SCRAPS
2006

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2006

Inaugurating not only a new year, but a new vision, this morning's dawn broke meteorological precedents and displayed a euphoric panorama assuring us God was still in charge and all would again be right with the world.

The sky and hills were different from any I had ever seen before. From low in the southeast a red glow gradually diffused the sky. As it brought forth its light, the usual hills in the east were outlined, but immediately behind them emerged a second range of higher hills, undoubtedly a cloud bank, but having an f^1 profile making them appear as real as an actual mountain range. Then above this range appeared even higher peaks, white with cloud-snow on their isolated summits, a trans-placed Himalayan landscape.

With this serial regression of cloud-mountain ranges *crest* came an important message. It revealed the true nature of the world: A sequence of successive realities behind each illusory reality. But most startling was the increase in beauty and grandeur at each successive reality. My eyes were repeatedly drawn up from the familiar hills to the magnificent heights and lights beyond. On one precious morning, it seemed the true nature of the world stood revealed.

DREAM0108.WPD   January 8, 2006

ANOTHER CRAZY DREAM

We[1] enter one of those typical parking lots that I encounter in dreams, marked into zones by barbed wire, the accessible zones are full, the difficult to reach zones are empty. Finally we find a place and head for the restaurant. We eat, but I have to wait and wait for the cashier. Finally she comes. I pay and she gives me a package as receipt. Sharon has disappeared. I hunt for her but cannot find her, so I wander around and see this huge unfinished building about 10 storeys high a structural steel framework. I am very concerned: How can they afford not to finish that thing?. What is the delay?

I am perplexed. Everything is so distorted here. I decide to open the receipt package. It has five goodies, chocolate nuts, I eat one then discover a hidden partition and underneath there is chocolate ice cream. Just then I sight Sharon. She has been inspecting all of the fences that surround the parking lot. I give her the ice cream. She is suspicious but eats it. Then we are joined by the rest of our party (the usual suspects who came with us in the first place). We have to find a place to stay. Finally we find a room but there are about eight of us and I find it too crowded. I excuse myself and wander outside. Then looking around the crowded lobby I see a familiar face, and at the same time she sees me. IT IS ROBIN! We look at each other, recognize each other, then we hug. I am bewildered. I thought Robin was dead, but no. She has been alive all this time but in this crazy world of unfinished buildings and weird parking lots. Now I am here too.

I wake up and try to figure out what all this means. Robin seems to know a lot more than I do. She knows where she is. I just think she is dead. But then the notion occurs to me that she may be thinking I am dead and she is the one who is alive. So what might really have happened is this: Upon her death our common world split into "parallel universes". She died in mine but lived on in her universe. But to her, I died in her universe, but here I am alive in mine. That is, We are both alive but no longer in the same world, but are each "alive" in a parallel universe.

Speculation, yes. But what I do <u>know</u>: In some profound sense Robin is alive and flourishing in some other world, be it parallel, orthogonal, diagonal or whatever.

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[1]The "we" is a nebulous crowd of people, a mix of persons whom I know well and others who are somewhat familiar, but not identifiable.

THE FORMS OF REPLACEMENT

In addition to motion, growth, decay, an important manifestation of change is replacement. There are several types of replacement.

PASSING THE TORCH:
>   Children replacing parents
>   Students replacing teachers
>   Princes replacing kings
>   New presidents, popes, etc, replacing their predecessors

THE GIFT REPLACES THE GIVER
>   The system replaces the systematizer [Heliocentrics replace Copernicus]
>   The compositions replace the composer. [The symphonies replace Beethoven]
>   The plays replace the playwright [Hamlet, Macbeth, et al replace Shakespear]
>   The discovery replaces the discover [X-rays replace Rontgen]
>   The invention replaces the inventor [electric lighting replaces Edison]
>   The collection replaces the collector
>   The product replaces the process
>   The selection replaces the selector or becomes the selector [in bio-evolution]
>   Creation replaces its Creator

