *in*, but rather it is the evolution of all interconnected cycles of existence thanks to the fruits of sacrifice of gods, humans, and

the rest of creation.

Lawrence Bardawil appeared to be the first to establish a clear link between the Cosmic bird or Principal Bird Deity to *Itzamna*.<sup>100</sup> In *Ritual and Power in Stone* Guernsey states that “the name Itzamnaaj literally means ‘one who does *itz*. In Yucatec Mayan, *itz* refers to milk; nectar; dew; the resin or gum from trees, bushes, and some herbs; candle wax; rust; juice; and body fluids such as sweat, semen, and tear... This meaning was connoted by a beaded flower medallion [the same that we saw hanging from the ‘neck’ of the World tree in the Temple of the Foliated Cross and the shield itself in the Temple of the Sun representation] that functioned phonetically as the symbol of *itz*, and which was one of the primary diagnostic attributes of Itzamnaaj.”<sup>101</sup> Thus the powerful secretion from the sun-cycles is what gives the old sun god its name. The goal was to control and use the secretions to feed the cosmic cycles to fruition. “As Freidel, Schele, and Parker further noted, *itzam* was thus a term that referred to an individual who had access to the supernatural world, or who could manifest *itz* and thereby manipulate a cosmic substance of the Otherworld.”<sup>102</sup> As stated in the previous chapter, the cosmic bird is also associated with *Hunahpu* once he substitutes *Vucub Caquix* at the top of the Cosmic or World tree. Hence, the Cosmic Bird deity perched atop the green tree of the cosmos, stands for that power that allows for control of the precious fluids necessary for the proper evolution of the cycles of existence. That’s the result of the sacrifice of the

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<sup>100</sup> Bardawil, Lawrence. The Principal Bird Deity in Maya Art. In *The Art, Iconography, and Dynastic History of Palenque, Part III*. (Ed. Merle Greene Robertson), pp. 195-208. Proceedings of the Segunda Mesa Redonda de Palenque, 1974. Pebble Beach, CA: Precolumbian Art Research, Robert Louis Stevenson School.

<sup>101</sup> Guernsey, Julia. *Ritual and Power in Stone: the performance of rulership in Mesoamerican Izapan style art*. Austin: University of Texas Press, 2006, p. 108. Also Schele, Linda et al. *Maya Cosmos: Three Thousand Years on the Shaman’s Path*. New York: W. Morrow Co., 1993, p. 51.

<sup>102</sup> Guernsey, Julia. *Ritual and Power in Stone: the performance of rulership in Mesoamerican Izapan style art*. Austin: University of Texas Press, 2006, p. 108.

*Hun Hunahpu* and the Hero Twins which must be emulated by the deceased and current lords of Palenque.

### *Pakal's Sarcophagus Lid*

One of the great discoveries in Maya archaeology was finding the burial site of the great Maya *ahau* of Palenque, king *Pakal*. Prior to this discovery it was not believed that the Maya constructed pyramids to house the bodies of the deceased lords. There are many interesting points of examination about the building (it was built with a psychoduct connecting *Pakal's* death chamber with the outside world, for instance) and the overall structure of the sarcophagus (it is phallic shaped). Our focus will be the rich text and imagery of the lid of the sarcophagus. It should be known that, unfortunately, many wild and unsupported speculations exist about the meaning of these images (some speculate, for instance, that *Pakal* is seating in a manner similar to astronauts, hence, he must be 'riding' a spaceship.)<sup>103</sup>

*Pakal* is dead and falling, in a fetal pose, into the maw of the earth monster. He is literally falling into *Xibalba*. As in the imagery of the Temple of the Cross on the forehead of the earth monster is the symbol of *k'in*, ensuring the understanding that the earth monster is doing the work to sustain the sun and its motion. In between *k'in* and *Pakal* lies the symbols of the conch, a flower organism and in the middle, the cutting stone of sacrifice (with phallic characteristics again). *Xibalba* welcomes the sacrifice of the dead king and produces, from the king's chest the growth of the Cosmic or World

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<sup>103</sup> In one of the visits to Palenque I overheard to my dismay, more than once, professional guides tell tourists about this astronaut 'interpretation' of the meaning of the lid.



Figure 5 – Reproduction of the lid of *Pakal*'s sarcophagus

tree. The depiction of *Wacah Chan* is remarkably similar to the representation in the Temple of the Cross. The Cosmic bird sitting atop of the tree with the horizontal branches interlocked with the cosmic umbilicus providing the cosmic axis and the formation of space itself.

