TIME

COSMIC TIME

GEOLOGIC TIME

EVOLUTION

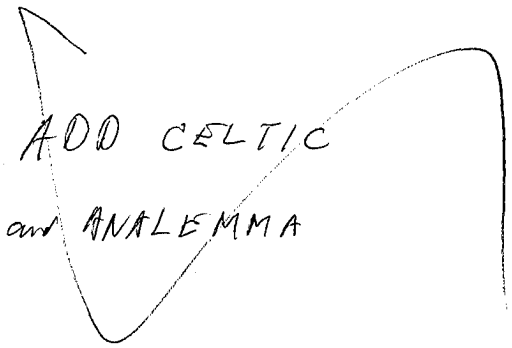
CALENDARS

WESTERN

CHINESE

HINDU

CELTIC


ADD CELTIC
and ANALEMMA

TIME

THEORIES OF TIME

- CHANGE
- LINEAR AND CYCLICAL TIME
  - Chronos and Kairos
- DIRECTION OF TIME
  - Second Law of Thermodynamics
  - Causalism and Finalism
- DETERMINISM SPECTRUM
  - Determinism, Fibonaccian, Markovian, Existentialism
  - Hopi views
- PHYSICAL TIME
  - Matrices
  - Space-time
- SUBJECTIVE TIME
  - Dental Seconds
  - Civil Time, Client Time, Prussian Time
  - Jet lag

MEASUREMENT OF TIME

- LINEAR TIME
  - Cosmic Ages
    - Hubble Time
    - Geologic Time
    - Evolution
  - Cultural Ages
    - Astrological Ages (Pisces, Aquarius, etc)
    - Axial Periods
    - Mayan Suns
    - Astronomical Julian Days
- CYCLICAL TIME
  - Astronomical Cycles
    - Precession, Elongation, Apsides
    - Year, Month, Day, Analemma
  - Clocks
  - Calendars
    - Western, Liturgical Years
    - Celtic
    - Chinese
    - Hindu
    - Mayan
  - Keplerian Cycles
    - The Week, CHON

THE BOOK OF TIME

1 The Experience of Time
1.1 Psychological or Subjective Time
duration and interval, 'during and until'
1.2 Physical or Objective Time
2 The Species of Time
2.1 Dyadic Times
2.1.1 Cyclical / Linear
2.1.2 Secular / Liturgical
Sky time and Earth time
2.1.3 Eliade: Sequential / Primordial
The 'Moment' vs Eternity
2.1.4 Natural / Empathetic
2.1.5 Milne:
2.1.6 Hinton:
2.1.7 Kepler: Second Law / Third Law
2.1.8 Velocity / Density (light / heavy)
2.1.9 Figure / Ground
Slow and Fast universes,
Parmenides / Herakleidos
2.2 Triadic Times
2.2.1 Bennett: Successive / Eternity / Hyparxis
2.2.2 Ouspensky:
2.2.3 Rifkin: Natural / Factory / Computer
2.3 Other Times
2.3.1 Minkowski: Space-time
2.3.2 Monastery time / Clock time Multiple Times
2.3.3 Dunne: Infinite Regression
3 The Parameterization of Time
3.1 Past, Present, Future
3.2 Now, Decker, Determinator Velocity of NOW
3.3 Cycles and Rhythms
3.3.1 Period, Frequency, Amplitude, Phase The NOW iris,
3.3.2 Harmonics and Timbre
The relation to music spatial curvature
3.3.3 Coherence (phase) and Commensurability (frequency)
3.3.4 Continuity
3.4 The 'Drummers'
3.4.1 The Sun, The Moon, The Earth
The Year, The Month, The Day
3.4.2 Longer Cycles
Precession, Inclination, Eccentricity
Galactic Rotation, The Big Bang
3.4.3 Shorter Cycles
Atomic times, Planck time
3.4.4 CHON, the ubiquitous zeitgeber, Infra-time
4 The Measurement of Time
4.1 The Calendar
4.1.1 The Seasons
4.1.2 The Analemma
4.2 Clocks
4.2.1 The divisions of the day
Civil, Military, Maritime, Liturgical (Monastic)
5 Models and Theories of Time
5.1 Determinism, Probalism, Teleology
causalism / finalism synchronicity
5.2 Predictability and Computability multi-causal threads
5.3 The arrow of time
The second law of thermodynamics
Clades
Hoyle's 'cone-ladder'
5.4 Charge-Parity-Time CPT

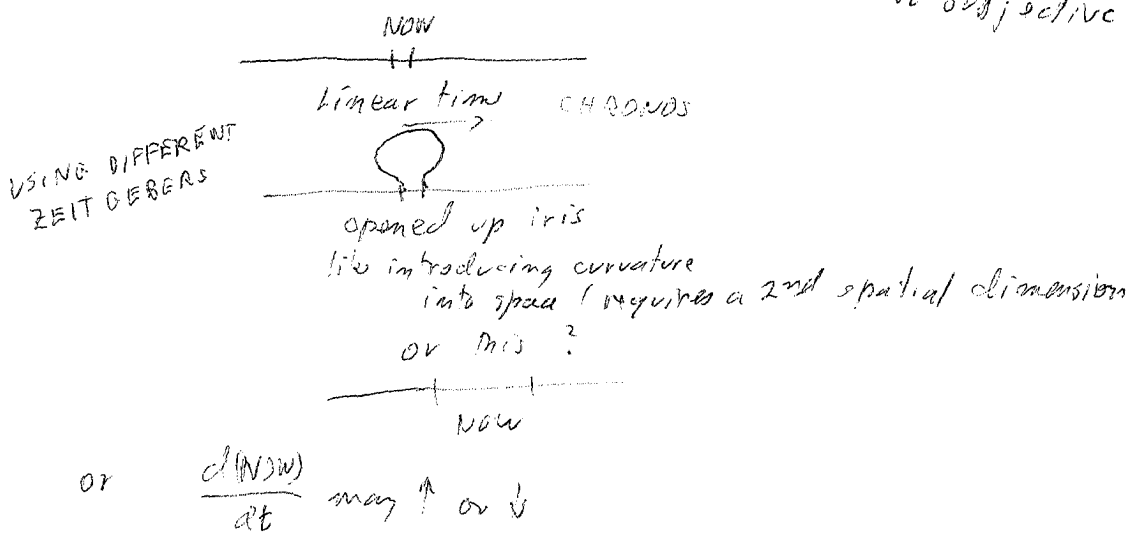
RECURRENCE and MEMORY
Recognition and Recollection

TIME

The velocity of the present (NOW)
The span of the present (NOW)
The resolving power of the present (NOW)

~ ∃ a temporal iris

Model
To account for subjective time



or $\frac{d(NOW)}{dt}$ may ↑ or ↓

TIMEREF1.WP5 DISK: JOURNYEARØ2 January 27, 199Ø

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TIME1.WP5 DISK: JOURNYEARØ2 JANUARY 4, 199Ø

Some notes on Time, Cycles and Spirals

In our ageing and in the laboratory we experience time as linear--the moving finger writes, and having writ moves on. But in the seasons and in the manifestations of life itself we experience time as cyclical--plants sprout, grow, mature and die then are reborn, sprout, grow, mature and die. All things animal, vegetable, mineral--whether they are humans, trees, mountains or even stars--age and decay, yet all are reborn and move endlessly through the cycle of birth and death. The linear facet of time appears to derive from the pervasive presence of the Second Law of Thermodynamics while the cyclical facet seems to originate with the forces of plenitude and preservation.

One device which we have employed to represent phenomena subject to these two aspects of time is to map them onto a continuous curve, such as a spiral or helix which combines both line and circle. This is adequate so long as only continuous processes such as growth and decay are involved and nothing new is created. But spirals and helices cannot do justice to creation, emergence or to transitions between levels. Continuity is the essence of a reality and continuity restricts us to a single level or single reality. In order for two levels or realities to interact there must be some break in continuity. But in our experience of time do we not also experience moments of discontinuity? Those instants of time detached from the steady advance of the clock in which our consciousness is blanked or in which our consciousness is released and we partake of eternity.

We have a physical example of discontinuous action between levels in the Bohr model of the atom. In this model electrons are represented as particles which planetwise orbit the atomic nucleus. But energy may leave or enter the system altering the orbiting configuration and this always occurs in a discontinuous manner. Upon interaction with energy to or from the outside, the electrons do not spiral, but jump from one orbit to another, moving discontinuously from one continuous configuration to a different continuous configuration. It is this type of activity that is precluded in spiral and helical representations of change. While a spiral may provide an appropriate model for growth ocurring through seasonal cycles or even a model for adaptive evolutionary change, it does not model transformation, emergence or extinction or events involving interaction with other levels. If left alone a system may move on a circle or spiral, but if something is incarnated from outside--such as an hv packet of energy as in the case of the atom--a transformation results.

We may further appeal metaphorically to the atom. In order for an interaction to take place, the system and the incoming energy must be in tune. The frequency, v, in the energy packet must match the frequency of the electron orbit or no transformation can take place. And so it is with all change beyond growth and decay. There must be a tuning between the seed, psyche, or soul, and the incarnating life essence, information, or divine spirit before transformation can take place.

TIME

One of The Species of 2 kinds of time approaches to

TIME2.WP5

~~SPTIME01~~.WP5 DISK: February 23, 1990

SOME THOUGHTS REGARDING KEPLER'S LAWS

I have long felt that Kepler's laws contained far more clues to the structure of the natural order than the important relations that Newton constructed out of them. In accord with Gerard's dictum for remodularization, it may be appropriate to look at Kepler's laws from some different perspectives:

In the second law we have,
That in a single orbit area swept is proportional to time or
R^2 is proportional to T
In the third law we have,
That in comparing orbits volume is proportional to time squared or
R^3 is proportional to T^2

Setting aside, for the moment, how Newton restructured Kepler's laws to produce the universal law of gravitational attraction, let us say that putting the second and third law in juxtaposition as above seems to point to a dimensional paradox. Perhaps we are talking about different kinds of time but all symbolized by T. Or maybe we are talking about different kinds of space but subsumed under the symbol R. Or both. Or as Newton would have it, the law governing the motion of one object is not talking about the same thing as the law comparing the motions of several objects.

In studying the rotation of galaxies, we find that inner portions seem to rotate like solid bodies while outer portions rotate in accord with Kepler's third law. But solid body rotation is what is to be expected if the second law applies in comparing orbits, for points on wheels sweep out equal areas in equal times. The second law seems to govern single and closely connected bodies, while the third law seems to apply to less connected bodies. Recalling a classical and medieval view, we might say that the second law governs motions of bodies on the same level while the third law governs motions of bodies on different levels. Bodies on the same level are using the same clock while bodies on different levels are using different clocks. We are accustomed to describing all motions in terms of our own clock, but this is the source of the paradox, for each 'level' has its own drummer.

We are not talking about the relation between the clocks of observers in relative motion as described by Einstein's special theory. In that theory there is one dimension of time which is modified by the Lorenz transformations when there is relative motion. Here we are trying to sniff out the possible existence of a completely different time dimension--an orthogonal time.

The time in the 2° law, or this is inertial or gravitational time,
The time in the 3° law, is dual. there is inertial, and time
proportional to R, which we might call Radius-time

$\frac{GM}{R} = \frac{(2\pi R)^2}{(T)^2} = v^2$ Two kinds of space: extension and separation
radius time goes with the separation
inertial time goes with the extension

Extended bodies share the same inertial time $T \propto \rho^{-1/2}$ density time
separated bodies must be synchronized by radius time $= \frac{R}{c}$ velocity time

or are these different parts of a temporal spectrum
Cosmic time and Gravitational time?

