Taking Measure

Explorations in Number, Architecture and Consciousness

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Chapter 3 - Measuring Time

People like us, who believe in physics, know that the distinction between past, present, and future is only a stubbornly persistent illusion. -Albert Einstein

To quantify this illusion called time we have watched sand pass through the hourglass, swung pendulums, squeezed quartz crystals to produce piezoelectric pulses, and measured the radiation regularly emitted by caesium-133 atoms. However the surest and oldest time keeping method is to observe day turning into night and night into day, noticing the seasons change and repeat, tracking phases of the moon, and recording the slow precession of the fixed stars over many human lifetimes.

Is time an arrow flying from past, present, to the future or is time a circle, a spiral, or a web?

Are space and time one and the same fabric, with warp of space and weft of time? Is our imperfect perception of time really a glimpse of a fourth spatial dimension?

Fish have trouble seeing the water they swim in. We don't really know what time is. The wise say there is only the eternal now.

Nevertheless we measure days by dividing them into hours, minutes, and seconds. In a period of 24 hours (technically a mean solar day), with 60 minutes per hour, and 60 seconds per minute, there are exactly 86,400 seconds.

The ancient Egyptian year was divided into 36 *decans*, or periods of 10 days, plus 5 added festival days at the end of the year. (36 x 10) + 5 = 365.

One decan is 10 days x 86,400 seconds/day = 864,000 seconds.

Isn't it clever that the year, which is simply the Earth's motion around the Sun, would be divided into decans which mirror the Sun's diameter of 864,000 miles (99.9%). This presupposes synchronization between seconds and the mile.

Time is personified by Father Time, the deathly old man with the scythe. This image derives from the Grim Reaper and Chronos, the Greek god of time. Chronos is also associated with the titan Cronus who is usually depicted with a scythe. The Romans called this god

Saturn. All of these gods are echoes of Osiris, the ancient Egyptian Lord of the Dead.

The Sothic Calendar

The ancient Egyptians based their new year on the phenomenon of the heliacal rising of Sirius, star of Isis. This occurs on the first morning of the year when Sirius is visible on the Eastern horizon just before the Sun rises.

Jim Alison discovered that Pennsylvania Ave in Washington DC, which runs from the White House to the Capitol, is aligned to the heliacal rising of Sirius (see http://bit.ly/RaQmFX). This is a significant avenue of power, and a great secret in plain sight.

Robert Bauval and Graham Hancock showed in Talisman that the Champs-Elysees, which runs along the historical axis of Paris, is likewise oriented to the heliacal rising of Sirius and that the axis of Notre Dame de Paris is also thus aligned.

The Greek name for Sirius is Sothis. The Sothic cycle is a period of 1461 ancient Egyptian years of 365 days each. Because the ancient Egyptian year does not account for the extra approximate quarter day in the Earth's revolution about the Sun (365.242 days in the solar year), the date of the heliacal rising shifts throughout the year over time.

After a period of exactly 1461 years the date of the heliacal rising of Sirius returns to its original date. The original date is reckoned to be the summer solstice, the time of year when the Nile traditionally began its annual flood (before the Aswan dam was built in the 1960s which ended the flooding).

There are interesting parallels between ancient Egyptian time and ancient Olympic time. The summer Olympics were in ancient times and are again in modern times held every 4 years. In every 4 year period there are 4 x 365 days plus 1 extra day to account for leap day. Doing the math yields 1461 days. The Olympic period is 1461 days and the Sothic cycle is 1461 years. The frequency of Olympic games (and US Presidential elections for that matter) echoes the Sothic calendar.

In a blog called Groupname for Grapejuice, the writer recognized the following important connections between Sothic and Olympic

time (see http://bit.ly/PFCJKW).

Sirius disappears for 70 days below the horizon immediately prior to its heliacal rising. The Egyptians equated this 70 day period with the journey of the soul through the Duat or underworld. This was echoed in the 70 day mummification process.

In preparation for the 2012 London summer Olympics, the torch was lit in Athens with a parabolic mirror from the light of the Sun. The Olympic torch began its relay in the UK at Land's End in Cornwall on May 19th, 70 days before the cauldron of 204 separate flames (referencing the 24 hours in a day) was lit at the opening ceremony on July 27th.

The torch relay covered a distance of 8000 miles, crisscrossing all over Britain to make up the required distance. The torch was carried by 8000 torchbearers and 8000 holes perforate each triangular torch. The diameter of the Earth is 8000 miles (99%). The torch relay thus represents a journey through the center of the Earth.

Dante's Divine Comedy (published circa 1310) has 3 books: Hell, Purgatory, and Paradise. Dante's journey through the Earth began in Jerusalem and passed through all the nine rings of Hell. Was Dante really describing the Egyptian underworld, complete with a reference to the ennead in the rings? Every night Ra takes the Sun on his boat through the Duat, facing many perils and monsters.