DYSFUNCTIONAL REPLACEMENTS
>   A part replaces the whole   [cancer cells]
>   Executive power replaces separation of powers, [President over congress and courts]
>   The messenger replaces the message [Darius executing the bearer of bad news]
>   The pointing finger replaces its designation
>   The teacher replaces the teaching [Deification of the teacher, as in most religions]
>   The institution replaces its mission [the Pentagon's prime focus: defending the Pentagon]
>   War replaces its participants
>   Power replaces its administer wielder
>   The means replaces (and actually determines) the ends
>   The symbol replaces what it represents
>   The word of the law replaces its intent
>   Proselyting replaces development

REVERSIBLE REPLACEMENTS
>   The agent replaces the agenda, then the agenda replaces the agent
>   The action replaces the act. then the act (result) replaces the action [eg invasion of Iraq]
>   Science and Technology

Dialectical Replacements
        generalization, abstraction

Action replaces {acts}

Which act from {acts} to be selected by value criteria
is trumped by the meta-criterion:

　　　　action more valuable than any of {acts}

　　i.e. Action becomes a value, a criterion
　　　　　　again　　set - subset mix

We admire: "sticking to guns"

?⇒ an innate fear of change?

　　　　　of/for choice
Criteria, level
menu level　　　　　　　level mix

The CIA cannot do its job if restricted by
the constitution and the law.
　　The mission of a sub-institution
　　　　replaces the Parent institution
　　　　　　w
　　The Pentagon replacing its mission
　　to protect the country to protecting itself
　All by people whose identity is with
　themselves, their job, their department
　　　not with the country they are
　　　　supposed to serve

The Governments priority is no longer solving problems
　but preventing their becoming known to the public
　　　　　　　　　　　　　　－ Le Monde

At a certain point in schooling, [usually grad school]

A watershed　　politics, competition begins to dominate research
　　　　　　　　　　　　　　　　replay
　　　　　　　　　　AAS
　　e.g. astronomers replace astronomy
　　　　post, position, office replaces the search
　　　　the synchronic takes over and excludes the diachronic

　Competition over what exists replaces efforts for innovation

Our synchronic duty is to serve;
Our diachronic duty is to search.

We have here-and-now duties, local duties, duties to our neighbors, our colleagues, our contemporaries. These duties are summarized in the Buddhist interpretation of Compassion, and in the Gospel injunctions of sharing and loving your neighbor and your enemy. But we also have long range duties and big picture duties. These include stewardship of the earth and the unending duty to search, a duty implicit in Buddhist Wisdom, in the Taoist path, and in the Judaic Talmud.

But serving writes on searching and searching writes on serving. Compassion and Wisdom grow or decay together. Dogmatic teachings and incompetent practices are related pairs as are effective solutions and open investigations. Our service must incorporate the products of our search and our search must be guided by the needs of serving

Today we have insufficient compassion and wisdom to cure our diseases of greed, power, arrogance and war. And without commitment to an open ended search for new wisdom these dysfunctions may soon terminate us. Hence, as we care for one another and for our world we must continue to explore and search for a wisdom that will guide our future choices and creations.

RECURSIVE ALTERNATIVES

Measured values: (All $\log_{10}$ cgs) $S = -39.355880 = G\, m_p^2\,/\,\hbar c \alpha \mu$

$\alpha \mu = 1.1270742$ $m_p^2 = -47.553204$ $\hbar c = -16.500103$ $G = -7.175705$

The general characteristic polynomial corresponding to the recursion equation
$$A_{n+2} = bA_{n+1} + cA_n \quad \text{is}$$
$x^2 - bx - c = 0$,   with roots $v = (b+\sqrt{b^2 + 4c})/2$ and $u = (b-\sqrt{b^2+4c})/2$
$(u+v) = b$ and $u \cdot v = -c$

CASE 1) the "$\Pi\Sigma$" Case   Assume: the characteristic polynomial is $x^2 - 10x + 10 = 0$,
$v = 5 + \sqrt{15} = 8.8729805$, $u = 5 - \sqrt{15} = 1.1270167$, and $v^2/2 = 5(4+\sqrt{15}) = 39.364892$
$u + v = 10.0000000$, $u \cdot v = 10,0000000$