NOTE29.WPD November 9, 2004

BASIC TIMES AND FREQUENCIES

[UPDATE BASEFREQ.WPD, 2002-11-27, # 62]

ITEM	FORMULA	LOG_{10} Seconds	Hr-Min-Sec	HERTZ
electron Schuster	$2\pi\sqrt{(r_e^3/Gm_e)}$	-0.918814	0.120555 s	8.294954
baryon Schuster	$2\pi\sqrt{(r_e^3/Gm_p)}$	-2.550769	0.002813 s	355.442210
hydrogen Schuster	$2\pi\sqrt{(a_o^3/Gm_p)}$	+3.859735	2h 0m 39.94 s	0.0001381
earth Schuster	$2\pi\sqrt{(R_e^3/GM_e)}$	+3.704223	84m 20.84 s	0.0001976
earth Schumann	$2\pi R_e/c$	-0.874433	0.133526 s	7.489158
earth Schwarzschild	GM_e/c^3	-10.829925	1.479364×10^{-11} s	6.759662×10^{10}
earth Schwarz2	$2GM_e/c^3$	-10.528896	2.958721×10^{-11} s	3.379839×10^{10}
orbit Schumann	2π(A.U.)/c	+3.496286	52m 35.35 s	0.0003189
earth rotation ⊙		+4.9365137	86400 s	1.157407×10^{-5}
earth rotation ☆		+4.9353263	23h 56m 4.09 s	1.160576×10^{-5}
earth geosync*	$2\pi R_g/c$	-0.052906	0.885307 s	1.12955
neutron star	$\alpha\mu S\ t_p$	-2.785412	0.001639 s	610.1154
sun Schuster	$2\pi\sqrt{(R_s^3/GM_s)}$	+4.000163	2h 46m 43.75 s	0.00009996
sun Schumann	$2\pi R_s/c$	+1.163661	14.576760 s	0.068602
Sun Schwarzschild	GM_s/c^3	-5.307523	0.000004928026	203012.6031
Sun Schwarz2	$2GM_e/c^3$	-5.006494	0.000009851583	101506.5343
Univ Schuster	$\sqrt{(R_u^3/GM_u)}$	+17.456065	9.056346 gyr	
Univ Schumann	R_u/c	+17.456065	"	
Univ Schwarzschild	GM_u/c^3	+17.456065	"	
½ Univ			4.428173 gyr	
3/2 Univ			13.584519 gyr	

* This is the Schumann period at the distance R_g, = 42241 km (26,247 miles) from the center of the earth. The earth's equatorial radius is 6378 km, ∴ the synchronous orbit level is 35,863 km (22,284) miles above the surface.

Notes:

(earth Schuster)^4 = (earth rotation ⊙)^3 , 14.817 = 14.810 $\Delta = 0.007$

(earth Schuster)/(hydrogen) = 0.699017 or 7/10 $\Delta = 0.001$

(log day) = (log hydrogen) x (log 19) 4.9365 = 4.9357 $\Delta = 0.0008$

(log hydrogen) = (log earth Schuster) x (log 11) 3.860 = 3.858 $\Delta = 0.002$

The Compton wavelength $\lambda_C = h/2\pi m_e c$; $\log \lambda_C = -10.413234$ [cm]; $\log f_C = \log c/\lambda_C = 20.890055$ [hz]

03-03-08

GOLDEN DAYS

Golden Section:

$\frac{S}{L} = \frac{L}{S+L}$, $Y = S+L$, $L = Y-S$, $\frac{S}{Y-S} = \frac{Y-S}{Y}$, $S^2 - 3SY + Y^2 = 0$

$S = \frac{3 \pm \sqrt{5}}{2} Y$ $\quad S = 0.381966\,Y = \varphi^{-2} Y$

or $= 2.618034\,Y = \varphi^{2} Y$ where $\varphi = 1.618034$ The golden ratio

USING $S = \varphi^{-2} Y$ with $Y = 365.25$ get 139.51309 days for S and 225.73691 days for $Y - S = L$

For July 28 + 139 days forward → DEC 14, Jul 28 − 139 DAYS back → MAR 11

+ 226 days → MAR 11 −226 DAYS → DEC 14 13/4

For Dec 13 forward MAY 2 and JULY 28

For Mar 11 forward JULY 28 and Oct 22

$S = 139.513$ days

$L = 225.737$ days

For Sep 11 forward JAN 28 and Apr 24

Sep 11 + (L−S) = Dec 7

+ L Mar 3

− (L−S) Jun 18

− L MAR 24

July 28 + S = Dec 14 + S = May 2 July 28 + 2S = May 2

July 28 + L = Mar 11 − S = Oct 22 July 28 + L − S = Oct 22

$S + L = Y = 1$ $\quad 2S = -(L-S) = S - L$

$S = -L$

$S + L = 1 \; (= Y)$

$n \cdot Y = 1$

July 28 + (L−S) Oct 22

+ L Jan 16

− (L−S) May 2

− L Feb 5

$3(L-S) = 259$

cf. Mayan 260

$L - S = 86.22382$ days

$\times 2 = 172.44764$

$\times 3 = 258.67146$

$\times 4 = 344.89528$

$\times 5 = 431.1191$

$\times 6 = 517.34292$

$\times 7 = 603.56674$

EVOLUTION

BRAHMA02.WP6 June 25, 1997

BRAHMA TABLES II

Four interlocking evolutions take place governed by an algorithmic or Pythagorean ground. This ground is extracted from the Sunyata by Varicona and made SAT by Aksobya. It is the source of the basic homogenizing dialectics, recalling all that exists to return to primal oneness. The basic counter dialectics driving to variety or complexity are TAO. All worlds emerge at the interface of SAT and TAO.

TABLE OF GROUND AND FOUR EVOLUTIONS

GROUND	COSMIC	BIO	CULTURAL	SPIRITUAL
EPISTEMOLOGY	PHYSICAL SCIENCE	BIO SCIENCES	SOCIAL SCIENCES	RELIGIONS
CAUSAL MODE	DETERMINISTIC	OPPORTUNISTIC	TELEOLOGICAL	FINALISTIC
AXIOLOGY	WHAT IS TRUE	WHAT IS VALID	THE IMPORTANT	THE LONGED FOR
MIND	COSMIC	GLOBAL	COLLECTIVE	INDIVIDUAL
THE DYNAMIC	CONSERVATION PRINCIPLES	NATURAL SELECTION	DISCOVERY AND CREATIVITY	THE SEARCH
DRIVEN TOWARD	EXPANSION	VARIETY	HEGEMONY	ACCESS
PART TO WHOLE RELATION	FRACTAL	BOTH PRINCIPLES OF PLENITUDE	HIERARCHICAL	HOLOGRAPHIC
THE REPETITIVE	CYCLICAL PROCESSES	RHYTHMS, MITOSIS	GROWTH AND DECAY DECLINE OF WEST	REPENTANCE, REINCARNTION
THE ITERATIVE	ELEMENT CREATION	SEXUAL	EDUCATION	METANOIA
THE RECURSIVE	PART --> WHOLE	CELLS ⊃ WHOLE	4-FOLD PARALLELS	RE-ENTIFICATION
REGRESSION	FRACTAL	FOOD CHAIN, PARSITES	HIERARCHY, CLASSES, CASTES	ONENESS, ENLIGHTENMENT

EVOLUTN1.WPD January 10, 1999

EVOLUTION AS CYCLIC PROCESS

In the five successive extinctions of bio-history, the highest forms that evolved in each case disappeared, yet the bio-system does not return to square one. Each cycle of extinction/radiation leads to organisms of greater complexity, yet the genomes of the highest forms are not preserved. What then is preserved in the evolutionary process that is transmitted from cycle to cycle that enables evolution to reach new levels of complexity? What ingredients are enhanced at each cycle? What inhibitors are removed? Is it the power of self-organization that is enhanced? A power that allows more rapid development. Is it that greater variety exists and variety is the key to complexity? What characteristic, aside from complexity (which is not satisfactorily defined), increases from cycle to cycle? May we say that it is consciousness?

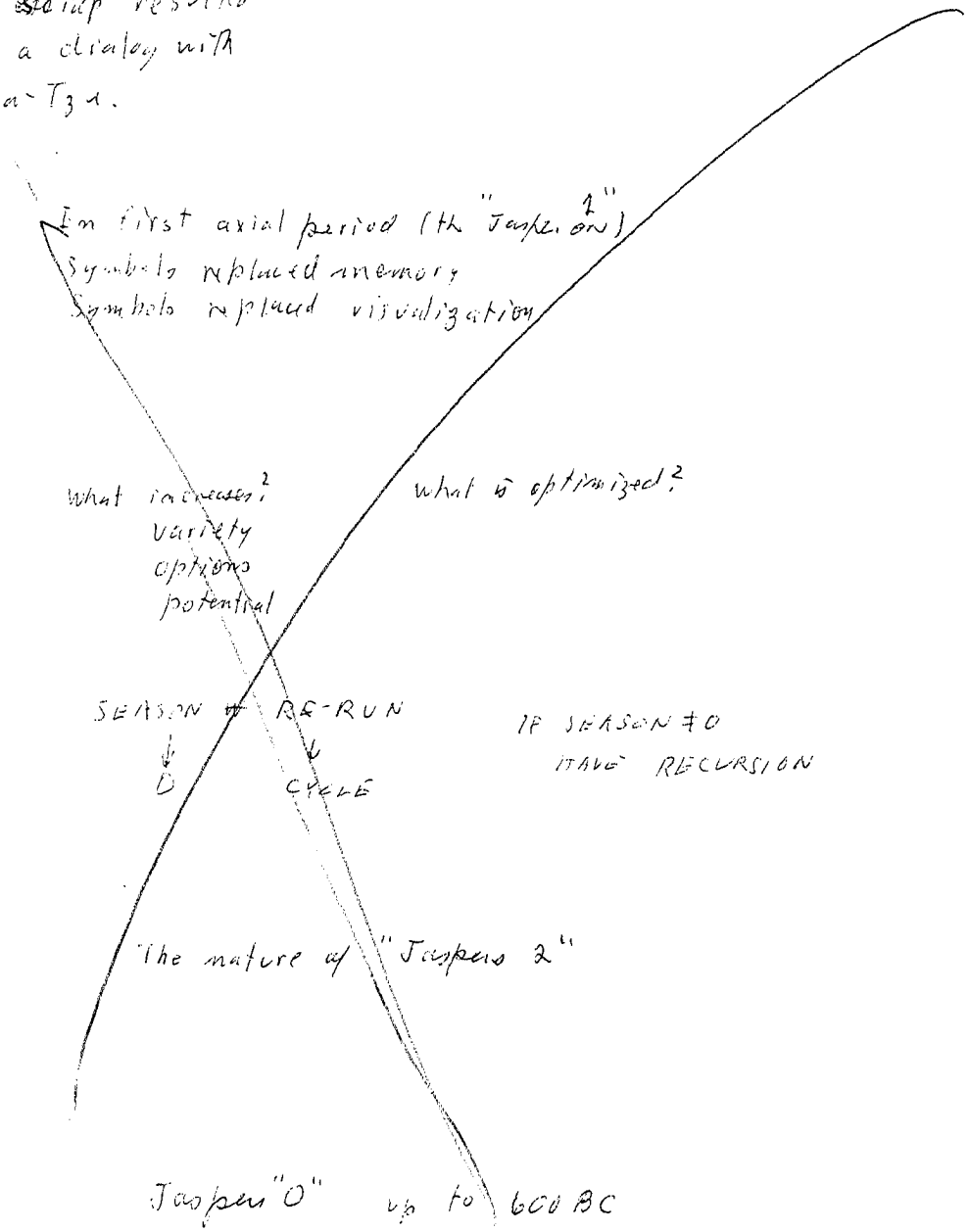
And turning to cultural evolution, what causes an extinction? What is lost and what is preserved? The great cultural extinction/radiation of c 500 B.C.E. (Jasper's Axial period) appears to have been caused, not by an asteroid, but largely by the introduction of writing. The effect of this was the liberation of the intellect from the necessity of memorization and oral transmission. The preservation of the culture and its records could be trusted to writing and human mental activity could turn from its focus on memory to focus on imagination resulting in enhancement of creativity and innovation. This has resulted in accelerated cultural change during the past 2500 years leading us now to a new cycle of extinction/radiation. The 20th century marks another axial period. We suspect that it is writing and the written record that is itself now being replaced. This time the "asteroid" of extinction is the computer. the internet Such facilitating powers as hypertext and morphing extend (or possibly replace) imagination. Hypertext allows the permuting of linkages and associations. Morphing allows the permuting of images and forms. If a world view is basically a set of mutually supportive associations and images, then instead of a single world view the computer can construct innumerable alternative sets of associations and images and create for us a smorgasbord of perspectives. The age of one solution, one answer, one ontology, one epistemology, one theology, one science, ...is ending. In the next radiant, multiple approaches and paths will emerge. The human intellect will again change focus, this time not from memory to imagination, but from imagination to evaluation. We leave the mono-world of "this is how it is" and enter the multi-world of "if this, then this". Our human task, not ascribable to computers, will be how and which world do we select?

The growth of potential will exceed that of realization
w. H. Kunnes Reality has outstripped experience

What commonalities are perceived in all of this? The ever increase in variety seems to be one factor operating in both bio and cultural evolution. And variety provides the building blocks both for complexity and for more variety. And possibly an on going increase in consciousness, an entity that we may not view as "a thing out there" because we ourselves are part of it and it a part of us.

no, cultural evolution tends ↔ homogeny

This scrap resulted from a dialog with Sha-Tzu.