I noticed that each of Dante's books consists of exactly 33 cantos. Scientists at Stanford University recently discovered that the Sun's core rotates once every 33 days (http://bit.ly/dcykJ2).
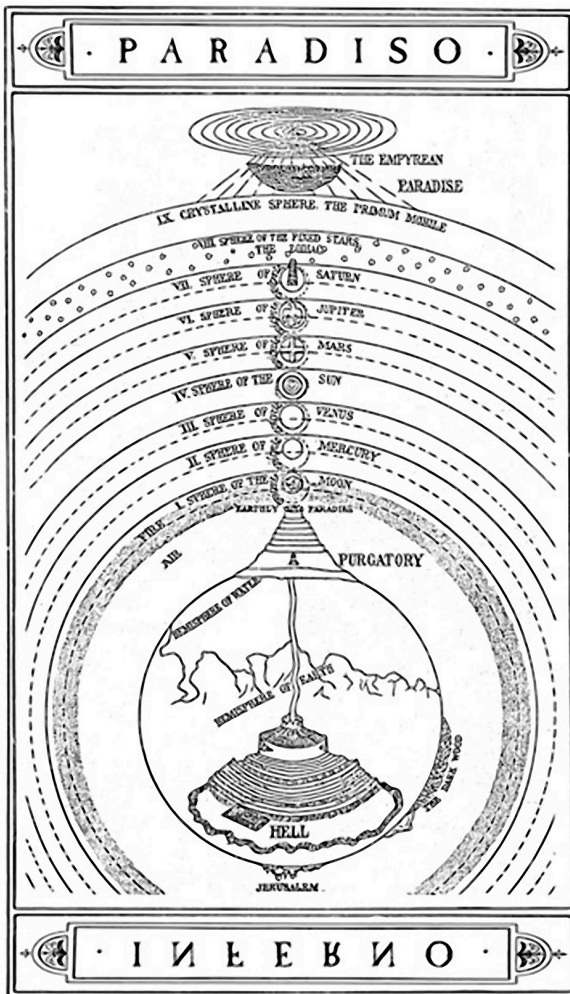
The 2012 London Olympics ended on August 12th and the Olympic flame was extinguished. The very next morning at the latitude of the London Olympic Stadium, the heliacal rising of Sirius signaled the beginning of another ancient Egyptian solar year. Is this all coincidence?

A Year and a Day (or Two)

There are modern echoes of an ancient tradition in which "a year and a day" was a significant period of time. In Wicca, a modern pagan religion, candidates must study for a year and a day before they are allowed to be formally initiated. In common law, there is a standard that death cannot be legally attributed to acts or omissions

that occurred more than a year and a day before the death (this rule was codified in New Zealand's Crimes Act). In Sacred Number and the Origins of Civilization (Inner Traditions 2007) Robin Heath's brother Richard traced the tradition of a king ruling for "a year and a day", after which he was killed, back to the matriarchal societies of the Bronze Age.

"A year and a day" resonates with the ancient 13-month solar calendar, which had 13 equal months each composed of 28 days as 13 x 28 = 364. If 364 days comprise a year then one needs an extra festival day to equal the Sothic calendar of 365 days.

The International Fixed Calendar uses this 13-month solar calendar with one or two days added that are out-of-time, belonging to no month or week (called Year Day and Leap Day). This calendar has the distinct advantages of being a perennial calendar such that every date is always fixed on the same weekday and every month has equal length of four 7-day weeks. The 13th month, called Sol, is inserted between June and July at midsummer. Perhaps surprisingly, the International Fixed Calendar was the official calendar of the Eastman Kodak Company from 1928-1989.
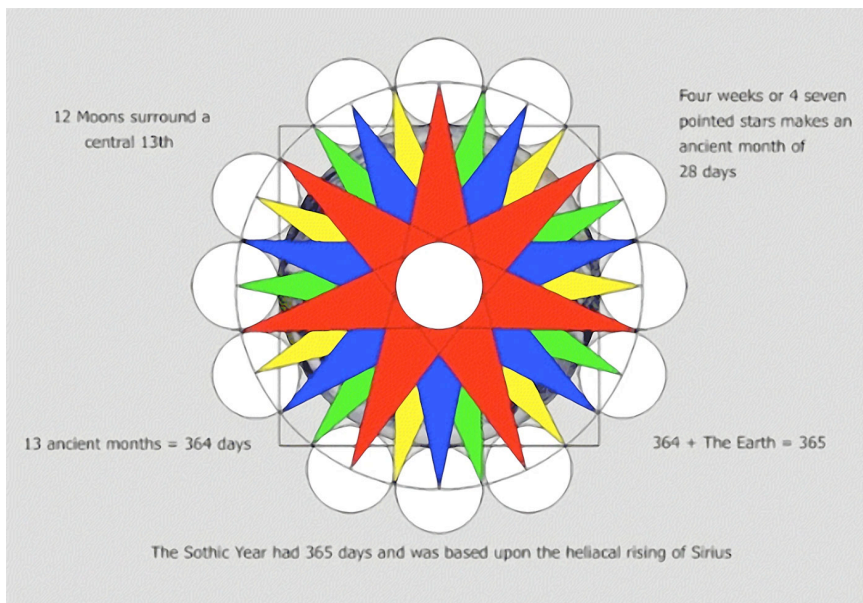
Ophiucus, the serpent bearer, is the 13th constellation that crosses the ecliptic. In the "year and a day" 13 month calendar, the ancients would have required 13 zodiac signs corresponding more or less to the months. In Babylonian Star Lore (Solaria 2008), Gavin White proposes that the 13th zodiac sign Ophiuchus may in fact be remotely descended from a Babylonian constellation representing Nirah, a serpent-god who was sometimes depicted with his upper half human but with serpents for legs.