CASE 2) Assume: $u = \alpha \mu = 1.1270742$ and $v^2/2 = S = 39.355880$,   then $v = 8.8719648$
$u + v = 9.9990390$, $u \cdot v = 9.9993626$

CASE 3) Assume: $u = \alpha \mu = 1.1270742$ and that $u + v = 10$
then $v = 8.8729258$, and $v^2/2 = 39.364406$, and $u \cdot v = 10.0004457$
$u + v = 10.0000000$, $u \cdot v = 10.0004457$

CASE 4) Assume: $u = \alpha \mu = 1.1270742$ and that $u \cdot v = 10$
then $v = 8.8725303$, and $v^2/2 = 39.360897$, and $u + v = 9.9996045$
$u + v = 9.9996045$, $u \cdot v = 10.0000000$

Assume in CASES 2), 3), and 4) that the differences between the $v^2/2$ values
and the $\Pi\Sigma$ value of 39.364892 are attributable to an error in G. Then the "correct" values of G
to make the difference $= 0$ and their differences, Δ, with the present value of G $= -7.175705$ are:

CASE 2) $G = -7.184717$, $\Delta = 0.009012$
CASE 3) $G = -7.184231$, $\Delta = 0.008526$
CASE 4) $G = -7.180722$, $\Delta = 0.005017$

RECURSION TABLE

$$A_{n+2} = b\,A_{n+1} - c\,A_n \qquad x^2 - b\,x + c = 0$$

CODE	FORM	$b = u + v$	$c = u \cdot v$	u	v	$v^2/2$	$\Delta(10 - b)$	$\Delta(10 - c)$
$\Pi\Sigma$	b = c	10	10	$5 - \sqrt{15}$	$5 + \sqrt{15}$	$5(4 + \sqrt{15})$		
$\Pi\Sigma$	b = c	10	10	1.1270167	8.8729805	39.364892	0	0
$\alpha\mu$, S	measured	9.9990390	9.9993627	1.1270742	8.8719648	39.355880	0.0009610	0.0006373
$\alpha\mu$, b		10	10.0004457	1.1270742	8.8729258	39.364406	0	0.0004457
$\alpha\mu$, c		9.9996045	10	1.1270742	8.8725303	39.360897	0.0004955	0
S, b		10	10.007889	1.1280352	8.8719648	39.355880	0	0.007889
S, c		9.9991108	10	1.127146	8.8719648	39.355880	0.0008892	0
$\alpha\mu$	b = c	9.9964922	9.9964922	1.1270742	8.869418	39.333288	0.0035078	0.0035078
S	b = c	9.9989979	9.9989979	1.1270331	8.8719648	39.355880	0.0010021	0.0010021
$(\alpha\mu)^2/10 + 1$	b = c	9.9992106	9.9992106	1.1270296	8.8721810	39.357798	0.0007894	0.0007894
$[10(\alpha\mu-1)]^{1/2}$	b = c	9.9844646	9.9844646	1.1272719	8.8571927	39.224931	0.0155354	0.0155354
$\Phi^{1/4}$	b = c	9.9502081	9.9502081	1.1278385	8.8223696	38.917103	0.0497919	0.0497919

Inputs are in red.   When b = c, u = v/(v-1) and v = u/(u-1),   And   b = c = $v^2/(v-1)$ = $u^2/(u-1)$

HISTWISD.WPD

January 26, 2006

THE WISDOM OF HISTORIANS

BARBARA TUCHMAN, HISTORIAN

In 1913 it was still possible to think the fault lay in the system, not in humanity.

Government remains the paramount field of unwisdom because it is there that men seek power over others and lose it over themselves.

Policy founded upon error multiplies, never retreats.

War is the unfolding of miscalculations.