EVOLUTION: THE LARGER PATTERN

For Darwin to have entitled his book, "The Origin of Species" was a great misnomer. While his form of evolution can nicely account for gradual adaptive changes that take place in a species due to contextual changes, it says little that is substantive regarding origin itself. Innovation is not accounted for. [We are here distinguishing between innovation and modification.] Whether origins are built into the life structure and process through some self-organizing principle--auto poesis; or come from some external source is presently not known. Fossil patterns seem to show that origins occur only at singular moments in time, usually after great extinctions. This would indicate that potential, seeds so to speak, ~~is~~ are always present, but can only develop when inhibiting forces are removed. A great extinction removes the inhibitors allowing the seeds to sprout, as when the mammalian seeds sprouted after the termination of the dinosaurs.

The stem cell is always present

cf Gurdjieff

But there are other anomalies. In the Darwinian model success leads to survival, failure to extinction. This is hardly what is observed in cultural and societal evolution. Success leads to stagnation, not evolution. Success is a trap resulting in stasis and an all out effort to preserve the status quo and prevent further change. Only an extinction can allow evolution to resume, as with the cretaceous-tertiary dinosaur extinction. Failure, on the other hand, may lead to self extinction, but may also lead to change. So it is those species that are not successful, but are teachable, able to change, that are the ultimate survivors.

cf 60's booklet on losers

We conclude that success is a trap, but that failure does not entrap us for failure can bring the challenge to learn and change. The cutting edge of evolution is not with the successful, but with the failures and only with those failures who are able to change. In the long run it is not the well adapted, the successful, who survive, it is the readily adaptable.

We look about and see many institutions that have stagnated. The fact that they are here and have stagnated implies, however, that at some earlier time they must have been a success. For example, up to our time Science has been successful, but it has become a trap. And if to continue, the future vehicle of human knowledge cannot be science, but some new epistemology more inclusive and more adaptive. As has been said, the human spirit will always escape from the traps that the human intellect creates for it. The essence of this human spirit contains something paradoxical: It is capable of a kind of success that is able to transcend success. It has discovered evolution's greater pattern.

also the military, some religions, and maybe the law as practiced

WHITEHEAD QUOTE

cf Gould's note: The subsequent highest species are never descendants of a previous highest species.

1996 63a

Se 96-55

EXTINCTIONS AND RADIANTS

The temporal pattern that extinction must precede radiant may not be completely accurate. In the cretaceous-tertiary case where the extinction was caused by the intervention of an outside agent, an asteroid, it appears that extinction clearly preceded radiant. However, there is evidence that dinosaur termination was in process and mammalian life existed prior to the asteroidal impact. The outside agent could more accurately be described as catalytic rather than purely causal, life speeding up a process that had already begun to take place, and which probably would have been effected over time even without the asteroid.

When we look at extinction/radiants in human history, we see certain catalytic events occurring but never a single catastrophic event to which extinction could be unequivocally attributed. For example, World War I could not be considered as causal of the extinction/radiant taking place in the twentieth century, but it was certainly catalytic. We see rather that the innovations of the radiant are themselves, positive feedback causes of the extinction. Examples are Darwinism, relativity, quantum reality ... challenging and replacing creationism, newtonism, objective realism. World War I played a catalytic role in accelerating the development and acceptance of innovations, but was more symptomatic that causal.

The Poets of WI tell what boo ext, not: The Glory of

Taking the view that an extinction/radiant is a complex interplay of untested emergent innovations and established adaptive traditions, abetted by catalytic events, let us put in juxtaposition the e/r of 600 B.C.E. and that of today.

This was called the "axial" period by Jaspers

The Extinction/Radiant of 600 B.C.

First we look for catalytic events, that disequilibrated the established social orders of the time. An innovation that appears both catalytic and causal was the spreading of writing with the invention of alphabets that took place about a century prior. This single development, changing oral traditions to written ones, is perhaps the central hallmark of the "Piscean Age" extending from 600 B.C. to the present. Oral traditions were not terminated, many oral lineages persist to this day, but the torch of knowledge was passed to the written word. (And today the torch is being placed to books themselves.)

There were two important results of the writing revolution:

First the erosion of proprietary knowledge. The mystery religions, the hermetic, the occult, all lost ground to the open, the communicable, the testable. Magic was replaced by science and priesthoods by academicians. Writing had the effect of democratizing learning, challenging authority, and discrediting

elites. It effected a clear distinction between myth and history, between fantasy and fact, between imagination and reality. The world was seen not to be capricious, but lawful. These innovations began some 2600 years ago but are still working themselves out.

However, there was another result of transference to the written word. It had the effect of truncating knowledge. Only that which was expressible in vernaculars, that which could be communicated to and by everyman was of value. "Higher" knowledge was denigrated and then denied.

Second, was the transference of divinity. No longer could the ruler, the pharaoh, be the possessor of divinity. Mortality and divinity were separated. Either the ruler was not god or we all had the same immortality he claimed. Both views prevailed. However, the old view held on in proclamation if not in belief. The Caesars claimed divinity. "O.K. if it stabilizes the state, make it official belief, but personally we don't believe it." The idea did not die easily. It continued not as the divinity of the ruler, but as the divine right of ruler. Most of this was put to rest with the French Revolution in 1789, but one anachronistic vestige of the divinity in a ruler was proclaimed in 1870 when Pope Pius IX pronounced papal infallibility.

Some specifics of the radiant:

DATE	PLACE	PERSON	INNOVATION
630-553	PERSIA	ZARATHUSTRA	GOOD AND EVIL
624-545	MILETUS	THALES	SCIENCE
611-546	MILETUS	ANAXIMANDER	MATERIALISM
604-531	CHINA	LAO TZU	TAO
600-529	MESOPOTAMIA	CYRUS	EMANCIPATION
599-527	INDIA	MAHAVIRA	AHIMSA
581-497	SAMOS	PYTHAGORAS	MATHEMATICS
563-483	INDIA	SAKIMUNI	DHARMA
551-479	CHINA	KUNG FU TZE	ETHICS
544-483	EPHESUS	HERAKLIDOS	TIME
C 540	ISRAEL	DEUTERO ISAIAH	MONOTHEISM

Notes: The Tao may be considered the path of the cosmos; the Dharma, the path of life. Ahimsa is non-violence. Pythagoras did not invent mathematics, he first recognized it abstract power. Heraklidos discriminated linear (historical) time and cyclical time.

SELECT01.WPD SEPTEMBER 17, 1999

Those Not Selected

Natural Selection–we are told picks those best fit to carry on the agenda. But it is not natural selection, it is auto selection. These selected themselves, yet they tell us that God chose them, or that the processes of nature selected them over others. But when we seek the identity of the selector, we discover that it is not God but they themselves who did the selecting. But it is not only that they select themselves as the agents, but they also selected the agenda. And the agenda they have selected is the Principle of Plenitude–conversion of all into their own likeness. This is homogenization! And prunes the branches from the tree, leaving a bare pole. Or at best terminates deviation while permitting some variation.

We know that self-reference is a process initiating existence. Self-selection seems naturally to follow self-reference. It thus seems we must find and support that which came into existence by some process other than self-reference. Those of a different origin may not be addicted to the Principle of Plenitude, but be dedicated to an agenda of proliferation of diversity. Only in diversity, the flourishing of many species and agendas, may the tree become a tree. Meantime, we must cherish our differences. We must unite with those rejected, with those decreed to being of no use to the agenda of the selected ones. We must seek alternate agendas to the Principle of Plenitude. For it has been said that Brahma created the world and its theme in order to listen to all the possible variations on the theme.

It is the responsibility of those rejected, those scorned, those disavowed, and those betrayed not to seek to destroy that which exists, but to seek and establish alternatives that will co-exist in symbiosis and harmony. If the agenda of the Principle of Plenitude with its adherents cannot fit into such a ensemble of diverse agendas, then according to workings of their own agenda they become extinct.

SINGPNTS.WP6 APRIL 24, 1998

SINGULAR POINTS: PART I

The nineteenth century physicist Clark Maxwell felt that one possible way to reconcile the determinstic world of the physicist with the ordinary world of human experience where free will and choice prevailed, was to postulate singular points in time during which deterministic chains were open and options were possible. Events causally followed events except during the open moments when selection among options became possible. Selections could be made randomly, teleologically, or by some contextual force.

Maxwell's approach has parallels in many traditions:

- The avatars of Vishnu: the world runs it course, but from time to time an avatar of Vishnu, such as Krishna, appears to make corrections.
- Dynasties of gods: Uranus reigns, then rebellion and the Titans take over, after a period again revolt and the Olympians seize power, their time ends and mankind comes to the fore.
- Paleontological extinctions and radiants: Since earth formed there appear to have been five major extinctions in which some catastrophic event temporarily or permanently altered the environment causing dominant species to become extinct and be replaced with a radiant of new organisms.
- Axial periods: Human history replicates paleontological history. From time to time there are "axial" periods when old patterns of thought and ways of viewing the world are replaced by a radiant of innovative concepts. For example, the period around 500-600 B.C.E. when Confucius, Lao Tzu, Mahavira, Buddha, Zoraster, 2nd Isaiah, Thales and Pythagoras were all alive at the same time. And perhaps the present century, when Freud, Jung, Einstein, Schrodinger, Gödel Dirac, Turing, von Neumann, Watson, Krick, ... were all alive at the same time. Wittgenstein
- Custodians of learning: Mystery religions in Egypt and Greece, The Academies of Pythagoras, Plato, Aristotle (from 500 B.C.E to 529 C.E.), The monastic orders (Benedictine from 529 C.E.) to the 15th Century. The universities from the 15th century to the present. Next the think tanks?

In an abstract way each period of development is representable by a sigmoidal function, an S-growth curve, in which there is a slow beginning, a period of great fruition, and a final diminishing period as the idea or institution's energy is depleted. When the curve reaches its upper asymptote, a singular point in time is reached. The torch is passed to a new curve. During the passage of the torch determinism is broken and choice, selection, innovation become possible. The envelope of all the S-curves displays the real picture of evolution.

cf. 1996 #63

RADIANT2.P51 DISK EMERGENCE 12/09/80
06/05/82
02/29/88

THE RADIANT OF 600 B.C.

Some 65 million years ago an event of tremendous impact occured on earth, frequently referred to by geologists and paleontologists as the "Cretacious-Tertiary Event". The fossil records show that scores of species suddenly became extinct, including the families of great dinosaurs. And following this catastrophy occurred what evolutionists call a radiant, the near simultaneous appearance of a large number of new species. The Cretacious-Tertiary Event constituted a major discontinuity in the evolutionary patterns of the biological history of the earth. In recent years a plausable explanation of the CTE has been forthcoming. Based upon the almost world wide presence of an anamolous thin layer of iridium at the cretaceous-tertiary interface and on the rarity of this element on earth and its greater abundance in meteorites, it has been surmised that the CTE might plausibly have been caused by a collision between the earth and a small asteroid. If this indeed be the case, then extraterrestial interventions have played as significant a role in bio-evolution as have the on going processes of natural selection and adaptation.

But the rock records show that there have been other radiants in paleo-history. We do not know whether they were also preceeded by asteroidal collisions or by some other terrestial cataclysm of global magnitude, or by any geophysical catastrophe at all. What is significant, whatever the cause, is the near simultaneous multi-appearance of new species during relatively short spans of history. The emerging species may subsequently be gradually modified through various kinds of interactions over millions of years. They may even become extinct. Evolution thus appears to involve two distinct processes: Emergence of new species, a rapidly occuring short time span phenomenon; and modification of species through selection and adaptation, a slow long term process which cannot of itself account for the origin of new species.

Cultural history exhibits some of the same phenomena found in paleo history. In reviewing the course of mankind's cultural development, not surprisingly, we again find the phenomenon of the radiant. Ideas and artifacts, whether or not they have fallen into desuetude, may suddenly be replaced by a new set of ideas and implements. While some of the old may survive to take a place alongside the new, all of the ideas--old and new--are gradually modified and refined until their relationships are adapted to a new order. The significant similarity between bio and cultural evolution lies in the fact that the process is one of simultaneous emergence of many new elements, rather than in sporadic innovation.

A cultural radiant, not unlike the cretacious-tertiary bio- radiant, seems to have occurred in the sixth century before the present era. There does not seem to be any identifiable global catastrophy associated with this incidence of cultural emergence, but an event of great psychological impact undoubtedly occurred between 600 and 500 B.C. We need look only at the spectrum of great innovative thinkers, all alive during this period, to validate this point.