When the patriarchal cultures took over in the Iron Age the serpent was vilified, the calendar was changed to 12 months, and Ophiucus was largely forgotten.

Ophiucus is located between Sagittarius and Scorpio on the ecliptic. The arrow of Sagittarius and the stinger of Scorpio both reach toward Ophiucus' foot that is trampling the scorpion. The convergence of these symbols just happens to point in the direction of our galactic core at the intersection of the ecliptic and the galactic mid-plane, which is also symbolized as the golden gate, or gate of death. See my Esoteric Astronomy episode in Secrets In Plain Sight - Volume 1 for more information.

Perhaps Eve learned all this when she ate the apple from the Tree of Knowledge proffered by the serpent. Adam and Eve's expulsion from the garden by Yahweh, which also vilified femininity and the serpent, seems to me to be related to dropping Ophiucus. Tracing the astronomical origins of religious stories is known as *astrotheology*. Santos Bonacci (http://universaltruthschool.com) is a master of this "holy science."

John Michell's New Jerusalem diagram in <u>The Dimensions of Paradise: Sacred Geometry, Ancient Science, and the Heavenly Order on Earth</u> (Inner Traditions 2008) resonates with the concept of "a year and a day." Its 13 months are symbolized by the smaller circles, the 28 points of four 7-pointed stars represent the days and weeks of the months. The larger Earth circle behind the stars represents the extra day. The diagram is created by squaring the circle and the large Earth circle and smaller months/moon circles are in the proper proportion of 3:11.

12 Moons surround a central 13th

Four weeks or 4 seven pointed stars makes an ancient month of 28 days

13 ancient months = 364 days

364 + The Earth = 365

The Sothic Year had 365 days and was based upon the heliacal rising of Sirius

The numerology of playing cards also encodes "a year and a day." There are 4 suits corresponding to the seasons, or 2 solstices (black) and 2 equinoxes (red). There are 13 cards in each suit (Ace through 10 plus 3 royals), corresponding to the months in the year. The 12 face cards correspond to the months of the solar year. Adding the face values of each suit:

1+2+3+4+5+6+7+8+9+10+11+12+13 = 91.

Totaling the values of all suits, 4 x 91 = 364. Therefore the total face values of the cards correspond to the days in the year. The Jokers are Year Day and optionally Leap Day making up the Sothic or Gregorian year, respectively.

The Gregorian calendar that we use today alternates between a 365 and 366 day year to compensate for the Earth's actual solar year of 365.242 days. In this calendar the following rules determine whether a year will have 365 days or 366 days.

Every fourth year will generally be a leap year when we have a February 29th, except every 100 years there won't be a leap year (i.e. 1900 AD wasn't a leap year). Also every 400 years we skip the exception (i.e. 2000 AD was a leap year). And every 4000 years we will also have to remember to skip leap year (i.e. 4000 AD won't be a leap year). Got that?

Looking back, when the Gregorian calendar started in 1582 AD, it began by skipping 10 days to restore the vernal equinox to March 21st. This remains a challenging problem when trying to calculate exactly how many days ago something happened when the Gregorian calendar crosses into the previous Julian calendar (in addition to the complexity of keeping track of Gregorian leap days).

The Gregorian calendar we use today is officially called the "current or Common Era" and this is abbreviated CE. Dates before the Common Era are abbreviated BCE. The older acronyms AD and BC are considered politically incorrect because AD stands for the Latin *Anno Domini Nostri Iesu Christi*, which means "In the Year of Our Lord Jesus Christ."

The attention given to being supposedly politically correct by using CE/BCE rather than AD/BC is a triviality that distracts people from the fact that our global calendar is still based on Jesus Christ no matter which abbreviation you use. Perhaps we are still basing time on Jesus Christ because today 33% of the world's population is Christian, 21% are Muslim, 14% are non-religious, 13% are Hindu, 12% belong to many other religions, 6% are Buddhist, and just 0.2% are Jewish.

The English acronym BC means "Before Christ", so many

reasonably but mistakenly assume AD means "After Death," rather than an acronym standing for the phrase, "In the Year [since the birth] of Our Lord Jesus Christ." Further confusion about this concept stems from the problem of deciding when the year 1 AD was supposed to have been. The Gregorian calendar places Christ's birth on Dec 25th, 1 AD. Christ lived approximately 33-1/3 years, so that his death came at Easter in 35 AD.

There is no year zero in the calendar, so 5 BC was 9 years before 5 AD. The years follow this pattern: 2 BC, 1 BC 1 AD, 2 AD, etc. It is very confusing accounting for exactly how many years ago something happened before the Common Era. Of course it is also very confusing counting backwards in the whole BC epoch. For example, Julius Caesar was born in 100 BC and died in 44 BC at the age of 55 years.