The power to command frequently causes failure to think

CHARLES BEARD, HISTORIAN

BEARDS' FOUR APHORISMS OF HISTORY:

1.   The mills of the gods grind slowly, but they grind exceedingly fine.

2.   Whom the gods would destroy they first make mad with power.

3.   The bee fertilizes the flower which it robs.

4.   Only when it gets dark enough can you see the stars

ROBERT CONQUEST, HISTORIAN AND POET

Conquest'S Law:

To anticipate the behavior of an organization, assume it to be controlled by a secret cabal of enemies determined to discredit it.

LI KIANG, HISTORIAN AND PHILOSOPHER

The agent that effects an extinction germinates the ensuing radiant.
(cf Beard No. 3)

STILL ANOTHER CRAZY DREAM

I have been infected with some sort of mental disease whose primary symptom is strange and crazy dreams. Although strange and crazy, these dreams seem to be trying to communicate an important message, and if I had the code book, they may even be mantic.

The dream I had about 4:30 this a.m. seems to relate in some way to my working last night on the Feynman Dialectic, which is about the interaction of generalization and abstraction. But related or not, the dream has caught my attention.

The Dream:

I am in a strange terrain, filled with high and precipitous cliffs and deep bare valleys. There is no vegetation, only bare rock; but the rocks all seem to be sedimentary and the cliffs appear to display a stratified record covering eons of time. No life, only me standing atop one of the cliffs scanning the barren vista below. Then there appear two or three helicopters, flying in and out among the cliffs and inspecting them close up. There seems to be a feeling of expectation, there is some catastrophic event impending. The choppers are here to see if the rocks can be de-coded. and give a clue to what is about to happen. Then they fly away. I decide I should leave too and see if anyone knows what is going on.

I find myself in a huge airport waiting room. It is crowded, filled with a mix of bearded toughs and slick guys in suits. No women seem to be present. Everybody seems to be expectant yet fearless. They all seem to know something that I don't. Why are they smiling and winking at one another? I see an old friend from my RAND days. I ask him if he knows what is going on. He pulls me aside and says, "This is the most ingenious thing I have ever encountered. It must have been thought up by someone as brilliant as Einstein." Yes, what is it? "These guys are two groups waiting to board two planes. Each group is told that they are going to fly out to where they can see the other plane and all who are in it destroyed. And they all believe the they will see their adversaries or enemies in the other plane go down. And they all believe this, not realizing their own plane will also be destroyed!!" I watch as the crowd splits into two groups and two lines form to board the two planes. Everyone can hardly wait to get on board. But curiously, the toughs don't board one plane and the suits the other, as I expected, but a mix of toughs and suits boarded each plane. I was confused and woke up.

I thought this whole thing is absurd. The pilots must know this scenario won't work, but maybe they too are true believers that only the other plane will be destroyed. I was reminded of a painting I once saw depicting gleeful good guys with angel's wings watching the bad guys burn in Hell.

> *We are the ones, the chosen few*
> *The rest of you are damned*
> *There's plenty of room in Hell for you*
> *We don't want Heaven crammed.*

But the dream says this will be a mutual situation.

DIALECTICS
INTRODUCTION

Dictionary definitions of dialectics define it as a process for ascertaining truth through logical arguments. This definition derives from the original meaning of dialectics, a question-answer dialogue used by Socrates to exposit the deeper meanings in verbal propositions. Centuries later the term dialectics was revived by Hegel [1770-1831] to describe a method of integrating "contraries" or opposing views through synthesis. That is, from parts of the thesis and parts of its antithesis we can integrate a synthesis which becomes a new thesis. Marx[1818-1883] picked up Hegel's concept of dialectics, but replaced the concept of synthesis with that of a struggle between the opposites, so called dialectical materialism, reducing dialectics from an on going synthetic process to a win/lose conflict. While many philosophers from Plato to the present have discussed dialectics, it appears that each has given it a somewhat different meaning, as did Hegel and Marx.

