

# THE TEACHING OF ANCIENT SCIENCE, TECHNOLOGY, AND TRIBAL MYTHOLOGY

Robert N. St. Clair, University of Louisville

## ABSTRACT

Teachers and parents are the gatekeepers to culture. Parents are involved with primary socialization and teachers engage in secondary socialization. Teachers differ from parents in that they provide the knowledge, the cultural mores, and tribal wisdom in the form of graded stories and readers. What they teach plays a large part in what their students come to know as their culture. What they fail to teach plays a role in what is lost and forgotten in the dark shadows of the past. My quest is concerned with the traditions of the Medicine Wheel. One can teach this culturally laden icon as mythology and legend; and one can also teach it as ancient science and technology. Both ways of teach may be done in the form of different domains within curriculum development and it is important to note that both accounts of tribal knowledge and tradition needs to be imparted to other indigenous groups. Hence, what began as a journey into the symbolic richness of this symbol soon led me to realize that this symbol is also a technological instrument of ancient science. There is even a whole new field dedicated to this study, the field of science known as Archeoastronomy. What I desire to impart in this essay is the intriguing description of the knowledge of the skies as described by ancestral traditions. These traditions are not limited to the indigenous societies of North America, but also to related tribal traditions of numerous indigenous cultures around the world. It was Immanuel Velikovsky who first noticed this intrinsic relationship between science and mythology. It was because of his insights that many astronomers began to seriously study the myths of indigenous groups all around the world. Their findings gave new interpretations to rock paintings, pictographs, earth mound cultures, and temple building empires. The stories of creation that emerged from these groups are not to be devalued in any way as they describe accurately the astronomy of the past. One of the finding that emerged from this research is the fact that the year 10,500 BCE continues to emerge as a significant time in the past of these tribes. Speculations about these findings, how they portrayed tribal knowledge, and what they meant culturally are discussed.

## INTRODUCTION

For teachers of indigenous languages and cultures, there is always the crucial problem of deciding what to incorporate into the lesson plans and what to omit from full or partial discussion. As case in point, one may consider what is involved in teaching the concept of the Medicine Wheel. This is a unique visual metaphor because it incorporates so many sacred and traditional values and beliefs. It is an image that recurs over large

areas of North America, especially among the indigenous cultures of Mexico and the United States. Through this icon, we learn how various groups are situated in their own cultures. We learn how they envision themselves in space and time and through tribal historiography. Hence, this visual metaphor is an excellent teaching instrument because it frames life and its values. However, the further we go in our investigation of its symbology, the more we come to realize its complexity. We find, for example, that there are two kinds of Medicine Wheels. One is associated with the Vision Quest ceremonies (Storm, 1977, St. Clair, 2000) and the other functions as an astronomical marker of sacred time (Krupp, 1983). One could end a teaching lesson with the former and never even deal with the latter. However, as a teacher of cultural knowledge, this would not be a wise decision. There are many reasons why the teaching this ancient tradition is important. It demonstrates, for example, that there were ancient practitioners of science that knew about the heavens, the locations of the stars, and their meanings. If one were to ask, for example, are indigenous tribes lacking in mathematical concepts and scientific theories of the world, the answer would be readily clarified and documented. There are ancient traditions of science. There were highly interesting uses of mathematical instrumentalities. Perhaps this phase of teaching the Medicine Wheel should be done under a different part of the curriculum, but it should be done, nonetheless. Hence, the focus of this article is on the latter, the sacred marking of time and space. It is a story that needs to be told for a variety of reasons. One of them is that it corroborates numerous recent scientific findings. Consider, for example, the tribal stories regarding Klamath Lake. It turns out that the tribal accounts of what happened in the past have been fully documented. What was considered to be a legend, turned out to be a scientific report! Similarly, stories about the alignment of the planets and catastrophic astronomical changes in the past were not mere legends, but accurate descriptions of events at the time. It is for this reason that many astronomers have turned to the indigenous legends of tribal culture for a deeper understanding of past astronomical events. Many of the stories about the gods and goddesses turned out to be accurate accounts of planetary movements, sidereal patterns, and astronomical events. Why would anyone want to deny these important findings in their tribal teachings? Why would one want to limit the stories of the past to certain legends and not others? Why would one want to deny the teaching of ancient science tribal members at a time when being scientific is considered to be an invention of modern times? To deny such accounts of the past would be the equivalence of silencing the knowledge and the wisdom of the Old Ones. Their mythological worlds need to be told in our language and culture classes. Their mythological worlds need to be understood from several perspectives.