THE 600 B.C. RADIANT
(All dates are B.C.)

ZARATHUSTRA	PERSIA	630-553
THALES	MILETUS	624-545
ANAXIMANDER	MILETUS	611-546
LAO TZU	CHINA	604-531
MAHAVIRA	INDIA	599-527
ANAXIMENES	MILETUS	586-526
PYTHAGORAS	SAMOS	581-497
SIDDHARTHA GAUTAMA	INDIA	563-483
KUNG FU TZU	CHINA	551-479
HERAKLIDOS	EPHESUS	544-483
DEUTERO ISAIAH	ISRAEL	c 540

Also Contemporaneous with the above, were the Founders of the Six Schools of Brahmanical Philosophy and the Sages of the Upanishads, and the Ramayana was reportedly written about this time (510 BC), all in India.

This was the era of many of the important Hebrew Prophets and the first commitment of the Bible to writing in Babylon and in Israel In the New World the period around 500 BC saw the rise of the Zapotec culture, the first advanced civilization in the Americas, at Monte Alban in southern Mexico.

No subsequent period of equal time, including even the European Renaissance, has produced so many great germinal thinkers and ideas. Only in the present century do we find anything comparable in innovative thought.

EMERGENCE

Emergence is not about resurrection, it is not about restructuring or metanoia. It is beyond cycles and repetition, beyond growth and iteration, beyond evolution and recursion. It is not possible within a system or organism, nor is it possible without what lies dormant but already within the system. It is effected only by the interaction of content and context through the removal of intrinsic inhibitors. Emergence is the result of an intentional apophatic and synthetic dialectic. A portion must be destroyed in order that a portion may emerge. An extinction must precede a radiant. Inhibitory templates must be identified and rejected before access to additional pages of the code book is possible.

The phenomenon of emergence has acquired widespread cognizance as a result of researches in bio-evolution. The origin of new species was seen to be beyond the actions of natural selection alone. While the biological processes are not fully understood, a compulsion for the production of organisms of increasing complexity is pervasively evident. As a part of life, this same compulsion is shared by human beings. This was made manifest 25 centuries before the study of emergence in bio-evolution in the life and teachings of the Buddha. In his vocabulary inhibitors were called 'illusions', living organisms were called 'sentient beings', and emergence was called 'enlightenment'.

Today the compulsion to break out to a higher level is again becoming manifest. Paradoxically, the central thrust of the present search for liberation comes from the same discipline that spent three centuries reinforcing the inhibitors--western science. The experience of science in the 20th century reversed the construction of the mechanistic, materialistic world view to which science had previously been devoted. The reality implicit in quantum mechanics proclaimed **illusion** to some of our most sacred cows. As all of this is currently being digested, many of the foremost researchers are searching for a transcendent worldview that will liberate them from the inhibitive assumptions that presently dominate our culture.

EMERG01.WP6 APRIL 3, 1997; rev May 1, 1997

ON EMERGENCE

EMERGENCE: THE CREATION OF SOMETHING NEW, IN BOTH ITS TEMPLATE AND ITS MANIFESTATION LEVELS. or THE DESTRUCTION OF INHIBITORS THAT FORBAD SOMETHING THAT ALREADY EXISTED IN ARCHETYPE OR TEMPLATE FORM TO BECOME MANIFEST.

We begin with a set of experiences, say those that are permitted by our biological structure. Soon some of these are emphasized (usually those with a large repetition rate) which results in the negation of others. This is like a rut in the side of a hill. The future flow of water will choose these existing ruts and develop them into gorges. Which is to say that whatever is selected operates through the Principle of Plenitude, confirming itself and blocking other choices. Or as the Law of Hardening puts it, whenever information concerning a particular area is extracted this precludes information being extracted from other areas. That is, SELECTION CREATES INHIBITORS, which is to say that selection destroys access to that which is not selected. This process results in an ever narrowing and increasingly static world.

We may paraphrase the Law of Hardening: ACTUALIZATION REDUCES POTENTIAL, this not only in the sense of fulfilling potential, but in actually recucing remaining potential. Ultimately when actualization through successive selections has completely exhausted potential, an extinction occurs. The inhibitors are destroyed and a new potential becomes available. With the slate wiped clean, a new emergence can occur. This is an iterative process: Emergence, Selection, Actualization, Extinction. Thus to keep the world from ossifying, the circumvention of the law of hardening involves the necessity of extinctions, mortality, and death. Something existing must be sacrificed in order that something not yet existing can be born,

The Duty of Śiva

WITHOUT AN EXTINCTION THERE CAN BE NO RADIANT.

[cf Rubik's CUBE]

The law of hardening and the emergence-selection-actualization-extinction cycle also apply to natural selection and bio evolution. Natural selection by itself cannot generate new species. Its ultimate results are to fulfill and exploit the possibilities inherent in what already exist, that is, to fill all the existing niches. Of course, it is not quite this simple, since the evolution of species also effects and alters the gestalt context in which the evolution is taking place, which in turn alters the path of evolution. In time the changes reach the boundaries of the potential. Then there is either stasis, no further evolution, (turtles), or an extinction occurs that liberates the configuration allowing for the emergence of new species.

DISK - MIX

ON COMPLEXITY

Simple systems are characterized by:

- Predictability
- Few interactions and feedback loops
- Centralized decision making (or control)
- Decomposability (reductionism)
- Linearity (substitutions)
- High imbalance in system-context interaction
- There exists the possibility of being objective, ie. discounting the influence of the observer.

EXISTENTIAL

Complex systems are characterized by:

- Unpredictability
- High level of interaction with the context
  (The number of components in the system is far less important than the degree on interaction of the components).
- Distributed decision making and control
- Non-decomposability
- Non-linearity
- Balance in system-context interactions
- Large role of the subjective

HISTORY

SURPRISE-GENERATING MECHANISMS

MECHANISM	SURPRISE EFFECT
Logical tangles	Paradoxical conclusions
Catastrophes	Discontinuity from smoothness
Chaos	Deterministic randomness
Uncomputability	Output transcends rules
Irreducibility	Behavior cannot be decomposed
Emergence	Self-organized patterns

from Complexification by John L. Casti

DISK MIX

COMPSUB.WP6

PARAGRAPHS FROM SUBSCRAPS ON COMPLEXITY

DATE[06-18-97
NUMBER[27
SUBJ[COMPLEXITY
NOTE[
NUMBER[
SUBJ[EVOLUTION
NOTE[Several modifications in our thinking about evolution have been proposed by Stephen J. Gould in his book, Full House.

One of these is the discarding of 'progress' as playing any role in evolution. Gould points out that the species that successively occupy the most advanced (in the sense of complexity) tail of the Poisson distribution representing the totality of species at any time, are not descendants of one another. The tail is successively taken over by diverse species having different evolutionary paths. To view the occupants of the extreme tip of the tail as evolving from one another, as progress does, is an illusion. Gould holds that the concept of 'progress' is an anthropocentric input into evolution in order to preserve our special most favored postition in the universe. [Man, made in the image of God.] {< We have had to come up with answers to Copernicus and Darwin, both of whom displaced us from the pinacle. >}

A second point emphasized by Gould is that diversity or variety, not complexity, is the measure of the advance of the life complex. My question here is what role does variety play in the increase of complexity. Does greater variety lead to more rapid increase of complexity? that is, How does increasing the height of the curve also increase the variance, extend the tail?

]DATE[06-18-97
NUMBER[25
SUBJ[COMPLEXITY
NOTE[McShea, quoted by Gould, Full House, p 203, defines complexity as a function of both the number of parts in the system, and the degree of **irregulatity** of their arrangement. Thus complexity is in opposition to order. {<This leads us to the paradoxical conclusion that the second law of thermodynamics, which increases disorder, plays a role in the increase of complexity. Is entropy, then, a measure of complexity? And here introducing Szilard's views of information as negentropy we have the more complex the system, the less its information content. This is certainly counter intuitive! Perhaps the number of parts component is the overriding factor. >}

DATE[06-24-97
NUMBER[28
SUBJ[EVOLUTION
NOTE[Evidently people see the world in two ways. Your Rothstein sees parts integrating into something organic, your Yi-Fu Tuan sees a universal drive toward 'segmentation'. This gives us something most important to investigate. The result of things coming together is either an organism (complexity) or homogenization. And the result of things fragmenting is either uniqueness (variety) or extinction. Stephen J. Gould has concluded that bio- evolution is not moving toward complexity but toward variety. This pulls the rug out from under the idea of progress being involved in evolution. However, cultural evolution does not follow the same rules as bio-evolution, so culturally speaking progress may still have some meaning.
]

Whence Emergence?

{[But in the "ratchet" of successive radiations and extinctions is there aught that grows? If it is variety, then there is some "pawl" that allows it to increase despite extinctions. If variety increases, then options increase, and options are a measure of potential. May we then conclude that evolution moves so as to increase its potential?]}

How can options, potential and consciousness related?

~~SUBJ[COMPLEXITY~~
NOTE[
NUMBER[
SUBJ[EVOLUTION
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Protagoras
Man is the measure of all things

DATE[07-11-97
NUMBER[30
SUBJ[EVOLUTION
NOTE[RE a review of Stephen J. Gould's "Full House" from the Britannica Year Book of Science and the Future 1998. p238

"Homo Sapiens, a tiny twig, born just yesterday, on an enormously arboreal tree of life that would never produce the same set of branches if regrown from seed"
{[This is an assumption, regarding one of the most profound questions regarding the nature of the cosmos. Even the discovery of diverse life forms on other worlds would not give a complete answer to this question.]}

"To regard the production of **complexity** in evolution as an indicator of directionality toward progress is a mistake. What is needed is a reconceptualization of what evolutionary progress means." "We must view the history of change as the increase or contraction of **variation** in an entire system."
{[In other words, evolution moves primarily toward increase in variation, increase of complexity is a spin off.]}

"Humans are here by luck of draw, not of evolution's direction ."
]

Confirms Brahmas Theme

CALENDARS

CALENDAR DATA

BEGINNING OF EPOCH

CALENDAR	DATE	
BYZANTINE-ORTHODOX	5509 BCE	JULIAN 4713 BCE [Set by 1582] / RUSSIAN
EGYPTIAN	4384 BCE	
BISHOP USHER	4004 BCE	ANNO MUNDI
JEWISH	3761 BCE	
OLMEC-AZTEC	3131 BCE	Aug 12
MAYAN	3114 BCE	Aug 11 or 13, OR Oct 15 3374 BCE
13 Baktun Completion of cycle		----> Dec 21 or 23, 2012 CE S = 260 yr
CHINESE	2698 BCE	2004 AD ~ 4702
FIRST OLYMPIAD	776 BCE	First games with records
FOUNDING OF ROME	753 BCE	
JAPANESE	659 BCE	Heisei 9
CHRISTIAN ERA	1 CE	"Common Era"
ZORASTRIAN	390 CE	
HEGIRA	622 CE	

Other data ?

Maya Avg 12, 3113 BCE	
Egypt Dyn	3200
Chinese	3082
Kali Yuga	3101
Nineveh	3100
Hebrew	3761 ✓

STRUCTURE DATES

STONE HENGE	c 3000 BCE 3030 BCE	
NEW GRANGE	3200 BCE	
GISA PYRAMIDS	2300 BCE	Carbon 14 2589 BCE → 2504 BCE (Atalay p. 66)
CHACO CANYON	350 – 1200 CE	
GREAT WALL OF CHINA	230 BCE	

HINDU TIME UNITS

DIVINE YEAR = 360 YEARS ; 12,000 DIVINE YEARS = ONE MAHAYUGA
KRTA YUGA = 4000 D.Y.; TRETA YUGA = 3000 D.Y. = 1,080,000 YEARS
DVAPARTA YUGA = 2000 D.Y. ; KALI YUGA = 1000 D.Y.
MAHAYUGA = 3 KTTA YUGAS, = 4 TRETA YUGAS = 6 DVAPARTA YUGAS = 12 KALI YUGAS = 4,320,000 YEARS
ONE KALPA = 1000 MAHAYUGAS = 4,320,000,000 YEARS = 4.32×10^9 YEARS[1]
A KALPA = ONE DAY IN THE LIFE OF BRAHMA
THE LIFETIME OF BRAHMA IS 100 BRAHMA YEARS,
EACH OF 360 BRAHMA DAYS = 100×360 KALPAS = 155.52×10^{12} YEARS

---

[1]Two Kalpas = 8.64×10^9 years, or a Hubble Age of 12.69 billion years
This corresponds to a value, H_o.= 75.463 km/sec/megaparsec.