If we seek a generalized definition of dialectics that can include and go beyond its several historical meanings, we note the following:
1) Dialectics is a process effecting change.
2) Dialectics is in essence a two fold or two phase process, as in question-answer or contraries-synthesis.
3) Dialectics is not only an epistemological process that effects change in the content of knowledge, but also an ontological process guiding evolution and effecting changes in the material world.
4) Dialectical processes may terminate in a single conclusion or result, converge to a stable oscillatory situation, repeatedly effect the emergence of novelty, or diverge to extensive diversity.
5) There are several possible *species* of dialectics. These include:
Concurrent dialectics in which the principles or forces act simultaneously.
Cyclical, or time sharing dialectics, in which the principles or forces take turns.   T D M A
and these may be single cycle, two cycle or multiple cycle dialectics,
metaphorically engines or pumps, steam, diesel, otto cycle etc. .

We may now define dialectics in a more general way as follows:

DIALECTICS:
Pairs of propositions or principles that work with and/or against one another, whose interaction effects the emergence of epistemic or material novelty which may be open and on going or convergent and terminal. .

TELESCOPES AND INTELLIGENCE
SOME METAPHORS

TELESCOPES	INTELLIGENCE
Light gathering power: photons/second proportional to the lens or mirror diameter squared	Data processing power: bits/second proportional to the number of parameters in the database squared
Magnification range: Wide field to high detail ratio, (measured by lens focal length to eyepiece focal length ratio)	Identification range: Big picture to detail discrimination ratio
Direction positioning: Two coordinates, declination and right ascension	Thought positioning: Two coordinates, concentration and attention span

The overall power of a telescope is seen to depend on its size, focusing range, and steadiness in tracking objects. There is also the matter of selecting which objects to observe and knowing when best to observe them. In addition there are <u>contextual parameters</u> , such as atmospheric turbulence and sky darkness, that affect overall telescope power and usefulness.. Finally, the usefulness of a telescope depends on how the results of the observations are integrated with other observations and with the theories that attempt to synthesize all observation.

Overall intelligence depends on the amount of data one is able to process; on the flexibility in moving between details and big pictures; and on how big a big picture can be entertained and what detailed discriminations can be perceived. Intelligence requires criteria for establishing priorities and selecting which ideas, concepts, problems and issues to engage, and the timing. Effective application of intelligence requires insight into <u>contextual parameters</u> such as differences in cultural thinking and values and what is changing and the rates of change. Finally, intelligence is measured by the ability to see new patterns in the data with imagination and openness replacing ideologies and dogmas.

THINKTYPES.WPD   March 10, 2006

FOUR SPECIES OF THINKING

SCIENCE APPROACH:
> Focus on confirmed facts [confirmed meaning repeating or reproducible by experiment]
> Focus on the "IS", what is out there, objective, value free.
> [But now being modified by recognizing observers' participation]
> True/False, Aristotelean view being replaced by a probabilistic view,
> [But allowing Popper falsification]
> Skeptical and uncertain, open to modification and correction, never final; If can, then do.
> View of others: General unconcern, but toss them a few apples now and then.

LAW APPROACH:
> Focus on selected facts [what advances winning the case]
> Selection of inputs; control both what is admitted as evidence and who can be a witness.
> [Use of ad hominems to discredit witnesses and to disallow inputs]
> Interchange sets with subsets and exclude contexts to advance chosen views
> Wording of law overruling intent of law, i.e. symbols replace substance.
> Homogenize circumstances to subject them to the law.
> Stasis oriented, certainty is established by precedence
> View of others: They are to be both protected and controlled.

POLITICAL APPROACH:
> Focus on images and illusions [What appeals to and entertains the public]
> Project infallibility and pseudo certainty using PR, spin, and Orwellisms
> Believe in yourself and your agendas, insulate policies from facts and contexts
> Power of office allows you to create reality. i.e. "Might makes Right"
> [but we have fought wars against "Macht geht vor Recht"]
> View of others: The public are sheep to be led and homogenized into lockstep.

FAITH APPROACH:
> Focus on the belief system, on its description of the world.
> Focus on direction, ignore current position
> Have absolute certainty in the correctness of the vision. Wish can subdue reality.
> Diversity is dangerous.
> ["We are the ones, the chosen few, The rest of you are damned,
> There is plenty of room in Hell for you, We don't want Heaven crammed.]
> View of others: They are unwashed and must either be converted or eliminated.