If civilization is ever interrupted it seems unlikely that anyone will remember all the complexities, exceptions, and peculiarities of the Gregorian calendar. However, even this tortured calendar resonates with the phrase "a year and a day" as 52 weeks x 7 days = 364 days.

I would hope the simplicity of the 13 month fixed calendar will eventually supplant our current convoluted system of variable length months, shifting days and dates, and month names prefixed with Sept which means 7, Oct which means 8, Nov which means 9, and Dec which means 10, all being out of phase with the year. We have Julius (July) and Augustus (August) Caesar to thank for our collective dissociation with time. Perhaps our global calendar was a Roman plan to divide and conquer the mind in time? This appears to have worked very well.

The Lunar Year

The Muslim calendar is a purely lunar calendar consisting of 12 lunar months of 354 or 355 days (based on the lunar synodic year of 354.367 days). A lunar month is the average period of the Moon's revolution with respect to a line joining the Sun and Earth, which turns out to be 29.5 days. This is the period of one full moon to the next.

The Muslim calendar is not synchronized with the Sun and thus seasons drift over time by about 11 days a year. The Muslim

calendar gets synchronized with the solar year every 33 Muslim years.

The first year in the Muslim calendar was 622 AD when Muhammad moved from Mecca to Medina. The current Muslim year is 1433 in the year of the Hijra (which equates to the year 2012 AD in the Gregorian calendar). The Muslim calendar is the official calendar of Saudi Arabia.

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In The Lost Science of Measuring the Earth, John Michell and Robin Heath identified a 5:12:13 Pythagorean triangle that forms a greater temple around Stonehenge that I described in Secrets In Plain Sight - Volume 1. Lundy Island is the right angle point of the triangle, with Stonehenge due East, and due north the quarry in the Preseli hills of Wales where the bluestones used in Stonehenge were mined.

There are 12 months in the solar year but 13 resonates with the Moon. Most years have 12 full moons but every second or third year has 13. The Moon's dance with the Sun is complicated. Calculating the date of Easter, which is tied to both the Moon and the Sun, is a kind of calendrical rocket science.

The most harmonious interval in any dance is the musical fifth. If this tone is struck it forms a just 3:2 interval. Michell and Heath drew a line from Stonehenge to the 3:2 point on the line between Lundy and Preseli and discovered that not only does it go to a giant

menhir on Caldey Island that a priory church is built around, but its proportion measures 12.369 which is the number of full moons in a year (99.99%). This is also the square root of the number 153 (to 5 significant digits), which has esoteric, religious, and architectural significance, see Key Numbers.

The Sidereal Year

A solar year is 365.242 days but the Earth actually rotates 366 times a year relative to the fixed stars. A *sidereal* (with respect to distant stars) day is 236 seconds less than a mean solar day. The subtle discrepancy between the solar and sidereal day is caused by the curvature of the Earth's orbit. Over the year this difference amounts to the Earth rotating one extra day relative to the stars.

We have already seen the number 366 used as the number of days in a leap year.

Consider also that the Earth is 366.6% the size of the Moon.

The Lunisolar Year

Lunisolar calendars incorporate the movements of both Moon and Sun in their earthly timekeeping. This complicated relationship produces calendars requiring complex intercalation, or insertion of days, weeks, and/or months to make the math work out. Many traditional Asian calendars are lunisolar. Interestingly, the calculation of Easter is not tied to the Gregorian calendar because it is lunisolar.

The Jewish calendar is also lunisolar—it indicates both the moon phase and season of the solar year. The Jewish calendar is tied to the Metonic cycle, a 19-year period that more or less synchronizes the Moon with the Sun. The Jewish calendar is the official calendar of Israel. It started *Anno Mundi* or "at the creation of the world" in 3760 BC.

The year 2013 AD is the Jewish year 5773 AM.

Here's a timely correlation: the Great Pyramid is 5773 inches in height.

Richard Heath offered the following metrology in <u>Sacred Number and the Origins of Civilization</u>. The Great Pyramid is 1/11th of a mile (480 feet) in height for what is called the *unfinished pyramid*,

plus a 1-1/11 foot high *pyramidion* to cap it off. 481.1 feet is 5773 inches.

There are a total of 2013 minutes in 33°33'.

The square root of 33.33 is approximately 5.773.
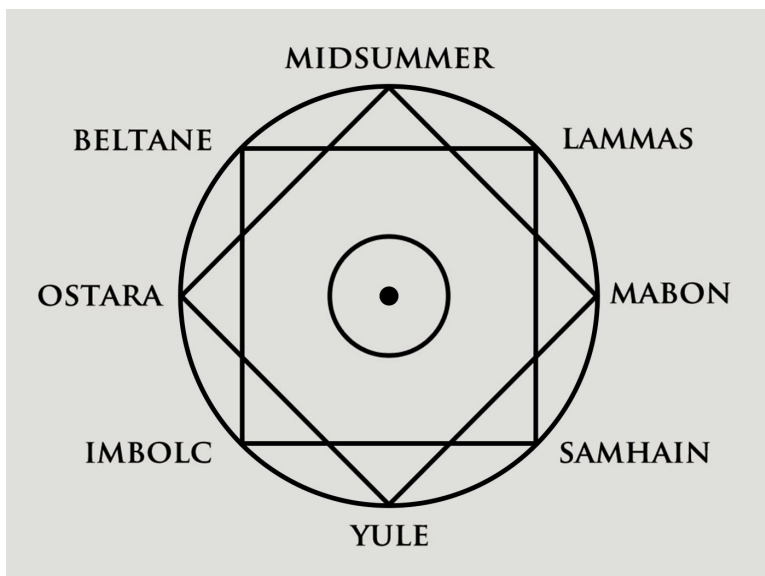
The Circle of the Year