Julian Date

Noon 1st Jan 4713 B.C. = J.D. 0.0
" " " 1 B.C. = J.D. 1,721,058 = 0 A.D.
" " " 1 A.D. = J.D. 1721,424
" " " 2000 A.D = J.D. 2451,544

Founding of Rome
Urba Condita April 21, 753 B.C.E.
Year 2005 A.D. = 2758 ab urba condita

CALENDAR DATA

BEGINNING OF EPOCH

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MAYAN	3114 BCE	Aug 11 or 13, OR Oct 15 3374 BCE
Completion of cycle		----> Dec 21 or 23, 2012 CE Sixth Sun or 12-12-12
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FIRST OLYMPIAD	776 BCE	First games with records
FOUNDING OF ROME	753 BCE	
JAPANESE	659 BCE	Heisei 9
CHRISTIAN ERA	1 CE	"Common Era"
ZORASTRIAN	390 CE	
HEGIRA	622 CE	

STRUCTURE DATES

STONE HENGE	Before 3000 BCE	
NEW GRANGE	3200 BCE	
GISA PYRAMIDS	2300 BCE	Great Pyramid completed 2566 BCE ?
CHACO CANYON	850 - 1200 CE	
GREAT WALL OF CHINA	230 BCE	

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DIVINE YEAR = 360 YEARS ; 12,000 DIVINE YEARS = ONE MAHAYUGA
KRTA YUGA = 4000 D.Y.; TRETA YUGA = 3000 D.Y. = 1,080,000 YEARS
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---

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This corresponds to a value, $H_o = 75.463$ km/sec/megaparsec.

Earliest Writing 3378 BCE Samaria
First recorded eclipse 2283 BCE BABYLON

4977 BCE, Sunday April 27 - Creation - Kepler [1571-1630]
3936 BCE Oct 24 - Creation - Johanes Helevius [1611-87]
3500 BCE Creation - Newton [1642-1727]

First Julian Day Day1 = Jan 1 4713 BCE
by Joseph Justus Scaliger [1540-1609]
Jan 1, 2000 = Julian Day 2,451,545 or 2,451,544?
[named after Scaliger's Father]

FROM TIMETABLES OF HISTORY
1° Recorded date -4241
2° Jewish 10 Year -3760
3° Orthodox 10 Year -5509 Sept 1.
4° MAYAN 10 Year -3372 ?

AGESMAN1.WP6 November 29, 1997

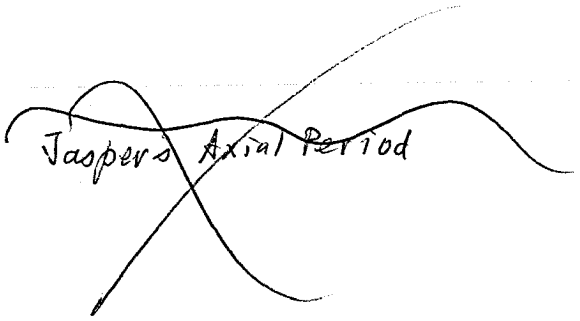
THE AGES OF MAN

Many ancient traditions point to there being a sequence of ages, each age being more degenerate than the one previous. The Hindu tradition speaks of a series of Kalpas and Yugas between each of which the quality of life declines. The Greek tradition speaks of the successive ages of Gold, Silver, Bronze, and Iron. The Book of Daniel in the Bible refers to a similar decline from gold to clay. We may question whether these ages refer to actual successive periods of human civilization, (whose sequential decline runs counter to the present age's idea of progress), or whether the idea of decline originates in analogy to the process of personal ageing and degeneration that each individual encounters through life. In either event the idea of discrete ages fits well with the processes of time. In all ageing there appear to be discrete periods, plateaus of relatively slow change, separated by brief gaps of intense change.

In certain traditions, particularly the Egyptian, the ages of man have been tied to the precession of the equinoxes, a cycle of time lasting about 26,000 years. This cycle is customarily divided into twelve periods of about 2200 years, each period being named for a sign of the zodiac. While the length of a period may be calculable, (they may not all be equal), just when one period ends and the next begins is a matter of considerable speculation. Each period seems to be dominated by a theme which is instituted at the beginning of the period and is developed during the subsequent 2200 years. Each period also seems to make some profound contribution, some wisdom that transcends the involvements of its own time, and which is sometimes preserved for subsequent ages.

When this precessional view is adapted to recorded history, the record shows that we have been living in the age of Pisces. Some take this age to coincide with the Christian era, beginning about 2000 years ~~about~~ ago, (this identification possibly because of the Christian use of a fish symbol). But it seems far more likely that a new period, (say Pisces), began about 550 B.C.E. when the conceptual innovations of Lao Tzu, Confucius, Buddha, Maha Vira, Zarathustra, Second Isaiah, Thales, and Pythagoras all hit the world at the same time. It also seems reasonable that this period culminated with the work of Isaac Newton and terminated about 1780 C.E, with the revolutions in America and France.

If the present age began with the ideas of Locke, Rousseau, Paine, and Jefferson, these ideas were quickly followed by the conceptual innovations of Darwin, Faraday, Maxwell, Marx, and Mendelyev. And in this century with those of Planck, Freud, Einstein, Schrödinger, Jung, Gödel, Watson and Krick. Certainly a company comparable to that of 550 B.C.E. And as it took two millennia to work out the ideas of the sages of 550 B.C.E., it will probably take us two millennia to work out the impacts of our own "founding thinkers".


Jaspers Axial Period

WISAGES.WP6 November 29, 1997

THE WISDOM OF THE AGES

In speculating on what might be the wisest contributions made during each age, the danger is not so much in commission as in omision. In any event, here is a first draft from throwing out the net to recover what deserves to be put in the Golden Book of the Ages.

AGE	DATES	EPIGRAM
VIRGEAN	-13800 TO -11600	According to some the Sphinx
LEONEAN	-11600 TO -9400	dates to the Virgo/Leo passage,
CANCEREAN	-9400 TO -7200	Somewhen in the -9400 to -2700
GEMINEAN	-7200 TO -5000	period was Hermes Trismegistus
TAUREAN	-5000 TO -2700	a deified sage who proclaimed **"As above so below"** .
ARIEN	-2700 TO -550	The age that began with the pyramids whose secret wisdom is still being sought.
PISCEAN	-550 TO +1780	Perhaps Newton's Third Law **"To every action there is an equal and opposite reaction"**
AQUARIAN	+1780 TO +4000	Too early to know

From the Age of Pisces, Matthew 16:25 should be included in any selection of great wisdom:
"Whosover would save his life shall lose it, and whosoever would lose his life for my sake shall find it."

And also from the Age of Pisces, Plato's epigram,
"The opposite of every great truth is also true".

And from the Quran,
"When any member of the body suffers, the whole body suffers"
"When any Muslim suffers, all Islam suffers."

And from Buddhist tradition,
"None shall make it until all shall make it."

And from the Tao te Ching,
"The Tao that can be spoken is not the real Tao."

Perhaps the first wisdom of the Aquarian Age is
"The gods must be replaced in every age."
B.K.

ROSHANA.P51 DISK:THEO September 6, 1991

Rosh ha-Shanah
[Notes and comments on "The Jewish Holidays" by Michael Strassfeld]

Rosh ha-Shanah is New Years Day. It is also the 'Birthday of the World'. And it is the day when the Jews unconsciously acknowledge the Trinity.

There are two new years days, the first of Nisan, the first month, and Rosh ha-Shanah. These speak to the existence of two kinds of time. Rosh ha-Shanah is a celebration of the beginning of time, a linear or long cycle time, while the yearly cycle begins with Nisan and springtime. [cf the Mayan long and short counts] Strassfeld refers to the two times as historic/progressive time and cyclical/recurrent time. Some choose to combine the two into a spiral or helix.

As the birthday of the world, some hold that Rosh ha-Shanah is not the first day of creation, but the sixth day, the day on which humans were created. There is the Akshobya element here, that there really was no existence of the world until it was self referenced by the consciousness of humans. It takes both God and man to give the world existence. The lunar calendar has Rosh ha-Shanah coming as early as September 6th. So the first of creation could be as early as the crossover point in the analemma. It is important to have a day to meditate on creation and Creation. September 2 is probably the right date.

There are three major themes on Rosh ha-Shanah. First is malkhuyot, or sovereignty. God is creator and sovereign, maker and ruler of the world. Second is zikhronot, or remembrance, God is present, he cares. Third is shofarot, or the revelation at Sinai and the reminder of the final redemption still to come. Thus God is omnipotent, omniscient, and evolving. He is the Father--the Creator, the transcendent; the Holy Spirit--eternally with and within us, the immanent; and the Son--The Word by which God communicates with man, the conveyer to man of ever new theophanies. Persons, aspects or functions it does not matter. The three foldedness is essential.

If God the One creates the World, then there is Two, but immediately there is Three. The third is the relation between the two. Only the odd harmonics and integers generate the cosmos, the evens collapse onto themselves, they are the notes an octave apart.

MAYAN

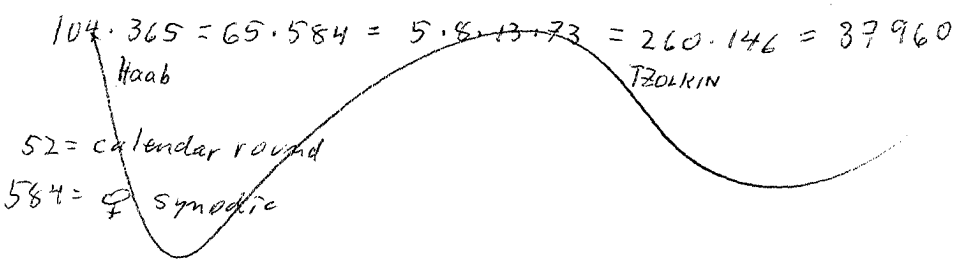
A DOWNLOAD Just Download Jan 12, 2002

BAKTUN.WPD

An extraordinary formation with Aztec connotations has appeared in Northamptonshire, and Geoff Stray believes he may have some vitally important insights into its symbolism, tied in with some astonishing discoveries of his own... i) THE SUNSTONE In 1790, a massive carved stone disc (12 feet in diameter) was dug up in Mexico City and is now on display in the Museum of Anthropology. It is known as the Aztec Sunstone, or Calendar Stone, since the central motif is said to show the five ages of the world, called Suns. Each of these Suns is said to have ended in catastrophe, with the central image usually said to be Tonatiuh, the Sun god representing the present era. The Aztecs had inherited their calendars from earlier civilizations in Mesoamerica, but some of the knowledge had been lost. The Maya people, for example, had a system of cross-referenced calendars, including one known as the Long Count, which tracks immense stretches of time and includes a 5,125-year cycle called the Great Cycle, or 13-Baktun Cycle, that started in 3114 BC and ends in 2012 AD, hence many of the prophecies surrounding 2012. For several years I had been interested in the possible consequences of this termination point, when I bought a plaster copy of the Aztec Sunstone, and hung it on my wall. Since the 20 Day Signs of the Maya were clearly shown on the Stone, and the central image implied that the Aztecs knew they were living in the final era, I wondered if the Sunstone might retain a few clues. I noticed that the ring of Day Signs shows the glyphs upside-down at the bottom of the ring, and the right way up at the top, as if the ring was designed to be rotated! There is also a pointer (above Tonatiuhs head), apparently designed to indicate a different Day Sign each day, as the ring rotates (clock-wise!). There are also several places on the Sunstone, where the designs are OVERLAID. In other words, the Sunstone represents a series of ROTATING LAYERS. I then worked out a way that, if the Sunstone was based on an earlier design with moving parts, it could have acted as a giant chronometer, measuring the 260-day Tzolkin cycle, the 384-day lunar year, the 56-year eclipse cycle (3 x 18.61-year lunar node cycles), the 52-year Calendar Round cycle, and the 104-year Venus Round (65 orbits of Venus). However, the cycle I was most interested in the 13-Baktun cycle was impossible [too difficult] to discover, since the number 18 was nowhere to be found on the Sunstone; 20 Kin (days) = 1 Uinal; 18 Uinals = 1 Tun; 20 Tuns = 1 Katun; 20 Katuns = 1 Baktun; 13 Baktuns = 1 Great Cycle. If I could only find the 18 Uinals, the chronometer would tick away the whole 5,125-year Great Cycle, I thought... Then I found the Secret Dial... ii) THE CROP FORMATION CONNECTION