All of the above justify the use of various cognitive filters, sieves, and nets to select what dots are on their table of discourse. And all of the above restrict inputs because of inherent limited information processing capacity

GUIDEPOSTS

FOR	PROPER or TRADITIONAL	ACTUAL or CURRENT
RELIGION	MORALITY	MONETARY
SCIENCE	VALIDITY	PUBLICITY
LAW	JUSTICE	LITIGATIONS
POLITICS	PROFICIENCY	EXPEDIENCY
LEADERSHIP	INTEGRITY	SECRECY
SOCIETY	INDIVIDUALITY	CONFORMITY
SPORTS	SKILL	THE RECORD
MEDIA	ACCURACY	VIEWERS *RATINGS*
HISTRIONICS	TALENT	CELEBRITY
SCHOLARSHIP	PROFUNDITY	CYNICISM

NON SEQUITUR Wiley Miller

THE EVOLUTIONARY STUMBLING BLOCK
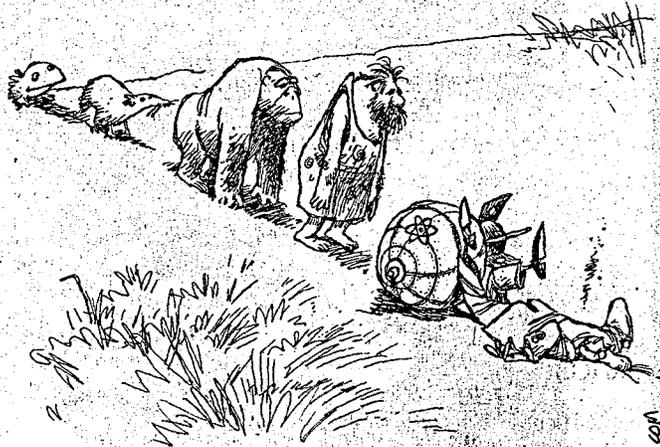
BIZARRO® Dan Piraro

$\bigcirc$
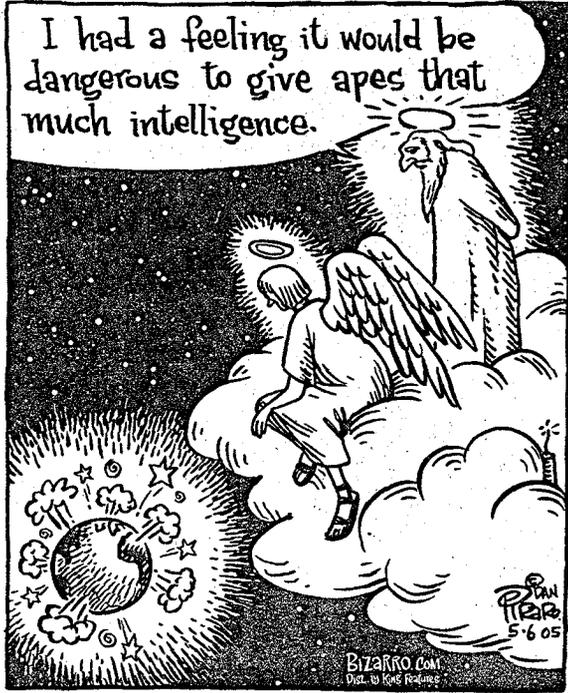
UNITS OF CHARGE:

The basic dimensionality of charge is $[ML^3/T^2]^{1/2}$

Historically, there are four basic units of charge:

    q, the electrostatic unit of charge, defined as the value of two equal charges separated by 1 cm exerting a force of 1 dyne: $q \cdot q' / r^2 = 1$ dyne, where r = 1 cm.   **q = 1**

    e, the natural unit of charge, the charge on an electron, $= (\hbar \alpha c)^{\frac{1}{2}}$, $= c(m_e \cdot r_e)^{\frac{1}{2}}$

    $\log_{10}$ values: $e = -9.318469q$, $e^2 = -18.636938q^2$

    ϵ, the planck charge, $= (\hbar c)^{\frac{1}{2}}$, $= c(m_o \cdot l_o)^{\frac{1}{2}}$

    $\log_{10}$ values: $\epsilon = -8.250052q$, $= 1.068417e$, $\epsilon^2 = -16.500103q^2$

    C, the "practical" or SI unit of charge, the Coulomb, defined as the value of two equal charges separated by 1 meter exerting a force of 1 newton. This is also the charge conveyed by one ampere flowing for one second.