Compared to the complexity of lunisolar schemes, a far simpler approach to timekeeping is to average the apparent motions of the Earth and Moon about the Sun. The Earth's solar synodic year is 365.242 days and the lunar synodic year is 354.367 days. Adding these periods and dividing by 2 yields an average of 360 days, to three significant figures.

Robert Temple wrote in The Crystal Sun (Century 2000):

I divided the duration of the Earth's year which is 365.242392, by 360...and wondered what the relationship between the two numbers could be. I was very surprised when I saw that the result was 1.014562, for I instantly recognized that it was the same (99.9%) as the Comma of Pythagoras to the third decimal place.

I mentioned the Comma earlier in Chapter 2 - Metrology.

The ancient Persians used a 360-day calendar based on the Babylonian division of the circle into 360 degrees. This calendar is a beautiful marriage between circular angular measure and the annual cycle. It is easy to visualize where you are in the course of a circular 360-day year. The Celtic calendar is based on the equal division of the year into 8 parts, making a solar symbol in the process.

In a 360-day calendar the solstices and equinoxes are 90 days apart, analogous to how a right angle measures 90 degrees in a circle. The circle of the year makes a lot of sense.

William Neil pointed out the following parallels in <u>How We Were Made</u>, (Oracle Books 2010):

360 feet = 4320 inches.
The Sun's radius is 432000 miles (99.8%).

360 yards = 1080 feet.
The Moon's radius is 1080 miles (99.9%).

1080 feet = 12960 inches.
The Earth's precession period is traditionally reckoned to be 2 x 12960 years.

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The Mayan Tun is a period of 360 days in the Tzolkin (long count) calendar. Even today, the 360-day calendar is utilized in a variety of modeling software to measure durations in modern financial markets.

However, the 360-day year is out of phase with the seasons. It needs to be adjusted with the addition of 6 days on leap year or 5 days on a regular year to keep in sync with our solar year. I think it is especially interesting that the gap would be precisely 6 or 5 days

(see The Honeycomb and the Apple).

The ancient Egyptian, modern Coptic (12 months of 30 days each), and French Republican calendars all use or used a 360 day year that has 6 or 5 days tacked on which are not part of any decan, decade, or month in order to sync up with the solar year.

In my reading of myth I speculate that the Earth once had an orbital period of exactly 360 days in the "golden age." There were no seasons then because the celestial equator was more or less parallel to the ecliptic. Therefore, the weather was constant with equal days and nights and humans lived in a lush equatorial "garden of Eden" where plants that are now annuals were probably then perennials. You can imagine why it was called a paradisiacal garden!

Whether due to comets striking or exploding above the Earth's surface, a near miss by what became the planet Venus according to Immanuel Velikovsky's Worlds in Collision (Dell 1950), or an advanced antediluvian technology gone wrong, the Earth's axis was cataclysmically tilted resulting in what we now experience as seasons.

After the cataclysm our orbital path was expanded slightly, making the year 365.242 days. The English foot must have been defined after the cataclysm because as I pointed out earlier, the number of feet in the Earth's equatorial circumference is 365.242 x 360,000 (99.99%).

In the cataclysm much of the ice melted causing the Great Flood, and as the massive loading of water on the planet shifted from North America and Europe to the Atlantic basin, Atlantis sunk and most of civilization was drowned by the now much higher global sea level.

The Great Year

The Earth rotates on its axis once every day and of course revolves around the Sun every year but there is a much longer cycle called the *Great Year*. Noticing this longer cycle requires record keeping over many generations because its period is so long. In fact, the average human life span is approximately one day in the Great Year.

To understand the Great Year, you need a few simple astronomy fundamentals under your belt. The apparent path that the Sun takes through the stars is called the ecliptic. The planets (Mercury, Venus, Mars, etc) appear to travel along the ecliptic because this is the plane in which these planets and the Earth orbit the Sun. The stars along the ecliptic are grouped into constellations called the zodiac (Aries, Taurus, Gemini, etc).

Astronomers and navigators have for millennia imagined a transparent celestial sphere surrounding the Earth at some arbitrary large scale. The Earth's equator is projected outward onto the celestial sphere and this is called the celestial equator. The fixed stars are also imagined to be projected downward onto the surface of this transparent celestial sphere.

The celestial equator is currently tilted 23.4 degrees with respect to the ecliptic. This tilt causes the seasons as the Earth travels along its orbit around the Sun.