The amazing formation (already nicknamed the Aztec Pizza!) which appeared on 3rd June this year at Wakerley Woods, Barrowden, Northamptonshire, certainly suggests the Aztec Sunstone, with its concentric rings of glyphs, though it at first seems to be a couple of olives short of a pizza. The Aztec Sunstone has a ring of 20 Day-signs, surrounded by a ring of 56 quincunxes, surrounded by a ring of 104 eagle-feathers, within a ring formed by two fire-serpents, of 12 segments each. The [A] weird thing is, I have been working on an animation of the Sunstone to demonstrate the rotating features described above, and this reached completion (apart from a proposed soundtrack) on Friday 1st June, after having come up with the idea about 18 months ago and working on the animation for the last three months. The following day, I was presented with a brass replica Sunstone which a friend (Joy) had found at a boot sale. I took this as a synchronistic, or a meaningful coincidence, that my efforts had been given the thumbs up by the Universe. This Aztec Pizza formation was reported on Sunday the 3rd the same weekend! Thats a COSMIC thumbs up! What is more, it encodes the

of Stonehenge


104 · 365 = 65 · 584 = 5 · 8 · 13 · 73 = 260 · 146 = 37960
Haab
TZOLKIN
52 = calendar round
584 = ♀ synodic

significant numbers which formed the breakthrough that the animation demonstrates. It is thought by most historians that the Aztecs had forgotten all about the Mayan Long Count calendar, which includes the 5,125-year cycle (The Great Cycle), or 13-Baktun Cycle. They had retained knowledge of the 260-day sacred Tzolkin calendar, the 365-day Haab, and the 52-year Calendar Round (52 Haabs = 73 Tzolkins). The Tzolkin is partially shown on the Sunstone in the form of the 20 Day Signs (which combine with 13 numbers 13 x 20 = 260), and the Calendar Round is represented by the 104 Eagle feathers. Two Calendar Rounds = 104 x 365-day years (= 1 Venus Cycle, or 65 cycles of Venus at 584 days per cycle). However, as I confirmed in a conversation with researcher John Major Jenkins, nobody has ever found evidence of the Long Count on the Sunstone, because, although it is possible to find some of the necessary numbers, such as 13 and 20, the vital number 18 is absent (there are 20 days in one Uinal, and 18 Uinals in one Tun of 360 days). The [A] breakthrough that the animation demonstrates (or will when released to the public), is that there is a Secret Dial concealed on the Sunstone, and it has 18 segments, just like two of the three dials on the new Wakerley Woods formation! I had spotted what looks like a visible segment of a hidden ring, showing two quincunxes; I then electronically cut and pasted eight copies of the suspected segment, each turned by multiples of a 40-degree angle, put them together, and found a perfect ring made from the nine segments of two quincunxes each: 18 Uinals!! This does not work on some of the colour paintings of the Sunstone, since the angle varies by up to two degrees on each side of the visible segment, and this can result in a 20-quincunx ring. However, it works perfectly on a photo of the real thing. Thus, it has now been possible to show an animation of a theoretical original Sunstone with moving parts, which acts as a chronometer and ticks away the whole Great Cycle, starting in 3114 BC with the beginning of history, and ending in 2012 with ... well, see my website http://www.diagnosis2012.co.uk for speculation see the Swirled News Links section. iii) CONCLUSIONS So, the Wakerley Woods formation shows the two critical numbers in my discovery: 9 (segments) and 18 (quincunxes or Uinals). The 18 central symbols are very suggestive of the four lesser Sun Rays, though pointing in towards the centre rather than out. The centre of the Sunstone is where the 18 are concealed, beneath the five Suns or eras. The numbers 9 and 18 are also significant in the 26,000-year precession of the equinoxes cycle, since it takes 72 years for the equinoxes to precess by 1 degree, and therefore nine years for an eighth of a degree, 18 for a quarter, and 36 for a half degree. The numbers also resonate with the Long Count numbers, since: 2 x 18 = 36 (360 days per Tun) 4 x 18 = 72 (7200 days per Katun, or 20-Tun cycle) 8 x 18 = 144 (144,000 days per Baktun, or 20-Katun cycle). Jenkins has made a good case that the Long Count is based on precession, with the Great Cycle being a fifth of the whole precession cycle (5,200-Tun Great Cycle x 5 = 26,000 Tuns). The number 9 is also reminiscent of Carl Callemans theory that the nine Underworld Cycles (Hells) of Mayan mythology represent the nine levels in the hierarchy of time cycles which make up the Long Count. This represents an evolutionary progression which goes all the way back to the Big Bang. We had a Tun represented in a crop formation at Avebury Trusloe in 1999 (18 tadpoles within a fried egg, surrounded by a ring of 20 circles). Last year we had a Baktun represented at East Kennett (a waffle grid of 20 x 20, representing 20 Katuns of 20 Tuns each = 400 Tuns = 1 Baktun). Now we have a formation which suggests a secret knowledge of the 13-Baktun cycle, and maybe the precession cycle; possibly even the age of the Universe! On the other hand, it could be a pizza (following a fried egg in 1999 and a waffle in 2000)... [Could be a stargate which, if built, lets others come here, so they send us a blueprint?]

From Serv ~1990

THE NUMBERS AND THE CYCLES

With regard to time, the basic problem for the Maya, as for us, is that of adapting a number system to the measurement of the non-comensurate cycles of the day, month, year and to the occurrence of eclipses and the apparitions of the planets. Whereas both we and the Maya observed the same objects and the same cycles, we ended with quite different representations of the phenomena. (By 'we' is meant here the Western tradition beginning with the Babylonians and Egyptians, being improved by the Greeks and the Arabs and put in its modern form by the Europeans.) It must be remarked at the outset that the Mayans achieved results superior in accuracy to ours. The length of the tropical year has been determined to be close to 365.24219 mean solar days. The Mayan calendar approximated this value with a year of 365.2420 days, while our present Gregorian calendar approximates the tropical year with 365,2425 days. The Mayan error is 0.0002 days, while the Gregorian error is 0.0003 days. (And the Gregorian calendar was not established until 1582, 90 years after the discovery of America and centuries after the Mayans developed their calendar.)

One of the reasons the Maya developed a different representation for celestial cycles was they started with a different number system. Our system is decimal or base ten, their's was vigesimal or base 20. Further, the Mayan number system was positional like ours and even employed the zero! As far as is known the Maya were the first peoples in history to invent and use the zero.

The Mayan attack on the problem of the calendar began with sequences of 20 and 13days. By intermeshing these sequences like two gears with 20 and 13 teeth they derived a cycle of 20 x 13 = 260 days, called the *tzolkin* and a similar cycle of 20 x 18 = 360 days called the *tun*. Five days called the *uayeb* were added to the tun each year to give an approximate or 'vague year' of 365 days called the *haab*. Again, in the manner of two intermeshed gears, the 260 day tzolkin and 365 day haab generated a cycle of 260 x 365 / 5 = 18980 days or roughly 52 years called the calendar round that formed the basis of their practical calendar. It was believed that at the end of every 52 year period the world would either be renewed or destroyed, and it was never certain during the 5 day uayeb at the end of the last year in a 52 year cycle which it would be.

While the utility of the 365 day cycle is clear to us because of its approximation to the year, the selection of the second or 260 day cycle is more mysterious. The explanation may lie in the fact that the Mayans also were very interested in the cycles of Venus and Mars as well as in the shorter monthly cycle of the moon. One of the numerical 'coincidences' associated with the orbits of the planets is the very close approximation of the Earth's year to 5/8 the synodic year of Venus. Thus whenever Venus first becomes the morning star it would always be in one of five exact locations

in the sky with respect to the constellations. The sequence of five would be repeated every eight Earth years. The Mayans certainly were interested in this strange regularity in the sky and undoubtedly looked for others. They found that the synodic year of Mars was 780 days (=3 x 260 days) and the synodic period of Venus was closely 9/4 this of 260 days, so 260 emerged as a cycle which tied together the Earth, Mars and Venus and made convenient the reckoning of their celestial periods. Here we must admit that we do not know exactly why the Mayans selected the 260 day cycle, but we can see its meaning and utility with respect to what we have learned of the motions of the planets.

In addition to the 52 year cycles of renewal, the Mayans had a second calendar based on the 360 day tun interval. This calendar was used for keeping track of long periods of time. In the way that we have built up large numbers--thousands, millions, billions, trillions,...--by factors of 1000, the Mayans built up large numbers using factors of 20. Thus 20 tuns was a katun (= 7200 days or about 19 years), 20 katuns was a baktun (= 144,000 days or 394 years) etc. These units were involved in what archeologists have called the Mayan 'long count', and were related to the archetypes and prophecies concerning the creation and destruction of the periods of the world, called Suns.

While no great difficulties were encountered in analyzing the lengths of the Mayan cycles, great problems were encounted in determining the origin or zero points of their cycles. We could confirm the length of their year with our own observations, but how could we determine which day they selected for 'new years day'. Of particular concern was the calibration of the Mayan dates with the Gregorian calendar. What in our dating system was their date 0.0.0? This problem was resolved in the 1920's by J.T. Goodman, Juan Martinez Hernandez, and J. Eric S. Thompson. They independently calibrated the beginning of the initial baktun as having occurred on August 12, 3113 B.C. It is interesting to compare this date with the zero points of other calendars. The first dynasty in Egypt about 3200 B.C., The Chinese calendar 3082 B.C., The Hindu Kali-Yuga 3101 B.C., The founding of Nineveh 3100 B.C., The Hebrew date of creation 3761 B.C. Bishop Usher 4004 B.C.

Before turning to the myths and archetypes which the Nahuatl peoples associated with these cycles, We must look at some of Jose Arguelles' interpretations of Mayan astronomical activities.

On page 67 of The Mayan Factor he says, " What scholars have taken to be the Mayan obsession with time is not that at all. Rather, the number sequences...are primarily intended to describe calibrations of a galactic harmonic as it corresponds to solar and earthly cycles of time." Again on page 73, he reiterates this idea, "Again we are assuming it was not the Classic Maya's primary intention to record time, but to record the harmonic calibrations of the 5200 tun harmonic synchronization beam."

Arguelles had difficulty with the Mayan's using cycles that did not precisely fit the observed cycles of planetary bodies. He then assumed that they were trying to represent something else with a longer time scale. He may then have thought: 'To find longer cycles one must go outside the solar system, to the galaxy itself. Astronomers have found that the sun orbits the galactic nucleus once in about 200,000,000 years. Some part of this great period must have been what the Mayan's were measuring. The solar system would pass through a sector of 5000/200,000,000 or 1/40,000 of the circumference of the galaxy in a period of 5000 years. This angle is only 32.4 seconds of arc. This means that what the Maya were concerned with was some sort of "beam" which would require 5000 years to pass through.' But here Arguelles ran into the difficulty that there was no such known beam. How could the Maya have known about a beam so "subtle" that we have not detected it? The answer was that the Maya were deposited here by an advanced galactic culture from other worlds and were to make observations and prepare earth to take its place in the Galactic Civilization.

At this point the focus on Arguelles shifts from Nahuatl cosmology to personal fantasies and we best return to what the Maya themselves had to say about what they were doing. Let us say only that had Arguelles known what both the Mayan astronomers and modern astronomers know about the difficulties of comensuration in the construction of a calendar, he would never have found it necessary to hypothesize galactic beams, subtle energies, and radially reciprocal circuits to explain the limitations imposed by the system of natural integers.

THE MYTHS AND ARCHETYPES

The creation myths of the peoples of the Americas contain the idea of successive and sequential worlds. Creation did not occur just once, but cycles of creation, fulfillment, and destruction follow one another. Such ideas are also present in the Yugas in Hindu thought, and obliquely in the story of the flood in the Bible.

According to the Maya there have been four creations or 'Suns' prior to the present or Fifth Sun. The first Sun was of spirit destroyed by fire, the second of mind destroyed by air, the third of emotion destroyed by water, the fourth of action destroyed by earth. Each failed because of imbalance. The Fifth or present Sun was created in August of 3113 B.C.(or 3374 B.C.) It is the Sun of movement. The length of the age of the Fifth Sun is 13 Baktuns which is 1,872,000 days or about 5125.36 tropical years. Calculations indicate that the age of the Fifth Sun will end in December of 2011 (2013?). The world will be destroyed by movement and replaced by the Sixth Sun which will be the age of consciousness. We must recognize that a lot of modern thought has been read into interpretation of the original symbols of Jaguars, Wind, Fiery Rain,

MOONMAYA.WPD June 15, 2004

SATELLITES
THE MOON AND THE MAYANS

One of the puzzling questions about the Mayan calendar and their system of time has been the origin of their 260 day "tun". This period does not seem to have an explicit astronomical basis, as does their "haab" which corresponds to our year. But the tun was as important as haab in the Mayan reckoning of time.