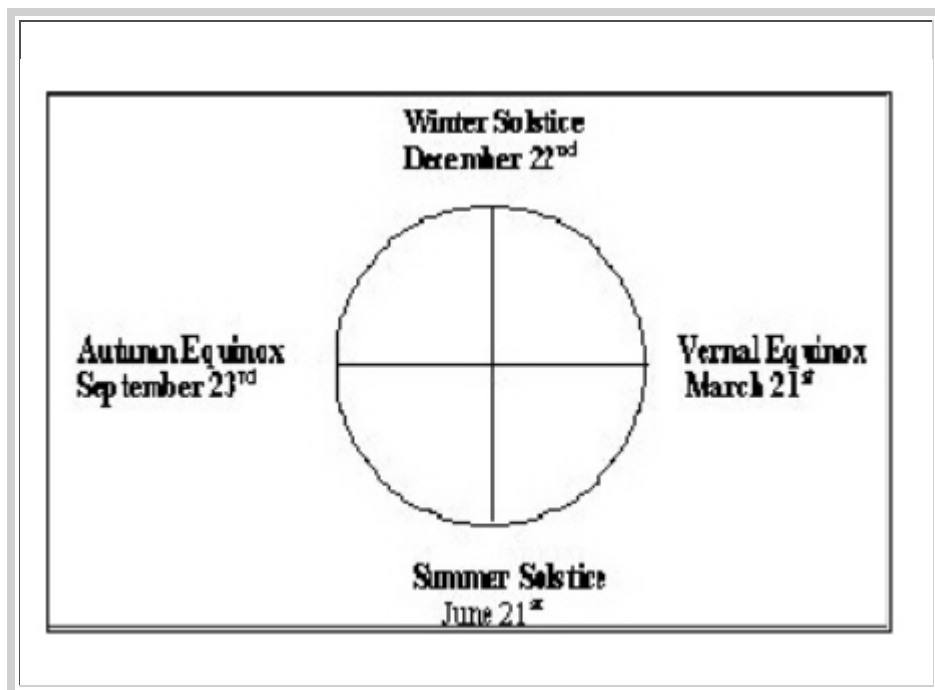
## THE MEDICINE WHEEL

As noted previously (St. Clair, 2000), the Medicine Wheel of the Vision Quest tells of a deep experience, of situating one's self in tribal values. It begins with the Vision Quest where a child spends four days and nights alone in nature. Here, different animals visit the child, he learns of them, and the spirits of nature visits him. Upon returning to the tribe, he retells his tale to the Shaman (a word derived from Eskimo meaning Sky Walker). There are many kinds of Shamans. Some can tell of the past, some of the future. Many see auras; many have the power to heal. However, the Shaman who does the vision quest brings a different spiritual gifts; he tells you who you are. In this ceremony, you are given a name, a marker of your character and being. The names have many qualities that are characteristically associated with your visits from the spirit world. If the northern spirits visited you, for example, your color would be white, the color of winter, the attribute of wisdom, and the fourth arrow, the place of the buffalo. These qualities are presented to you in the form of a personal icon, a badge of karmic identity. Some have referred to this ceremony as earth astrology (Sun Bear and Wabun, 1980). Its connections are much deeper than that. The Medicine Wheel incorporates religion, philosophy, literature, and tribal wisdom (Jung, 1969).

<b>THE STRUCTURE OF QUATERNITY</b>				
The Indian Medicine Wheel and the Seven Arrows				
	First Arrow	Second Arrow	Third Arrow	Fourth Arrow
VALUES	Illumination	Innocence	Introspection	Wisdom
COLORS	Yellow	Green	Black or Blue	White

SEASONS	Spring	Summer	Fall	Winter
DAY	Morning	Midday	Evening	Night
LIFE	Childhood	Teenager	Mid life	Old age
ANIMALS	Eagle	Frog, Mouse	Bear	Buffalo
Fifth Arrow = Father Sky				
Sixth Arrow = Mother Earth				
Seventh Arrow = The Center, the union of all parameters				