    $\log_{10}$ values: $C = 9.476821q$, $= 18.795290e$, $= 17.726904\epsilon$

Conversion factors between the units:

The conversion factor between the coulomb and the electron charge, $e = 1.602177 \times 10^{-19}$ C and the conversion factor between electron-volts and joules, 1 ev = 1.602177×10^{-19} joules, are the same. Call this factor B, $\log_{10}B$ is -18.795290 (Physics Today 1986)

The value of $\log_{10}(c/\hbar\alpha)^{\frac{1}{2}} = 19.795290$, hence $\log(1/B) + 1 = \log (c/\hbar\alpha)^{\frac{1}{2}}$ or $B = 10 \cdot (\hbar\alpha/c)^{\frac{1}{2}}$

$C = e/B = 10^{-1} \cdot (\hbar\alpha c^2/\hbar\alpha)^{\frac{1}{2}} = c/10$, that is for cgs values, **C** is one tenth the velocity of light.

Conversion factors Log_{10} values   FROM ROW TO COLUMN

	COULOMB C	esu q	electron e	PLANCK ϵ
C	0	9.476821	18.795289	17.726873
q	-9.476821	0	9.318469	8.250052
e	-18.795289	-9.318469	0	1.068417
ϵ	-17.726873	-8.250052	-1.068417	0

Conversion factors   FROM ROW TO COLUMN

	COULOMB C	esu q	electron e	PLANCK ϵ
C	1	2.998141E+9	6.241508E+18	5.331790E+17
q	3.333540E-10	1	2.081944E+9	1.778492E+8
e	1.602177E-19	4.803203E-10	1	11.706228
ϵ	1.875543E-18	5.622740E-9	0.085425	1

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UNITDIST.WPC   March 14, 2006   March 21, 2006

UNITS OF LENGTH AND DISTANCE

LENGTH	VALUE meters	$\log_{10}$ (VALUE) meters	
PLANCK LENGTH	1.616051×10^{-35} m	-34.791545 m	$[G\hbar/c^3]^{1/2}$
YOCTOMETER	10^{-24} m		
ZEPTOMETER	10^{-21} m		
ATTOMETER	10^{-18} m		
FEMTOMETER	10^{-15} m		
FERMI = r_e	2.817914×10^{-15} m	-14.550068 m	$[\hbar\alpha/cm_e]$
COMPTON λ	3.861589×10^{-13} m	-12.413234 m	$[\hbar/cm_e]$
PICOMETER	10^{-12} m		
BOHR RADIUS = a_o	5.291781×10^{-11} m	-10.276398 m	$[\hbar/\alpha cm_e]$
ANGSTROM	10^{-10} m		
NANOMETER	10^{-9} m		
(RYDBERG)$^{-1}$ = $1/R_\infty$	9.112698×10^{-8} m	-7.040353 m	$[4\pi a_o/\alpha]$
MICRON	10^{-6} m		
MILLIMETER	10^{-3} m		
KILOMETER	10^{3} m		
MEGAMETER	10^{6} m		
GIGAMETER	10^{9} m		
ASTRONOMICAL U	1.495985×10^{11} m	11.174927 m	
TERAMETER	10^{12} m		
PETAMETER	10^{15} m		
LIGHT YEAR	9.460896×10^{15} m	15.975932 m	
PARSEC	3.085691×10^{16} m	16.489352 m	
EXAMETER	10^{18} m		
ZETTAMETER	10^{21} m		
MEGAPARSEC	3.085691×10^{22}	22.498342 m	
YOTTAMETER	10^{24} m		
HUBBLE*	9.460530×10^{24} m	24.975916 m	
RADIUS OF UNIV**	8.568129×10^{25} m	25.932886 m	