William Neil noticed the following interesting numbers arising from the Earth's tilt angle (also known as the obliquity) of 23.4 degrees:

The Tropic of Cancer is 66.6 degrees from the North pole (90 - 23.4 = 66.6) and the Tropic of Capricorn is similarly 66.6 degrees from the South Pole.

The Arctic and Antarctic circles are 66.6 degrees from the Equator.
The Earth's average orbital speed is 66,666 miles per hour (99.9%).

The Sun is in the same plane as the celestial equator on exactly two days a year: the equinoxes, when day and night have equal length. We have vernal and autumnal equinoxes around March 20 and Sept 22, respectively.

Over many generations, observers noticed that the Sun was slipping backward through zodiac signs on the equinoxes. This slip is retrograde (backwards) to the direction the Sun moves every day through the zodiac. However the slip is so slow that it literally takes an age (approximately two millennia) to move from one sign to the preceding zodiac sign. The phenomenon is called the *Precession of the Equinoxes*. We are currently nearing the end of

the age of Pisces and "it is the dawning of the Age of Aquarius." The entire cycle of the precession of the equinoxes is called the Great Year.

Traditionally, the equinoxes have been reckoned to precess about 1 degree every 72 years. Therefore 72 years x 360 degrees = 25,920 years which is the traditional period of the Great Year.

Neil also noticed that the New Jerusalem described in St. John's revelatory vision encodes some interesting numbers relating to the Great Year:

And the city lieth foursquare, and the length is as large as the breadth: and he measured the city with the reed, twelve thousand furlongs. The length and the breadth and the height of it are equal. -Revelation 21:16

The new Jerusalem describes a cube having a volume of 12,000 furlongs cubed which equals 1.728×10^{12} cubic furlongs.

Amazingly there are exactly 66,666,666.666... Great Years in 1.728×10^{12} years. Recall that a furlong is 660 feet. That is a lot of sixes to be just a coincidence.

Dividing 25,920 by 12 to find the number of years per zodiacal sign yields 2,160 years per age. It is interesting that the Moon's diameter is 2160 miles (99.9%) because that numerologically corroborates that an age, or month, of the Great Year resonates with our Moon. The Greek word *mene* (moon) is the root of the English words moon, month, and menstruation. Again we see how distance, as measured in miles, is synchronized with our Earth's orbital period measured in years through the digits 216. It is interesting that summer solstice in the Northern hemisphere and winter solstice in the Southern hemisphere occur on the 21st of June, or 21/6, and 216 = 6 x 6 x 6.

Sirius Does Not Precess

Walter Cruttenden (http://binaryresearchinstitute.com) has highlighted the salient fact that Sirius does not precess. He cites research done by physicist Jed Z. Buchwald and astronomer Karl-Heinz Homann revealing that the heliacal risings of Sirius stay phase-locked to the precession of the vernal point (the intersection of the celestial equator and the ecliptic) over thousands of years,

while all the other stars in the sky slip slowly backward. The implications of this observation are staggering.

Cruttenden realized that this means our Sun is in a binary system with Sirius. Binary stars are gravitationally bound to each other and revolve around their common empty center of mass. NASA's Chandra website (http://chandra.harvard.edu) reports that more than 80% of all stars in the universe are in multiple star systems containing 2 or more stars. Why not ours?

Pardon the pun, but this is a revolution in thinking. I see the Cruttenden revolution as akin to the Copernican revolution in terms of what it will ultimately do for philosophy.

Just before his death, Nicolaus Copernicus published <u>De Revolutionibus Orbium Coelestium</u> (1542) with a heliocentric cosmology explaining how the planets orbit the Sun rather than the Earth. Our assumed position at the center of the universe was eventually dethroned and we grew intellectually as a species. However, at the time the Pope forced Galileo to recant and suffer the rest of his life under house arrest for publishing his telescope observations confirming Copernicus was correct.

Mathematics is the alphabet with which God has written the universe. -Galileo

Cruttenden's Binary Companion Theory explains that the cause of precession is our solar system's motion relative to Sirius. The current lunisolar theory in science textbooks attempts to explain precession as the Sun and Moon tugging on Earth's less than 1% equatorial bulge. There are numerous problems with the lunisolar model that Cruttenden systematically addresses and resolves with the Binary Companion Theory.