However, there is another part of the Medicine Wheel that led me to ask questions of a different nature. It is our contention that these are questions that we need to be addressed in our curricula. The Medicine Wheel, for example, has thirteen spokes radiating from the center. This is representative of the thirteen tribes, one of which is the tribe of human. However, this story conflicts with the archeological finding of Medicine Wheels found in Wyoming and parts of British Columbia, Canada. In these sites, for example, there are 28 spokes radiating from the central hub. This information is important because these spokes mark the days of the --month because the wheel portrays a lunar calendar. Another problem occurs in the marking of the four cardinal directions, the Quaternity. In one version of the Vision Quest model, it marks the four seasons and is characterized by north, south, east, and west. Symbolically, this Quaternity captures the sacredness of the number four: the four winds, the four ages, the four seasons, the four values, and the four arrows of seven arrows. What needs to be told is the rest of the story. We need to know that when this model was used as an astronomical instrument, the four directions were markers of movements of the sun in the sky, one set of marking for the solstices and another for the equinoxes .



What we have here are two different kinds of Medicine Wheels, one represents cultural traditions (the seven arrows) and the other marks astronomical information (equinox and solstice markers). In the latter, the months are lunar and based on repeating cycles of natural events. It is this second use of the Medicine Wheel that has fascinated modern astronomers. They have found great significance in the indigenous legends of and they have learned much from these tribal accounts.

<p><b>THE NORTH:</b>            THE WINTER SOLSTICE,            DECEMBER 22            THE LONGEST NIGHT            The Moon of Earth Renewal            The Moon of Rest and Cleansing            The Moon of the Big Winds</p>	<p><b>THE SOUTH:</b>            SUMMER SOLSTICE,            JUNE 21            THE LONGEST DAY            The Moon of the Strong Sun            The Moon of Ripe Berries            The Moon of the Harvest</p>
<p><b>THE EAST:</b>            SPRING EQUINOX,            MARCH 21            DAY EQUALS LENGTH OF NIGHT            The Moon of Budding Trees            The Moon of Frogs Return            The Moon of Corn Planting</p>	<p><b>THE WEST:</b>            AUTUMN EQUINOX,            SEPTEMBER 23            NIGHT EQUALS LENGTH OF THE            DAY            The Moon when the Ducks Fly            The Moon of Freeze Up            The Moon of Long Snows</p>

Hence, it is this second Medicine Wheel that I wish to elucidate and develop as a teaching tool. It is a story, for example, that tells us about the myths and legends of the old times and the wisdom of the ancient ones. This story is best told through the newly emerging field of archeoastronomy.

## ARCHEOASTRONOMY

For many decades, scientists looked upon creation stories as myths as unexplainable phenomena. They knew of colossal monuments such as Stonehenge, but they could not imagine how or why such places were constructed. It took a noted British-American astronomer, Gerald Hawkins to change their minds. In 1965, he decoded the mystery of Stonehenge. He found that the monument was an observatory designed to mark significant positions of the sun and moon cycles. He discovered that the Heel Stone was used to align itself with the sunrise of June 21, British midsummer. Other stones functioned as solstice and equinox markers. What Hawkins accomplished, was amazing. He led other scholars to seriously consider the role astronomy as a means for accounting for celestial lore, myths, and the wisdom of the ancients. Hence, these scholars created a new discipline, archeoastronomy. They began to examine mythology, religion, and the world-views of ancient cultures by means of astronomical practices. Since the work of Hawkins, archeoastronomers have discovered that the Great Pyramid at Giza in Egypt was aligned towards Sirius in the Canis Constellation and that the magnificent Maya Palace of the Governor at Uxmal was aligned with Venus (Aveni, 1997). They were amazed to learn that Stonehenge may have been built circa 3000 BC to 1400 BC. When they turned to the ancient Egyptians, they learned that these people possessed a great knowledge of geometry, mathematics, and astronomy and that the construction of the Great Pyramid of Giza took place at least 5000 years ago. Mayan archeoastronomy proved to be just as amazing. This was a culture that possessed the concept of zero and created a 5000 year calendar. In the United States, archeoastronomers turned their attention to local sites. John Eddy investigated the Big Horn Medicine Wheel in Wyoming and found that the points in the outer wheel marked the rising of the stars Rigel, Aldebaran, Formalhaut, and Sirius (Krupp, 1983).