*Pakal's* sacrifice will nourish the world tree for years to come in the same way that dead organism provide the nourishment for new plant growth. Death becomes life through the emanating fluids of sacrifice. The very constitution and evolution of the universe owes its being to the late king's sacrifice.

## Appendix A – Maya Mathematics

The motivation for increasing the knowledge of the cycles of existence led the Maya to develop a systematic way of mapping and knowing the cycles of existence and the interrelations between the cycles. As we have seen in chapter 2, the Maya developed a system of mathematics that allowed them to measure some of these cycles with great precision. The key mathematical tools were the vigesimal number system<sup>i</sup> and the arithmetic.<sup>ii</sup> This appendix serves as a venue for becoming acquainted with the arithmetical computations the Maya certainly used to arrive at their precise accounting of the planetary and other cycles.

The use of such tools allowed them to investigate the mathematical and physical connections between them. For instance, the Maya's desire to know and calculate the cycles of existence—agricultural, meteorological, divine, and physiological cycles, among others—went along with the desire to control these cycles. Maya astronomy, then, developed making use of this competent mathematical system with the purpose to know and control the cycles. Hence, the desire to know the essence of interconnected cycles was the force behind the Maya number system and, in turn, the mathematics they developed allowed them to further their inquiries into the precise nature of those cycles.

The aim of this appendix is to familiarize the reader with how the vigesimal system worked and to practice some simple arithmetical computations. Doing so will prepare the reader for a more robust understanding of the key Maya philosophical conceptions.

In our base ten system we use ten symbols or digits (0, 1, 2, 3, 4, 5, 6, 7, 8, 9) to create all the numbers. After we use each of the symbols, we begin a new cycle or place value using those ten basic symbols. After 9, we create a new place value for multiples of ten in front of the single units and we write 10. The units place value begin a new cycle with zero, while the tens place value becomes 1. After 99, we create another place value for multiples of one hundred. So 100 will follow 99 and has three place values: hundreds, tens, and units. The number 100 has 1 in the hundreds place value, zero for the tens and zero for the units. For instance, we can write number 324 is  $3 \times (\text{hundreds}) + 2 \times (\text{tens}) + 4 \times (\text{units})$ . So our basic cycle in arithmetic is marked by a 10 digit cycle using ten different symbols.

The Maya used three symbols in their base 20 number system instead:<sup>iii</sup> [some of this material should be familiar for it appeared in chapter 2, but I repeat it here for the sake of continuity and in case someone would chose to read it separately]

For zero they used several symbols, but the shell glyph is one of the most common:



For units a dot or as some prefer to think it, a cacao bean:



For groups of five units as a bar or a branch or five compressed cacao beans:



So they would write number 7:

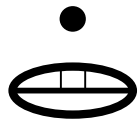


and number 16 like this:



If you think of numbers in cycles, the unit becomes the standard of measure for each cycle. Five means five cycles of unity. Twenty is twenty cycles of unity or five cycles of four, or four cycles of five or ten cycles of two. Some of these cycles were of great importance to the Maya and so were the numbers associated with these cycles. The number 20 is not only the basis for the numerical system, but the number of digits in our extremities, the number of days in the solar calendar and in the ritual calendar. For the Maya the number five is also a symbol and a cycle of importance since like the number of fingers and toes in each hand and foot, the cycle of five repeats four times in the number twenty which would be represented as four bars. The Mayas figure out that if they kept adding bar after bar and dot after dot would limit the use of mathematics to small numbers.

In their vigesimal system, the Maya also created place values usually on top or in front after the number 19. In this text, I have chosen to put the place values on top, but the choice is arbitrary. So the number 20, was written like this:



$$\begin{array}{rcl}
 1 \times (\text{twenty}) & = & 20 \\
 0 \times (\text{units}) & = & 0 \quad \text{adds to 20}
 \end{array}$$

Twenty-one is:



$$\begin{array}{rcl}
 1 \times (\text{twenty}) & = & 20 \\
 1 \times (\text{units}) & = & 1 \quad \text{adds to 21}
 \end{array}$$

Three hundred forty-two is:

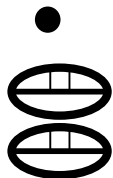


$$17 \times (\text{twenty}) = 340$$



$$2 \times (\text{units}) = 2 \quad \text{adds to 342}$$

So we would expect then that larger numbers would demand another place value multiple of twenty in the same way that after 99 we need another place value to create 100. What happens, however, is that since the mathematical system is supposed to serve as a map of the cycles in time and since the most important cycle of existence is the sun, the Maya felt that the solar cycle had to be reflected in their arithmetic. The second place setting (multiples of 20) does not go beyond 360, for 360 (plus five unlucky days) is the number of days it takes for the sun to return to the same location in the sky (approximately, since they knew that it actually takes 365.2422 days). The number 360 would be written as:



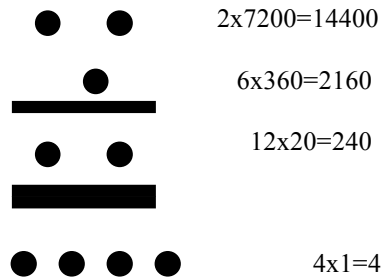
$$1 \times (20 \times 18 = 360) = 360$$

$$0 \times (20) = 0$$

$$0 \times (\text{units}) = 0$$

With larger numbers, this modification of the limit of the second place value to numbers no larger than 17, implies that larger place settings will be modified as well. So we will start at the bottom with multiples of units until we reach 19. At the second place setting, the multiples of 20 will go up until they reach 359 ( $17 \times 20 + 19 \times 1$ ). The third place setting, above the second place setting (as in the previous example) will go up until it reaches 7199 ( $19 \times 360 + 17 \times 20 + 19 \times 1$ ).

The number 16,804 will be:



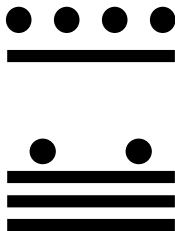
which adds to 16,804.

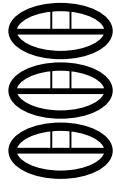
This would be a good time for you to practice writing a few Maya numbers. Answer in them in your notebook and be sure to bring it to the next class.

**Ex 7 (4): Write down the number 476 in Maya numerals.**

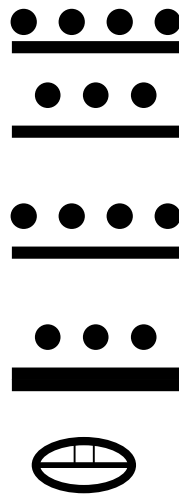
**Ex 8 (4): Write down the number 342,879 in Maya numerals.**

**Ex 9 (4): What is the following number in Arabic numerals?**









**Ex 10 (4): What is the following number in Arabic numerals?**



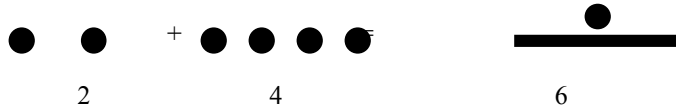
Adding and subtracting becomes an operation of adding and subtracting dots and bars in the appropriate place values. Even though we do not know for certain how the Mayans computed with their number system, there is enough indirect evidence to support that they did compute with large numbers and that they could have used multiplication and division.<sup>iv</sup> We can imagine, then, how addition may work as a matter of adding dots and bars following some simple rules:

- There are three symbols:  for zero or completion,  or unity,  for five
- Five will always be written as: 
- In each place value, the numbers range from zero to nineteen. Any multiple of 20 will be carried over to the next place value with one exception:
  - The second place value goes up to seventeen only.

Keeping these rules in mind, let's try our hand at Maya arithmetic.

Let's start with a simple operation:

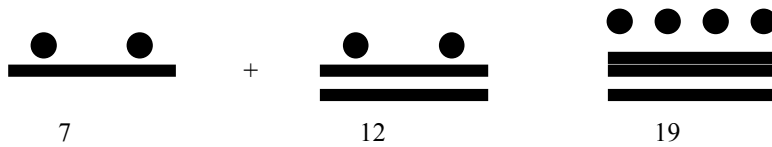
$$2 + 4 = 6$$



Try it on your own before looking at the answer on this next one :

$$7 + 12 = 19$$

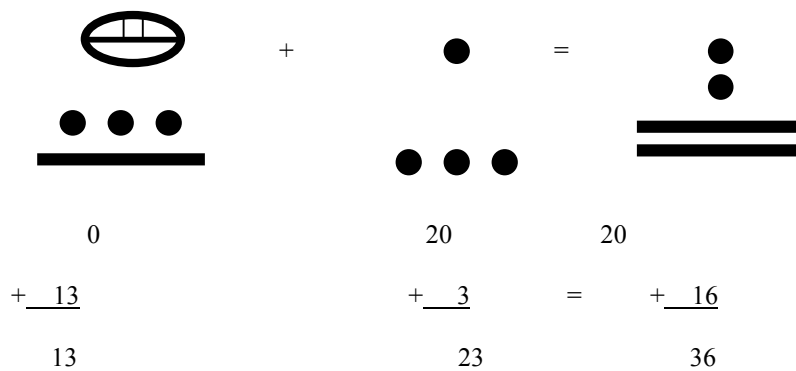
Answer:



Let's try:

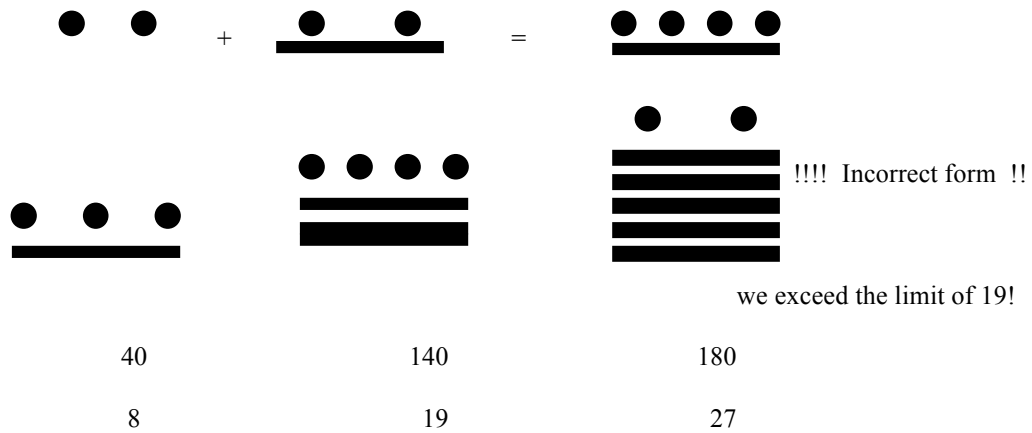
$$13 + 23 = 36$$

Answer:

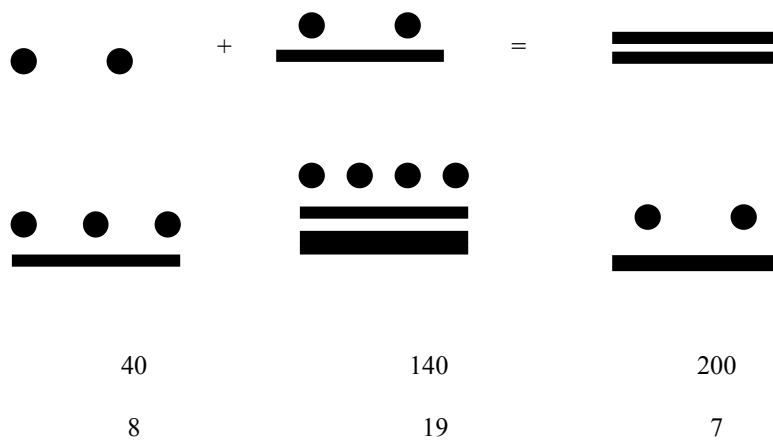


Also,









$$48 + 159 = 207$$



Remember that we can only write up to nineteen on each place holder, (except the second one, where we use up to 17). So we bring up 20 units up to the upper place value, as a dot, and we get:



**Ex 11 (4): Add the following numbers, using Maya symbols. Then, write the sum in the decimal system using Arabic notation:**

			
			
			
	+		=
			
			
			
			
			
			
			
			

Often the Maya used several different symbols and glyphs to represent the same concept. This is no different with numbers. In some contexts, the Maya preferred to use different variants for numbers.



























Below are the glyphs, head variants and Yucatec names for the numbers: (Notice how the numbers ten and above are formed)






















If you don't see the pictures below, please go to the following sites online:

<http://www.halfmoon.org/.cal/num1.gif>

<http://www.halfmoon.org/.cal/num2.gif>

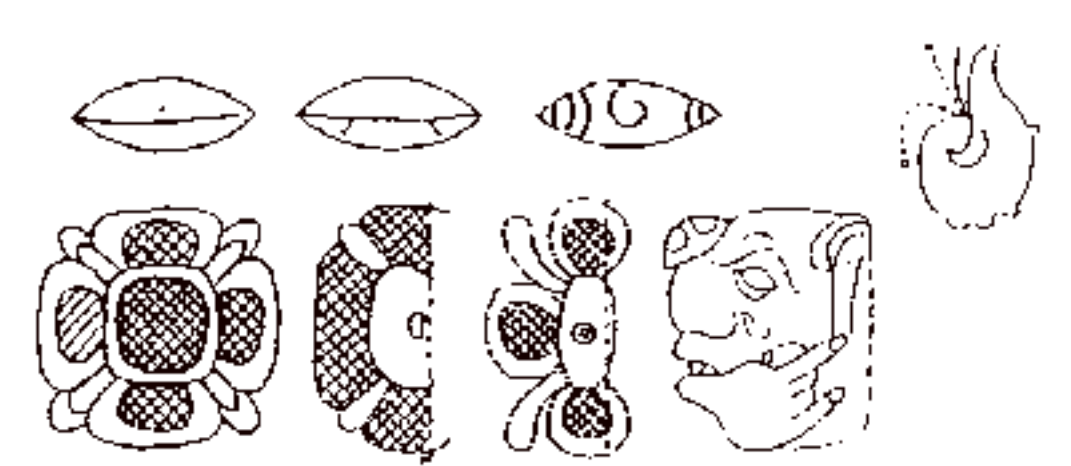
<http://www.halfmoon.org/.cal/num3.gif>

NUMBER ENGLISH & YUCATEC	EAR & DOT MONUMENT CODEX		HEAD VARIANTS
ZERO MI			 [SEATING GLYPH]
ONE HUN		.	  
TWO KA		..	  
THREE OX		...	  
FOUR KAN		....	  
FIVE HO		—	  
SIX WAE		— .	  

NUMBER ENGLISH & YUCATEC	BAR & DOT MONUMENT	CODEX	HEAD VARIANTS
SEVEN UX			
EIGHT WAXAH			
NINE BOLON			
TEN LAHUN			
ELEVEN MILIR			
TWELVE LAKAH			
THIRTEEN OXLAHUN			

NUMBER ENGLISH & YUCATEC	BAR & DOT		HEAD VARIANTS		
	MONUMENT	CODEX			
FOURTEEN KANLAHUN					
FIFTEEN HOLAHUN					
SIXTEEN WAKLAHUN					
SEVENTEEN UKLAHUN					
EIGHTEEN WAKLAHUN					
NINETEEN BOLONLAHUN					
COMPLETION					

The Maya also used different symbols for zero or completion. One of them is a conch or shell, another a half of a four-petaled flower:



The Maya were one of the few cultures in the world that created the concept of zero in their mathematics. They were using the concept of zero several hundred years before Europeans learned it from Islam and India. The symbol of zero was helpful for the Maya to indicate that a certain place-value had reached completion and that a new place-value was needed. Such a simple device allows for the computation of large numbers that otherwise would become undoable. As we will see, the concept of zero will carry further significance as completion of cycles. So zero, instead of simply meaning “empty” or “nothing” it indicated to the Maya that a new regenerative process was about to begin. Zero was the beginning, the setting of what was to come.

Below you can find some useful websites to hone your mathematical skills and for further investigation. Some of these sites, however, use the 400 mathematical model, rather than the 360 we are using. So please beware. In this chapter we used the 360 model because (1) it is the model used in

calendrical computations and (2) we do not have direct evidence that the Maya actually used the 400 model, even though, they probably did:

<http://www.mayacalendar.com/mayacalendar/mayamath.html>

[http://www-groups.dcs.st-and.ac.uk/~history/HistTopics/Mayan\\_mathematics.html](http://www-groups.dcs.st-and.ac.uk/~history/HistTopics/Mayan_mathematics.html)

[http://math.ucsd.edu/programs/undergraduate/history\\_of\\_math\\_resource/history\\_papers/math\\_history\\_07.pdf](http://math.ucsd.edu/programs/undergraduate/history_of_math_resource/history_papers/math_history_07.pdf)

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<sup>i</sup> Lambert, Joseph B.; Ownbey-McLaughlin, Barbara and McLaughlin, Charles D. Maya arithmetic. *Amer. Sci.* **68** (1980), no. 3, 249--255.

<sup>ii</sup> Ifrah, G. *A Universal History of Numbers: From Prehistory to the Invention of the Computer*. London, 1991. Ifrah points out that even though there is only evidence for the 360 model of counting instead of the 400, it would be reasonable to assume that merchants may have used this simpler model.

<sup>iii</sup> This maya notation gifs are borrowed from <http://www.michieltb.nl/maya/math.html>.

<sup>iv</sup> Lambert, Joseph B.; Ownbey-McLaughlin, Barbara and McLaughlin, Charles D. Maya arithmetic. *Amer. Sci.* **68** (1980), no. 3, 249--255.

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