The Binary Companion Theory also elegantly explains why the precessional rate has been observed to be speeding up. Our systems follow elliptical paths in the binary arrangement so we accelerate as we come into closer proximity to our common center of mass and decelerate as we move away from it. Periapsis is the point where our systems are closest together and Apoapsis is the point where they are the farthest apart in the Great Year.
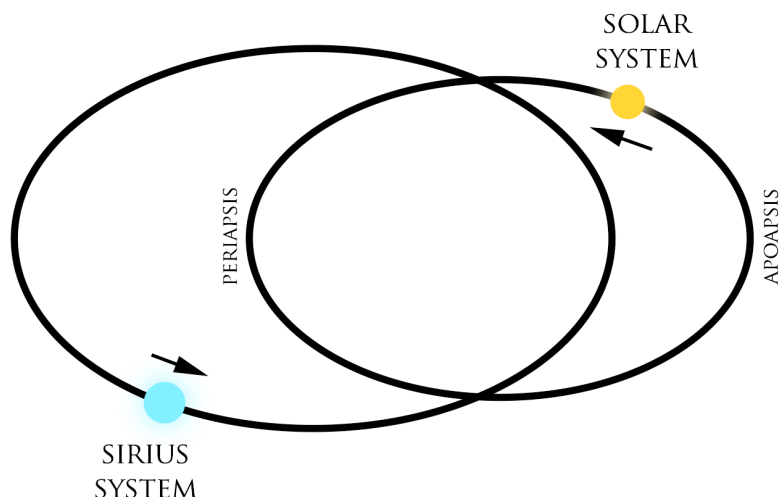
Thankfully, Cruttenden doesn't appear to be suffering the same fate as Galileo although most astronomers and astrophysicists haven't accepted the theory. The next generation will grow up with minds open to models that better describe the structure of reality. Thomas S. Kuhn's Structure of Scientific Revolutions: 50th Anniversary Edition (University of Chicago Press 2012) shows that this is in fact how scientific revolutions occur rather than via established scientists changing their opinions during their professional careers.

To me, one of the most interesting aspects of this mind-opening binary theory is of course the numbers. Cruttenden has found that the average period that best fits the data is a *24,000-year* cycle of precession.

Swami Sri Yukteswar (1855-1936) is probably best known as the great sage and teacher of Paramahansa Yogananda as written in his Autobiography of a Yogi (Self Realization Fellowship 1946). Yukteswar claimed that the Great Year is 24,000 years, and this was much later published in The Holy Science (Self-Realization Fellowship 1990). Through meditation he obtained not only self-realization (enlightenment) but also detailed scientific knowledge.

I have much to say about 24 in Key Numbers. 24 is a number that resonates with time, the precessional cycle, the Fibonacci

sequence, Phi, and prime numbers, among other things.

The minimum precessional rate is 72 years per degree, which produces the traditional figure of 25,920 years for the full cycle. The rate of precession used to be 72 years per degree and will be again when our system reaches *apoapsis*, the greatest distance we reach from Sirius in our mutual orbits. The maximum precession rate will be 60 years per degree at periapsis. The relationship of the minimum to maximum rates of precession is 72:60 or 6:5.

The average rate of precession for the Great Year is *66.66 years per degree*.

Consider that the force that binds Sol and Sirius in a binary system is gravity. It turns out that Isaac Newton's gravitational constant is:

$G = 6.666 \times 10^{-11}$ cubic meters per kilogram second squared.

This new, more accurate measurement of Newton's gravitational constant was reported in the January 5, 2007 issue of Science ("Atom Interferometer Measurement of the Newtonian Constant of Gravity" (by J. B. Fixler, G. T. Foster, J. M. McGuirk, and M. A. Kasevich).

The value of $G = 6.666 \times 10^{-11}$ cubic meters per kilogram second squared fits within the narrow tolerance of standard error in the atom interferometer experiment and it is my opinion that this is the "correct" value, based on the repetitive single digits.

It is uncanny how distance, mass, and time as encoded in the gravitational constant resonate with repetitive single digits through SI units.

Isaac Newton was more of an alchemist than a scientist judging by how much he wrote on each subject. He tried to calculate G from the size of the Earth encoded in the dimensions of the Great Pyramid and Solomon's temple and was very close to discovering the key, but he was ultimately unsuccessful in this effort. The Great Pyramid does encode the size of the Earth through the number 432. See Number Patterns for this discussion.

Newton devised the first ever temperature scale (called Newtons) that went from 0 degrees for freezing ice to 33 degrees for boiling water. He seemed to know the significance of the key number 33 and would be probably be pleased with the repetitive single digits

in the modern calculation of G.

Perhaps Gravitation is another definition of the freemasons' mysterious G at the center of their compasses and square emblem?

Sirius is the brightest star in our sky because it is so close, bound to our Sun in a binary relationship. How could we miss this until now? A tribe in Mali called the Dogon have known much about Sirius for thousands of years but we have largely ignored what they have had to say, assuming that their stories are just part of the "primitive" mythological imagination.

The Dogon

When Robert Temple published <u>The Sirius Mystery</u> (Sidgwick & Jackson 1976) it challenged belief systems because it revealed that the Dogon have preserved detailed astronomical knowledge that Sirius is actually itself a binary star that gravitationally binds together Sirius A (a bright star) and Sirius B (a dense dwarf star). This knowledge wasn't scientifically verified until modern times with the advent of powerful telescopes. The following question is well-worth considering, "How could the Dogon have known this?"

Laird Scranton has taken up the case in recent times and greatly expanded the discussion about the wisdom preserved by Dogon priests with the publication of his books <u>The Science of the Dogon</u> (2006), <u>Sacred Symbols of the Dogon</u> (2007), and <u>The Cosmological Origins of Myth and Symbol</u> (2010).

Scranton shows that the modern Dogon culture has numerous close parallels with pre-dynastic Egypt, going back before the invention of hieroglyphic writing. It appears that millennia ago a group of Dogon split off from Egypt, possibly from Nabta Playa in the south of Egypt and settled to the northwest in climatically inhospitable Mali, expressly to ensure the preservation of their knowledge through time.