Star Name	Magnitude	Constellation	Northern Visibility
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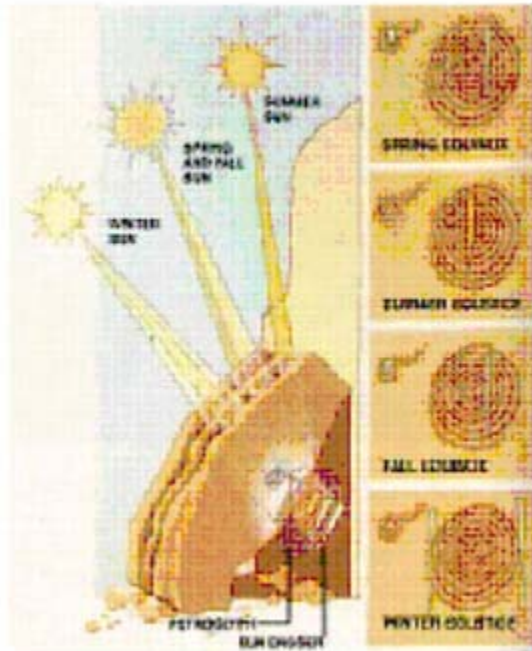
Sirius (Lakota Tayamnisinte)	-.03	Canis Minor (Lakota Tail in Animal star group)	Visible above 50 degrees north latitude. Marked on the Medicine Wheel at summer's end at dawn.
Rigel (Lakota Tayamnitchuhu)	0.3	Orion Constellation (Lakota Outer rib in Animal star group)	Visible on Zodiac (16 degree star belt above the horizon). Marked on Medicine Wheel.
Aldebaran	1.2	Taurus Constellation (Lakota Neck in Animal star group)	Visible on Zodiac (16 degree star belt above the horizon). Marked on Medicine Wheel.
Formalhaut	1.3	Pisces Australianus	Most southerly star visible at 50 degrees north. Marked on Medicine Wheel

In New Mexico in the Fajata Butte of Chaco Canyon, archaeoastronomers found a chamber with spiral petroglyphs that mark noon at the time of equinox (Krupp, 1983). The major architecture of the prehistoric Chaco Culture of New Mexico shows that 12 out of the 14 buildings on this site correlate with the cardinal directions and with the solstice and lunar standstill azimuth. Hence, these were constructed in a pattern consistent with the solar and lunar cycles. These have been documented for Pueblo Bonito, Pueblo Alto, Chetro Ketl, and Pueblo Pintado. However, the finding of archaeological time keeping machines is only part of the story of the new anthropology of astronomy. The more interesting venture takes place in relating indigenous creation myths (ancient cosmologies) to archaeological findings.

## ANCIENT COSMOLOGIES

All cultures have stories about how they were created, where they came from, and why they are here. These stories are called creation myths. What is interesting about aboriginal creation stories is that they tell of the world that was very different place from what we now know. For them, the sky looked very different from what we now know as the celestial firmament. They relate to us that in the beginning, we were ruled by a central luminary, a motionless sun. It was a time of natural abundance and cosmic harmony. There was only one rule, a Universal Monarch. It was a Golden Age. Later, this ancient order was disrupted and everything fell into confusion. The Universal Monarch tumbled from his appointed station followed by hordes of chaos set loose on all of creation. Darkness descended upon the earth, a cosmic night. In the heavens, the gods found themselves battling furiously among themselves. Eventually, a New World emerged with a new configuration of celestial beings. The Universal Monarch was transformed in the transition and assumed his rightful place in the heavens. What is interesting about this celestial lore is that it represents an archetype of creation stories. Over and over again, in widely disparate cultures around the world, this story is told with the same basic framework. The characters are the gods of the heavens; the queen of heaven, the warrior-hero, the primeval seven, the chaos monster, chaos hordes, and the rejuvenated creator-king. The struggle is between order and chaos. When there was order in the heavens, there was order below on earth. When there was chaos in the heavens, there was chaos on earth. The scenario was the same among story tellers: As above so below. The events took place in mythical time, when time stood still. All of these myths shared the same structure. How could this be? How could cultures that are separated by great distances and great barriers of nature share the same creation myths? How could a group on the other side of the world devise the same creation myth as a tribe located on this side of the globe? If these stories are nonsense, then why do they share the same content and structure? Perhaps, it should be argued that these stories are not nonsense.