It has been shown in a previous scrap [2000 #43] that the tun could have been the product of their vigesimal, base 20, number system and their selection of 13 days for the week. The origin of the latter could have been the close resonance between the earth's Schuster period[1] and its rotation period. It was noted that the error between **seven** rotation periods of 86,400 seconds and 120 Schuster periods of 5059.61 seconds is 2353 seconds. While the error between **thirteen** rotation periods and 222 Schuster periods is only 33 seconds. This would make a good case for a 13 day week instead of a 7 day week, provided that the Schuster period is the geophysical cycle basic to the week.

Comparisons for the tun:

Twenty 13 day weeks = 260 days; the error to 4440 Schuster periods is 668 seconds.
Thirty seven 7 day weeks = 259 days: error to 4423 Schuster periods is 1055 seconds.
[In both cases the Schuster values exceed the rotational values]

But there is another possibility related to the tun.

The lunar sidereal period is 27.3217 days. Nineteen of these periods equals 519.1123 days. This is an error of 0.8877 days in two tuns or less than a half day per tun.

So if we wish to pick a number of days that closely represents several cycles.

From the Schuster cycle and a 7 day week	259	days
From the lunar sidereal cycle	259.56	days
From the Schuster cycle and 13 day week	260	days

The tun is a useful choice.

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[1] The Schuster Period, t , is the limiting value in Kepler's third law, $t^2 = d^3/GM$, when the distance, d, is taken as the distance from the earth's center to its surface and where M is the mass of the earth. It is the time a satellite would take to circle the earth at the surface if the earth were a smooth sphere with no atmosphere. Or if there were a hole through the earth, it is the time an object would require to make a round trip through the hole.

MAYAN CALENDARS

TROPICAL YEARS [EQUINOX TO EQUINOX]

PRECISE: 365.2421897 days
JULIAN 365.25
GREGORIAN 365.2425
MAYAN 365.2420

VENUS SYNODIC

PRECISE 583.92 days
MAYAN 584

BASIC CYCLES

260 DAY SACRED OR LITURGICAL YEAR = TZOLKIN
CEREMONIAL

360 DAY YEAR [USED IN LONG COUNT] = TUN

365 DAY "VAGUE YEAR" = 18×20+5 = HAAB } SECULAR
18 months THE 5 DAYS CALLED = UAYEB }
18 of 20 days 1 of 5

THE LONG COUNT [LINEAR OR HISTORICAL TIME]

	DAYS	TROPICAL YEARS
1 DAY = KIN	1	
20 KIN = 1 UINAL	20	
18 UINALS = 1 TUN	360	
20 TUNS = 1 KATUN	7,200	19.71
20 KATUNS = 1 BAKTUN	144,000	394.26
20 BAKTUNS = 1 PICTUN	2,880,000	7,885.18
20 PICTUNS = 1 CALABTUN	57,600,000	157,703.57
20 CALABTUNS = 1 KINCHILTUN	1.152×10^9	3,154,100
20 KINCHILTONS = 1 ALAUTUN	23.040×10^9	63,081,400

[c. the last extinction]

ONLY THE FIRST FIVE ARE USED IN THE LONG COUNT

e.g. 8.14.10.13.15 7 Ahau 3 XUL = April 9, 328

9.9.16.0.0 = 627 AD

Baktuns, Katuns, tuns, UINALS, KIN — Long Count

7 Ahau of the Tzolkin
3 day of the month XUL in the Haab

? THE ZERO POINT OF THE LONG COUNT — AUG 12 or 13

2012 = 13.0.0.0.0 4 Ahau 8 Cumku — 3114 BCE

Dec 21 or 23 2012

alternate ? Oct 15 ? 3374 BCE

SHORT COUNT A cycle of 13 Katuns = 256¼ years
19.71 × 360 days

12.0.0.0.0 = 1617 AD

THE CALENDAR ROUND

RT = rt
ST = 260t
T = 1
$t = \frac{365}{260} = \frac{73}{52}$

MESH HAAB WITH TZOLKIN
365 260

least common multiples

365 × 260 = 94900 to starting point
but this will happen 5 times
or every 18980 days

T = 52, t = 73 · 260 = 18980 = 51.96

52 Haab = 73 Tzolkin

73 × 52 × 5 = 18980 days
= 51.965518 years
Called by the Aztecs
XIUHMOLPILLI

1 BAKTUN = 144,000 DAYS ≐ 394.26 yr

δ = 260 yrs

	3114 Series	3374 Series
0	3114 BCE	3374 BCE
1	2720	2980
2	2325	2586
3	1931	2191
4	1537	1797
5	1143	1403
6	749	1008
7	354 BCE	614
8	40 AD	220 BCE
9	434	174 AD
10	829	568
11	1223	963
12	1617	1357
13	2012	1751
14		2146

Lunar Eclipse at Winter Solstice
Every 373 years
Dec 2011, Dec 1638

1 BAKTUN + 1 KATUN + 1 TUN = 373.6 years
394.26 year, 19.71 yr, .99 yr

TZOLKIN = 260 DAYS
HAAB = 365 DAYS
TUN = 360 DAYS
UAYEB = "5" DAYS

TUN + UAYEB = HAAB

$2 \times (\text{TZOLKIN})^2 = 135,200$ days

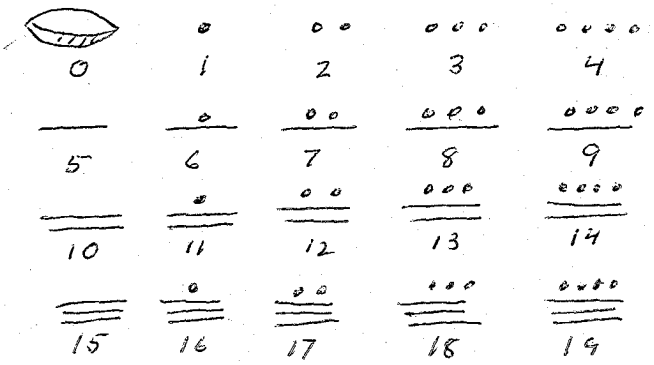
$\div 365.25 = 370.16$ years

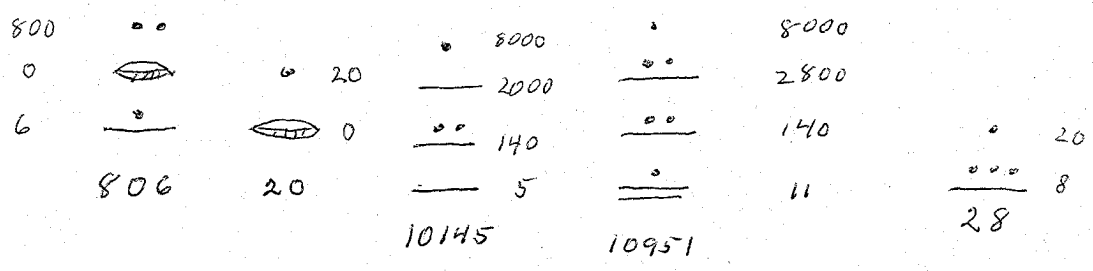
Haab years + UAYEB years = 370 years

BAKTUN 13.0.0.0.0 ≈ GREGORIAN 12-12-12

12.0.0.0.0 ≈ GREGORIAN 2012 - DEC - 12
" 1617 (or 1751)

MAYAN VIGESIMAL ARITHMETIC [BASE 20]





The zero was used as a place marker, as in western numbers
It appears that the first use of zero was to mark an empty position.

THE MAYAN VIEW OF TIME WAS THAT IT WAS MUCH MORE THAN AN ORDERING DEVICE. IT WAS A PHENOMENON THAT CONTAINED THE FORCES OF CREATION AND DESTRUCTION (~ SHIVA ~ cf. KAIROS) LUCKY and UNLUCKY

TIME WAS CYCLICAL

Synodic Periods

♀ 583.92 ≈ 584

♂ 779,94 ≈ 780

$\frac{780}{584} \approx \frac{4}{3}$ =

Eclipse year Lunar node to Lunar Node
= 346,62 days

$\frac{365}{5} = \frac{584}{8} = 73$

$\frac{780}{260} = 3$

$\frac{♀^2}{⊕♂} = \frac{6}{5}$

$2 \times 260 = \frac{3}{2} \times 346{,}62$

$520 = 519{,}93$

$\frac{♀}{⊕} = \frac{8}{5}$

$\frac{584}{260} = \frac{9}{4}$

11979

$\frac{3}{4} \cdot \frac{8}{5} = \frac{6}{5}$

$= 2.2451539$

$= \frac{9}{4}$

Mean sunspot M ⟷ M 10.9 yr

$\frac{16 \times 260}{365.2422} = 11.3897$

Note that the 5 suns may correspond to the 5 terrestrial extinctions

MYA

439
363
245
208
65

20 KATUNS = 1 BAKTUN
= 394.2593 years

13 KATUNS =
= 256.25 years

20 BAKTUNS = 1 PICTUN
= 7885.1854 years

13 BAKTUNS
= 5125.3709 years

3114 B.C.E
2009.37

May 15

THE LONG COUNT

LINEAR TIME

A DAY = KIN	KIN	PORTION OF TROPICAL YEAR
20 KIN = 1 UINAL	= 20 KIN	
18 UINALS = 1 TUN	= 360 KIN	0.9856
20 TUNS = 1 KATUN	= 7,200	19.7130
20 KATUNS = 1 BAKTUN	= 144,000	394.2593
20 BAKTUNS = 1 PICTUN	= 2,880,000	7885.1854

ZERO POINT OF THE LONG COUNT 0.0.0.0.0

AUG 11 or 13, 3114 B.C.E OR J.D. 584,248

WRITTEN EXAMPLE

8.14.10.13.15

BAKTUNS — KATUNS — TUNS — UINALS — KIN

1.0.0.0.0

13 BAKTUNS WOULD BE

1,872,000 days

+ 584,248

2,456,248

Julian Day Jan 1, 2000 = 2,451,545

So 4703 days later is 13.0.0.0.0

= 12 years ~~328~~ days

= Nov 17, 2012

2012

13.0.0.0.0	2012 ~ c. Nov 17	
12.0.0.0.0	1617.06	– Kepler's 3° Law Scien
11.0.0.0.0	1222.80	– Mongols invade West
10.0.0.0.0	828.54	– Algebra
9.0.0.0.0	434.28	– Attilla
8.0.0.0.0	40.08	AD Christ (roughly)
7.0.0.0.0	354.18	BCE
6.0.0.0.0	749.1	BCE

Julian Day 1 = Jan 1, 4713 B.C.E.

ZERO LONG COUNT AUG 13, 3114 B.C.E.

OR J.D. 584,248

Aprox Long Count — Gregorian

Baktun 13.0.0.0.0 = 2012-12-12

Pink 20

HINDU

LARGNUMB.WPD JUNE 11, 2000

KALPAS AS UNITS OF TIME

While we know that the ancients developed systems for expressing large numbers, we are ignorant of any practical applications for which they needed large numbers. Particularly, we recognize the creativity of Archimedes in his "Sand Reckoner" and of unknown Hindu mathematicians in their development of the system of yugas and kalpas. Today we have many uses for large numbers to express social, economic, and scientific quantities and have developed a convenient representation by expressing them as powers of ten. For example, one billion = 1,000,000,000 = 10^9. In our culture, astronomy has long been the cradle of large numbers, for distances, numbers of stars and other objects, and for their ages. With recent focus on the cosmological importance of the age of the universe, (derived from its rate of expansion), it is of interest to see what modern age numbers might look like when expressed in terms of ancient units like yugas and kalpas, which were used to represent great lengths of time.

THE HINDU TIME SYSTEM

Lifetime of Brahma 5.19178625 Billion years or 5.193124598 ...

Brahma, the creator of the universe, is supposed to have a lifetime of 100 Brahma Years, each of 360 Brahma Days. The length of one Brahma Day is called a kalpa and is 4.32×10^9 earth years. This would make Brahma's lifetime equal to about 156×10^{12} earth years. It is held that at the end of such a period the world disappears to be replaced by a new world with a new Brahma. But there are subdivisions to the kalpa or Day of Brahma. One kalpa is equal to 1000 mahayugas, each of which would be of length 4.32×10^6 earth years or of 12,000 so-called Divine Years. This works out to one Divine Year = 360 earth years, [360x12,000 = 4.32×10^6] Each mahayuga consists of four yugas, each successive yuga is of decreasing length, containing increasing strife and conflict. The first yuga is the Krta Yuga whose length is 4000 Divine Years, [1,440,000 earth years]; the second is the Treta Yuga of 3000 Divine Years, [1,080,000 years]; the third is the Dvapara Yuga of 2000 Divine Years, [720,000 years]; and the last is the Kali Yuga of 1000 Divine Years, [360,000 years]. These add up not to 12,000 Divine Years, but to only 10,000 Divine years. The discrepancy is explained in terms of "yuga dawns and twilights".