The knowledge preserved by the black-skinned Dogon correlates with what Robert Bauval is saying in his fascinating book <u>Black Genesis</u> (Inner Traditions 2011). Namely that an advanced black-skinned tribe inhabited Nabta Playa long before Pharaonic Egypt and that they gave rise to the dynastic Egyptian civilization.

Dogon myths tell the story of how they were given the art and

science of civilization by advanced beings they refer to as "teachers." Scranton shows that the Dogon word for teachers is phonetically the same as the Egyptian word for Sirius. Interestingly, the Dogon claim their teachers were spiritual rather than physical creatures. To me that suggests higher-dimensional communication rather than extra-terrestrial colonization.

Another Dogon story says eight Dogon individuals were chosen to be educated by the teachers and then these eight in turn educated the rest of their tribe. This is echoed in the Bible story of Noah, his wife, their 3 sons, and their wives being the sole survivors of the flood waters (4 men and 4 women).

The Dogon's myths and drawings encode much about the structure of reality that parallels what modern physicists have discovered about the atom, string theory, astronomy, and even biology. For example, Dogon drawings and stories have amazing parallels to genetics and sexual reproduction. This is the subject of Chapter 8 in Scranton's The Science of the Dogon.

After having my own mind opened to how the teachers' stories work on many levels, encoding scientific concepts that even the priests themselves might not be aware of, I made this visual connection between cell division and a 3,000 year old papyrus illustration of the ancient Egyptian creation myth. The myth begins with the world arising as a circular mound in an infinite sea. The sun is shown rising and setting with eight inherent primeval qualities of the water, represented as the 4 male and 4 female principles referred to as the Ogdoad. The Ogdoad correlates strongly with chromosomes' appearance in anaphase during cell mitosis. The creation myth encodes biological and cosmological concepts in a story people can understand and transmit through generations, even if they are not aware of all its levels of meaning.
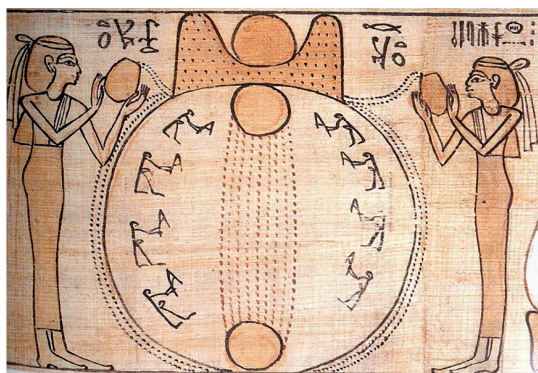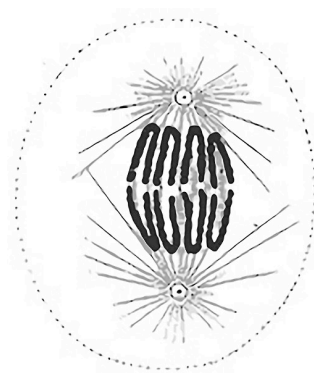
MITOSIS: CELL BIRTH   **EGYPTIAN ZEP TEPI: SUNRISE AT CREATION**

The birth of the cell (illustration on the left from <u>Gray's Anatomy</u>) has a striking resemblance to the mythological time of creation, called Zep Tepi. Scholars tend to dismiss parallels like this because they know that the ancient Egyptians did not posses the microscope so they logically assume that ancients could not have knowledge of the cell. Although I agree that it is unlikely that the ancient Egyptians were consciously aware of cell biology, they nevertheless appear to have been carriers of this knowledge via the complex encodings given to them by the teachers.

If the teachers are from Sirius, they would presumably have advanced technological knowledge and the wisdom to encode it in viral stories having symbols which humans would naturally and faithfully propagate through time. Perhaps the teachers were hoping their encoded knowledge would one day help us to advance our species when we became consciously aware of the deeper levels of encoded meaning.

Putting together the layers of encoding in the papyrus hints at a deeper message: the Sun is alive, just as cells are; as above, so below.

Rupert Sheldrake, English scientist and author, has this to say on the subject:

I think much good will come from recovering a sense of the life of the heavens. We are coming to see the Earth, Gaia, as alive. I think we also have to take seriously the idea that the Sun is alive and conscious. If one wants a scientific rationale for this, it comes

ready to hand through the discoveries of modern solar physics. We now know that the Sun has a complex system of magnetic fields, reversing its polarity every eleven years, associated with the sunspot cycle. With this underlying rhythm of magnetic polar reversals are a whole series of resonant and harmonic patterns of magnetic and electromagnetic change - global patterns over the surface of the sun of a fractal nature; patterns within patterns, highly turbulent, chaotic, sensitive, varied and complex. As electromagnetic patterns within our brains seem to be the interface between the mind and the nervous system, here we have a parallel in the physical behavior of the sun. It is perfectly possible that the sun has a mind which interfaces with the solar system itself as an organism. This is largely what astrology has concerned itself with (see http://bit.ly/U6EaXr).