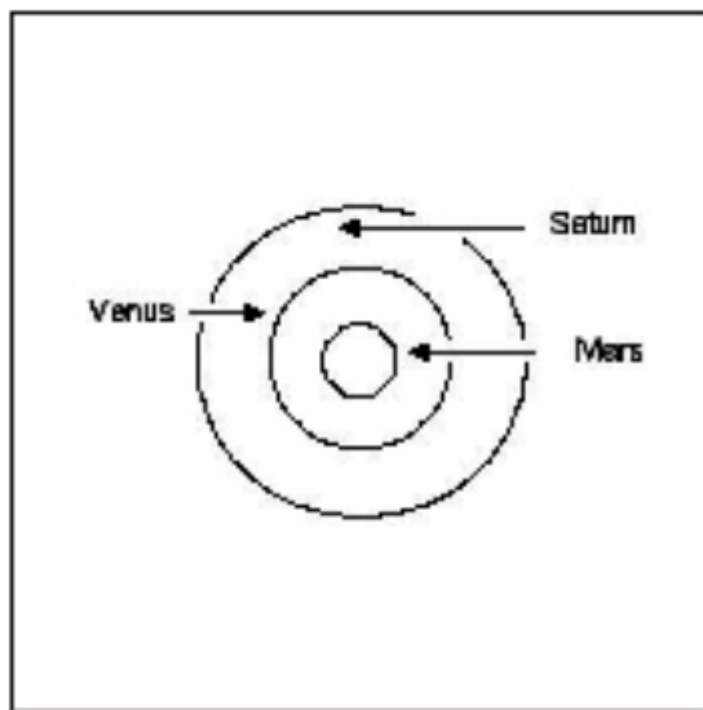
Perhaps, they speak of a time in the past when all of these events took place? Perhaps, this mythical time and space was real.



These are some of the questions that Immanuel Velikovsky asked himself. This noted scholar began his intellectual journey in the summer of 1937 when he noted that Moses of biblical legend was a prototype to the Greek Oedipus. By 1940, he was deeply involved in proving his hypothesis. Velikovsky, it should be noted, is no ordinary scholar. He did not limit himself to his own discipline and academic training. He searched for answers amidst numerous disciplines and learned to read many ancient scripts in order to document his findings. In one of his readings, he noted that the Dead Sea might be of recent origin. It did not exist as a sea in the story of Sodom and Gomorrah. He calculated the rate at which different salts could accumulate and be deposited from nearby outlets and arrived at the conclusion that under these circumstances, the Dead Sea would not exist in the present time. Velikovsky then noticed other anomalies such as the fact that the oceans are very salty. This led him to ask other questions: Where did all of this salt come from? Why is there a layer of ash covering the ocean floor? Why is the sulfur content so high on earth? He wanted to understand the physical world of the ancients. The further he went into recreating the world of the past, the more anomalies he found. For example, creation stories spoke of a time when the skies were very different from ours. It was a time when the sun stood motionless in the sky. It was a time when the planets were very close to earth. In his quest to understand these mythical times, Velikovsky found himself disagreeing with his fellow scientists. He put his findings into a book called *Worlds in Collision* (Velikovsky, 1950). In this work, he cited many creation myths around the world and documented that they told of the same story, a Golden Age of the past. He used his scientific knowledge to document earth changes, magnetic shifts, polar shifts, and geological cataclysms. He concluded that the earth was in a different configuration with regard to the other major planets in our solar system and that something happened to change this arrangement. What transpired was a scenario in which worlds were in collision and he documented his evidence by citing the asteroid belt circulating between the earth and Mars. Saturn, a planet that contained water, dislodged torrents of water. At that time, the earth was a satellite of Saturn. This water contained huge amounts of chlorine and made the oceans here on earth salty.

The Atlantic Ocean was created after the deluge and was called the Sea of Kronos, i.e., the Sea of Saturn. Velikovsky also asked why there were so many giant rifts along the ocean floor. From a mythological point of view, he asked why Jupiter (Jove) was assumed to be a supreme deity along with Saturn. He questioned why so many temples were built for them. What Velikovsky proposed was not a theory of the past, but a reconstruction.