THE 20TH CENTURY COSMOLOGICAL SYSTEM

For most of the 20th century, cosmologists have been using a model based on a "critical density"; critical in the sense that if exceeded, the universe will oscillate between a series of big bangs and big crunches, and if deficient, will expand forever. The jury is still out, but at the beginning of the 21st century, the smart money is on insufficient matter and eternal expansion. In this model we are concerned with three quantities:

1) An observable: the Hubble parameter, H_0 measured in kilometers/second/megaparsec.
2) An interval of time called the Hubble Age, A, the time from the present back to an origin assuming constant rate of expansion at the present rate, measured in billions of years.
3) The so-called age of the universe, T, the time from the present back to the big bang, measured in billions of years.

These quantities are related as follows:

(H_0 in km/sec/mpc) x (A in billions of years) = 978; and T = 2/3 A

And Now

kalpa = 4.32×10^9 years

Planck Age = 43.268366_{10} seconds

3.12×10^9 gynes in the human genome or 0.72 kalpas

It is Intriguing to guess that kalpa should have been defined as 4.3268366×10^9 year = modified kalpa

$= 9.636171$ years

$= 17.135282$ sec : modified kalpa

17.456067 sec = ~~Planck Age~~ T_U

$\delta = 0.320785_{10}$ ~ 2.093

17.485626 ~ 2 kalpas

17.135282 ~ 1 modified kalpa

0.300344 ~ 2

.30103

i.e. 2 modified kalpas = 17.436312

17.456067 T_U

$\delta = 0.019755$ ~ 1.0465

i.e. 2 modified kalpas $\doteq T_U$

$2 mk \times 1.0465 = T_U$

Working backwards.

if $2k \equiv T_U$

$1k = 17.155037$ sec

$= 9.695925_{10}$ yr ~ 4.528194×10^9 yr

4.32×10^9 yr old kalpa

0.208194×10^9 yr

off by 208 m.y.

1 galactic rotation

i.e. If kalpa were = $\frac{1}{2} T_U$ = new kalpa

then the difference between old kalpa and new kalpa would be the time of one revolution of the galaxy

Great stuff for the current astronomical crowd fun!

Lifetime of Brahma in seconds = 21.690898 = 21.6341.83

KALPAS AS UNITS OF TIME

The table shows the relations between the Hubble parameter, H_o; the Hubble time or age, A; the time since the big bang, the so-called age of the universe, T; with $\log_{10}$ values.

H_o km/sec/mpc	A Gyr	T Gyr	log T years	log T seconds
1) 550	1.8	1.2	9.079	16.578
2) 71.99	13.58	9.056	9.956955	17.456067
3) 75.46	12.96	8.64	9.936514	17.435626
4) 150.93	6.48	4.32	9.635484	17.134596
5) 4.1924×10^{-3}	233,280	155,520	14.191786 25	21.690898

1) Hubble's first value [Realm of the Nebulae p168, 1936] 5.191 B.Y.
2) Current value based on Cepheids [Friedman et al, 1999] This value = $(\alpha\mu S)^{3/2}\, t_o$
3) Value corresponding to 2 kalpas
4) Value corresponding to 1 kalpa
5) Value corresponding to "Lifetime of Brahma"
[log number of seconds in year = 7.499112]

5 or B_L

10^5 B.Y.

$B_L^2 = P_A$

A lifetime of Brahma = $\sqrt{\text{Planck Age}}$

The Life time of a Brahma $\sqrt{t_o}$ = 21.634183 = 21.690898

Notes: The age of the earth is estimated to be about 4.5 Gyr which is close to one kalpa, which means the earth was born toward the end of the first Day. The sun is estimated to be about 4.7 Gyr, though a second generation star, it was still born in the first Day. The age of the universe 2) is "slightly" over two kalpas. Meaning we have been in the third Day of Brahma for 0.42/4.32 = 0.097 Day, that is for about 420 million years. This means the third Day of Brahma began 420 million years ago in the Silurian period, the age of first appearance of vertebrates, the fishes, and the first seedless land plants and ferns. Since the beginning of the third Day, there have been 97 mahayugas (out of 1000 per Day). The 98th mahayuga of the third day began 960,000 years ago in the Pleistocene epoch. This was the time of homo erectus well before homo neanderthalensis and homo sapiens. But since 960,000 years is less than 1,440,000 years of a Krta Yuga, we are still in a Krta Yuga, with 680,000 years to go. That should be good news for all of us.

L.T. Brahma^2 43.381796

If we define the Planck Age, P_A, as +43.268366 seconds, and take the total number of Brahmas, past, present, and future, B_N, as having the same numerical value as the lifetime of Brahma, B_L, in seconds = 21.690898, then $B_N \times B_L$ = +43.381796, ~ P_A. [$\log_{10}$ values]

or $B_L^2 = P_A$

The difference must lie in the Yuga dawn and twilight, verges

While the use of kalpas has no advantage over our powers of ten notation, it does help to put relative lengths of time into perspective by reducing billions and millions of years to days and hours. Since the big bang we are now only two hours and 20 minutes into the third Day of Brahma.

= 100 Mahayugas

The Ordovician-Silurian extinction (10) occurred 439×10^6 years ago $\approx \frac{1}{10}$ kalpa

1 kalpa = 4.32×10^9 years 432×10^7

1 Mahayuga 4.32×10^6

100 Mahayugas

P_A = 43.268366

$P_A/2$ = 21.634183 = B_L

LB 21.6091
D 0.0257

Gyr = gigayears or 10^9 years

There seem to be numbers of the order of 10^9 that occur in nature

# of genes	3.12×10^9 [#]	$S^{1/4} = 2.36 \times 10^9$ [#]
age of earth	4.5×10^9 [y]	$(\alpha MS)^{1/4} = 16.12 \times 10^9$ [#]
Kalpa	4.32×10^9 [y]	

$S \doteq 7\,(\text{kalpa})^4$ $\quad 1.074\,S = 7K^4$

Sand Reckoner

Is there a large number of importance $\sim 0, 1$?

say, 13: $\frac{1}{\#} = \frac{\#}{\infty}$?

$0 \cdot \infty = 1$

$\# = \infty \cdot \sqrt{0}$

Orders of nothingness $(0)^n$ or $10)^{\frac{1}{n}}$

0^0

Archimedes' Sand Reckoner → 10^{63} grains = A $= 10^7, 10^9 = 10^7$ billion

but his largest number

$= 10^{8 \times 10^{16}}$ See The Kingdom of Infinite Number p172

$\sqrt[7]{10^{63}} = 10^9$ $\qquad 10^{63} = 10^{9 \times 7}$

$(1 \text{ billion})^7$

Kalpa = 9.6354837

$(K)^{6.54} = A$

10^{96}

K: The Meta-Universe or "FOAM" has $T_K = (\alpha MS)^2 t_0 = 37.697542$ sec

B_L = Life Time of Brahma this is $144.4 \times T_U$ $\qquad \frac{T_K}{T_U} = 2.159567$ antilog = 144.39993

$\frac{T_K}{B_L} = \frac{37.697542}{21.690898} = 1.737943 \simeq \frac{7}{4}$ $\quad$ antilog = 54.694416

$\frac{B_L}{T_U} = \frac{21.690898}{17.456065} = 1.242600 \simeq \frac{5}{4}$ $\quad$ antilog = 17.482338

$\frac{T_K T_U}{B_L^2} = 1.398634 \doteq 1.4$ $\quad$ i.e. $T_K \cdot T_U$ in B_L units $= 1.4 = \frac{7}{5}$ pure numbers

KALPASUP.WPD July 8, 2005

HUBBLE AND THE KALPAS

The units of the Hubble parameter, H_o, are in kilometers/second/megaparsec.
One megaparsec is equivalent to 19.489352 kilometers [$\log_{10}$ value]
Hence an $H_o = 1$ is equal to -19.489352 sec^{-1}
Or an $H_o = V$ gives a frequency of logV -19.489352 sec^{-1}, or a time of 19.489352 - logV sec

The best current value for the Hubble constant, H_o, is about 72 km/sec/mpc.
If we use the value $H_o = 71.977$; with $\log(71.977)^1 = 1.857194$;
we get a log Hubble Time of 17.632158 sec, or log time of 10.133046 years
The anti log value becomes 13.584573 $x10^9$ years

A Kalpa or day in the life of Brahma is defined as 4.320×10^9 years
[with a $\log_{10}$ value of 9.635484 years = 17.134596 seconds]
If the age of the present Brahma began with the Big Bang, then

the first Kalpa began	13.584×10^9 years ago	Big Bang
the second Kalpa began	9.264×10^9 years ago	First generation stars
the third Kalpa began	4.944×10^9 years ago	Second generation stars, sun
the fourth Kalpa began	624×10^6 years ago	In the Sinian Era[2]

The present Brahma is now in his fourth day.

An alternate theory places the age of the universe at 2/3 the Hubble Time.
Again using the same value of H_o as above, the log age then becomes 17.456065 sec
[$= (\alpha\mu\ m_o/m_p)^3 \times t_o$]; with a corresponding log value = 9.956953 years
whose anti log value is 9.056×10^9 years
If the age of the present Brahma began with the Big Bang, then

the first Kalpa began	9.056×10^9 years ago	Big Bang
the second Kalpa began	4.736×10^9 years ago	Age of sun
the third Kalpa began	416×10^6 years ago	in the Silurian period[3]

The present Brahma is now in his third day.

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[1]This value of the Hubble Parameter derives from $(\alpha\mu\ m_o/m_p)^3 \times t_o$, where α is the fine structure constant, μ is the proton/electron mass ratio, m_o is the Planck mass, m_p is the proton mass, and t_o is the Planck time..

[2]The Sinian era was from about 800 to 570 million years ago, time of the oldest animal fossils. The Cambrian Period began 570 million years ago, with the great Cambrian radiant at about 530 million years ago.

[3]The Silurian period , 439-409 million years ago, time of the first land plants. [The first recorded extinction was about 440 million years ago.]

4YUGAS.WPD APRIL 30, 2001

EXAMPLES OF YUGAS

From the point of view of Westerners the Hindu notion of the successive shorter and more degenerate Yugas seems contradictory to our concept of "progress". And while much in human history accords with progress, there are also patterns that follow that of the Yugas. Some examples:

YUGA	PHILOSOPHY	RELIGION	USA	GERMANY	COMMUNISM
KRTA	SOCRATES	JOHN BAPTIST	TR	BISMARCK	MARX
TRETA	PLATO	JESUS	WILSON	WILHELM II	ENGELS
DVAPARTA	ARISTOTLE	PAUL	FDR	LUDENDORF	LENIN
KALI	ALEXANDER	CONSTANTINE	NIXON	HITLER	STALIN

PHILOSOPHY: Socrates was an innovative thinker, completely out of the box. Plato organized and brought order to Socrates' ideas. Aristotle validated polarization, truncating and secularizing Plato's vision. Alexander took all to the lowest level, that of ego.

RELIGION: John the Baptist was a wild and innovative thinker. Jesus took many of John's ideas and organized an altruistic teaching. Paul truncated and secularized Jesus' message. Constantine politicized the teachings and set up the base for temporal power. .

USA: Teddy Roosevelt added conservation and anti-trust doctrines to the American heritage, but began programs to emulate European colonialism. Wilson violated American tradition by intruding into a European war. Franklin Roosevelt not only renounced isolationism but reduced the historic American vision to that of being a world power. Nixon pushed dedication to colonialism after it had become an anachronism.

GERMANY: Bismarck's vision included European stability, German unity, and rights for the working class. Wilhelm was ego driven subordinating Germany's best interests to his own needs. Ludendorf conceived and implemented the model that was to become that for 20th century dictators. Hitler created and incarnated an elaboration of Ludendorf's model.

COMMUNISM: Marx perceived the inherent flaws in capitalism and proposed an evolutionary path to socialism. Engels secularized and pragmatized Marx' vision. Lenin twisted the doctrine into a power platform. Stalin plunged to depths of inhumanity rendering Marx' ideas anathema for decades to come.