It was not long before other scientists joined Velikovsky on his quest to explain the mythical past. Giorgio de Santillan and Hertha von Dechen (1977) added further evidence from European literature. Allan and Delair (1995) looked at geological evidence, and David Thalbot (cf. Web Sources) came up with the Saturn Thesis in the journals *Pensée* and *Kronos*. There is evidence to suggest that we once had a dual sun system, binary twin stars. This is based on the fact that the earth rotates along an elliptical path rather than around a circle. Only a large planet similar to the sun could account for this rotation. Thalbot argued that Saturn was that solar body. With the help of his colleagues, Robert Gumbaugh (an engineer with years of experience in orbital calculations), Robert Bass (a former professor of Physics and Astronomy), and Robert Driscoll (a physicist working on electromagnetism), Thalbot was able to create a simulation of his Saturn Thesis. These men provided a model in which the ancients viewed Saturn as standing still in the sky. In front of this planet, a gaseous and light emitting orb, one found Venus. Behind Saturn, one found Jupiter and hidden behind Jupiter was the Sun. This was a collinear system in which Saturn and Jupiter were binary stars. When the ancients referred to the sun, they meant Saturn. Jupiter was hidden behind Saturn, the polar star.



What is interesting about this visual configuration is that it matches those found among various pictographs worldwide. Even the Egyptian god Ra is symbolized as the Sun (meaning Saturn) with an inner and an outer circle. The inner circle is assumed to be eye of the sun; it was Venus. It is interesting to note that this is a highly common ancient symbol, the sun sign. It is the union of male (Mars) and female (Venus). It is the balance of the Queen of Heaven (Venus) and the Warrior-Hero (Mars). Thalbot also notes that as Saturn began to break up, it was dislodged from its concentric circles leaving behind a crescent, another common symbol of creation myths and a current creation story symbol of the Arab world. Furthermore, the symbol of the feathered serpent under this new framework is concomitant with a comet that emits large amounts of debris into space as it passes by. Other symbols of debris emanating from a star can be found in famous wheel

of the Babylonian Shamash.

## MYTHICAL TIME AND SPACE

What was this mythical world like? Who were the gods and what planets did they represent? In the Saturn Thesis, the Queen of Heaven was Venus, symbolically the daughter of the Creator-King. In Sumer, they called her Innana; and in Egypt she was Isis. She is the ancient mother-goddess. The Warrior-Hero is the Hercules archetype who defeats the chaos monster in primordial time. He is Mars. In North America, he is the coyote or the raven. The Primeval Seven are satellite figures presented as wise men, patriarchs, seers, and even the heads of the Chaos Monster. These are the seven orbs revolving around Saturn. The Chaos Monster is the cosmic serpent or dragon who has darker, menacing powers. When the Chaos Monster is defeated, this signals the advent of the New World. The story of the Chaos Monster is the battle between Mars and Venus. The Chaos Hordes are companions to the monster figures. They are the friends of darkness and they move across the sky as clouds of darkness, ushering the cosmic night. This is the cosmic debris stretching out from Venus and reaching towards Saturn. Finally, there is the Rejuvenated Creator-King, a transformed figure that is reflected in the dramas of the New Year, the symbolic passing from one age to another. The Greeks called him Zeus, the Egyptians Osiris, and the Hebrews Yahweh. He is Jupiter.

Cosmic Entity	God or Goddess	Elements and Attributes of the Celestial Drama
Saturn (gas giant)	The Creator-King	The Universal Monarch. The primordial sun god. A polar star. The motionless sun god Ra, the first in the line of kings. The colors of Saturn are yellow, gold, or ochre.
Venus	Queen of Heaven	The Mother Goddess. The central star animating the Universal Monarch. The central eye, the nave of the world wheel. The fiery serpent or dragon. The angry goddess attacking the world. Venus turned from white into bright turquoise during her primordial change.
Mars	Warrior-Hero	He defeats the Chaos Monster. He reconfigures the world. He is a child born from the eye or heart of the Universal Monarch. Greek Ares and Hercules, Egyptian Horus and Sept, North American Coyote and Raven, Roman Apollo. Mars turned from blue-gray into deep dusty red during its primordial change.
Moons of Saturn	The Primeval Seven	Wise men, seers, patriarchs, heads of the Chaos Monster.
Mars and Venus	The Chaos Monster	The cosmic serpent or dragon that descends on the world. The gas and dust and debris between Mars and Venus. The prevalence of the ancient Swastika symbolizing jets of debris emanating from a circling comet (clockwise in some cultures, counterclockwise in others).

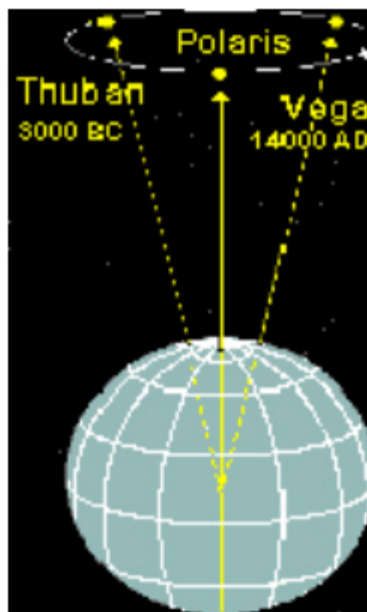


		Also, the symbol of the triskelion represents the jetting of debris
Venus	The Chaos Hordes	The swarming powers of disorder and calamity that move across the heavens. Material radiating out of Venus and moving towards Saturn. Jupiter Rejuvenated Creator-King Hidden behind Saturn and later provides the crescent on Saturn. The drama of the new age or the new year. Egyptian Osiris, Persian Ahura Mazda, Hebrew Yahweh, Greek Zeus.

The concept of being torn from a primordial entity in Jung's model of individuation fits well into this model of primordial or mythical time (Edringer, 1974). In Jungian Depth Psychology, consciousness emerges out of primordial darkness. It is torn from its center and struggles to overcome the capricious and vengeful gods and hopes to return to a state of primordial unity. It is a yearning for the age of the splendors of the gods, the Golden Age.

### **THE RE-INTERPRETATION OF CREATION MYTHS**

All tribes have sky watchers. They are the keepers of the count. They are the cultural astronomers who know of the great legends of the past. The stories that they tell are shrouded in mystery and only recently have there been insight into explaining these stories of the mythic past. These are the people who hold the deeper secrets of their tribes creation myths. Consider, for example, the Lakota and their discussions of celestial imagery, spirit and sky. Mark Hollibaugh (1997) discusses the concept of Wakan among the Lakota. He begins by discussing the work of James Walker (1991: 114-115) on Lakota rituals: "One star never moves and it is wakan. Others move in a circle about it." He is talking about Polaris, Wicahpi Owanjila, the polar star. In 14000 AD, the pole star will be Vega; in 3000 BC, it was Thuban. This shifting of the pole star occurs over large periods of time and repeats itself in a new cycle every 26000 years. There are expressions relating to this: Shkan means sky and taku shkanshkan moves what moves others. It is what gives motion to everything that moves. It was this force that gave Inyan, the rock, his first existence as the grandfather of all things. It was this force that made Maka, the earth, the next in existence and the grandmother of all things. This force also gave existence to Wi, the sun. In this creation story, we find that there are eight associates of Wakan Tanka, four of them are superior and four of them are inferior. The Sky (shkan) and the Wind (Tate) are one; The Rock (Inyan) and the Winged (Wakinyan) are one; the Earth (Maka) and the Wohpe (a figure associated with White Buffalo Calf Woman ) are one; and finally, the Sun (Wi) and the Moon (Wi Han) are one. These eight entities are part of the Great Mystery and are only known to the wisest shamans. The Sun and the Sky were the most powerful of the Gods in this mythical past and they are believed to be one and the same personalities. The Sun (Wi) was visible in the sky only half the time, while Nagi Tanka (the Great Spirit) was everywhere at all times and invisible except for its color, the blue of the sky. One other thing should be noted about this legend. It tells of the Lakota live suspended in time. They live in eternity in a time when the Sun was a persistent feature in the sky. This power is honored in the Sun Dance (Wi Wanyag Wachippi - Dance looking at the Sun). In this tale, we also learn of Heyoka, a contrary who used his spiritual powers to satisfy the thunder beings, Wakinyan. Upon completing his discussion of Lakota celestial imagery, Holbaugh (1997) concludes that Wakan Tanka is best translated as the Great Spirit or Great Mystery.



What is interesting about this creation myth is that it shares many features with other creation myths. Perhaps, this creation story should be reinterpreted. The pole star (Wicahpi Owanjila - the star that always stands in one place), for example, could be any of the collinear stars mentioned in the Saturn Thesis. Mars, Venus, Saturn, and Jupiter did not move in the primordial sky. Neither did the sun. Heyoka, the contrary star could be Mars; and Nagi Tanka could be Saturn. Wolpe could be Venus. I raise these questions because they have such intriguing possibilities of re-interpretation. I ask that we all seriously look at our creation myths in the light of the work of Velikovsky and his colleagues.

### CONCLUDING REMARKS

There are many other interesting aspects of Archeoastronomy that merit serious consideration and most of these have to do with creation myths. The Dogon tribe of Africa (Thompson, 2000: 141), for example, kept the secret of their creation myth hidden for two millennia. One morning all of the tribal members awoke and came to the realization that they all had the same dream, it was time to share the secrets of their creation myth. They went to a French anthropologist who was living with them and told him of their legends. What is interesting about this story is the fact that the members of this tribe kept calculations of the trajectory of Sirius B, a black dwarf. Sirius A is the brightest star in our known universe. It is easily recognizable with the naked eye. Sirius B, on the other hand, cannot be seen in the night sky. Astronomers who studied the gravitational pull of the planets surrounding Sirius B can only detect it with modern technology, as Sirius B is a black hole, it does not emit light. What makes this story even more fascinating is the fact that Sirius B was only discovered in 1929. There is much more wisdom and knowledge to cultural astronomy that we could ever imagine.

Another pattern in Archeoastronomy is concerned with the mirroring of the heavens on earth. The Great Pyramid of Giza (Khufu), for example, is aligned with two other pyramids, Khafra and Menkaura. They are laid out in a plan that has baffled Egyptologists for centuries. The first two pyramids are aligned perfectly, but the third is not so aligned. It is off centered. The question that has challenged scholars is why? Robert Bauval and Adrian Gilbert (1994: 108-126) provide an answer. The pyramids are meant to copy the position of the stars in the sky, in particular the stars in the Belt of Orion. What makes this mystery even more interesting is that the alignment of the pyramids with the Belt of Orion does not occur at the present time. However, at some time in the past, there was an alignment. The question is when? Egyptologists like to hypothesize that the Great Pyramids were built around 3,000 BCE. What Bauval and Gilbert have shown is that it was aligned

to the stars in the Belt of Orion around 10,500 years ago. This makes the pyramids older than had ever been suspected. This time frame is important because it will occur again in other investigations into archeoastronomy.

In Cambodia, there is the magnificent Royal Palace of Angkor Thom. What makes this palace so interesting to archeoastronomers is that it is laid out according to a celestial plan. The temple of Angkor Wat mirrors the stars in the Constellation Draco, the Dragon (Krupp, 1983). When was this celestial plan devised? When was the temple of Angkor Wat built? Graham Hancock and Santha Faiia (1998) used their astronomer computer software to trace sky maps back in time when the Constellation Draco would be in alignment with the Temple of Angkor Wat. Their finding, not surprisingly, was 10,500 B.C. What is so important about this date that keeps on re-appearing as a significant time in the study of archeoastronomy? Perhaps, it is important because it was the time around the events surrounding the great cataclysms that Velikovsky wrote about in his *Worlds in Collision*.

The purpose of this essay is not meant to merely enlighten us that archeoastronomy is a fascinating topic and that it incorporates science and mythology into a serious new discipline. The purpose of this essay is to make teachers of language and culture about information that they need to include into their curriculum development. At a time when we are concerned about the revitalization of indigenous languages and cultures, we cannot afford to take the risk of capriciously omitting valuable cultural information that needs to be included into our cultural textbooks. My concern in this article is to ask others to incorporate these ancient traditions of science and technology into their curricula. I only ask that they begin to seriously look at their own creation myths and find new levels of meaning in them. Now, more than ever, tribal mythology is important and should be shared with others. Not to include such information on the scientific contributions of indigenous cultures would be tantamount to openly assisting in the ethnocide of one's own cultural heritage. There is much to gain from knowing the creation myths and teachers are the gatekeepers of knowledge. It is by their efforts that we come to know and understand the past.

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