* A HUBBLE is the distance light travels in 10^9 years
** The distance traveled by light since the big bang. [based on log(age) = 17.456065 seconds]

Seconds in Sidereal Year	3.155815×10^7 sec	7.499112 sec
Velocity of Light	2.997924×10^8 m/s	8.476821 m/s
Astronomical Units/light Year	6.324191×10^4	4.801005
Astronomical Units/parsec	206,264.807	5.314425
Light years /parsec	3.261521	0.513420

The fermi in planck units: $\log = 20.241477 = [\alpha\mu S]^{1/2}$, where $S = \hbar\alpha c/Gm_e m_p \simeq \alpha\mu \left(\frac{m_o}{m_p}\right)^2$

Radius of universe in fermi units: $\log = 40.482954 = [\alpha\mu S]$

Radius of universe in plank units: $\log = 60.724431 = [\alpha\mu S]^{3/2}$

$$\frac{r_e}{\ell_o} = \alpha\mu \frac{m_o}{m_p}$$

$$\frac{r_e\, m_p}{\ell_o\, m_o} = \alpha\mu$$

DIMENSIONALITY OF ELECTRICAL UNITS

NAME	SYMBOL	DIMENSION	PLANCK	NAME
ENERGY	E	$M L^2 T^{-2}$	$\sqrt{(\hbar c^5/G)}$	joules
POWER	P	$M L^2 T^{-3}$	c^5/G	watts
FORCE	F	MLT^{-2}	c^4/G	dynes
CURRENT	I	$L T^{-2} \sqrt{(ML)}$	$c^3/\sqrt{G}$	amperes
POTENTIAL	V	$T^{-1} \sqrt{(ML)}$	$c^2/\sqrt{G}$	volts
CHARGE	Q	$L T^{-1} \sqrt{(ML)}$	$\sqrt{(\hbar c)}$	coulombs
RESISTANCE	Ω	T / L	$\sqrt{(G\hbar/c^7)}$	ohms

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FORMULAE:

CHARGE • VOLTAGE = ENERGY ;   CURRENT ^{2} • RESISTANCE = ENERGY

CURRENT • VOLTAGE = POWER ;   VOLTAGE ^{2} = FORCE

CHARGE / LENGTH = VOLTAGE ;   CHARGE / TIME = CURRENT

VOLTAGE • LENGTH = CURRENT • TIME

VOLTAGE = CURRENT • RESISTANCE   (OHM'S LAW)

$T \cdot V = \sqrt{(ML)}$; $I \cdot T^2/L = \sqrt{(ML)}$; $Q \cdot \Omega = \sqrt{(ML)}$; $E/I = \sqrt{(ML)}$

cf 2004 #20

March 24, 2006

THE UNSAID THAT MUST BE SAID

Today, as in the summer of 1914, events are moving toward a denouement that no one wants, everyone fears, and most believe cannot happen, but which our institutions, our processes, and our way of thinking make inevitable. The result in 1914 was a devastating war with countless destructive spin-offs and side effects which in turn generated further wars, with destructive spin-offs and side effects. The destabilization persists and the recurring archetype could today effect species suicide together with the destruction of countless other innocent plant and animal species.

RADIOACTIVE DECAY IS MEASURED IN CENTURIES

Whether from cosmic perspective, diachronic measurement, or in the judgement of Brahma, the self-labeled species, "homo sapiens sapiens", is a failed experiment. It has been evaluated too dangerous and self-centered to be allowed to continue on its chosen blind arrogant course. Hence, the determinator of humanity's future has been allowed to pass from the zone of open-endedness. The die are cast—only the date is yet to be set. Protection has been withdrawn and the human species is now left fully to its own devices, and those devices dictate its self-extinction.

○

ELECVOLT.WPD   February 20, 2000, January 18, 2001,March 25, 2006, September 18, 2006

ELECTRON VOLT UNIT CONVERSIONS

The electron volt has been found by particle physicists to be a useful unit with which to measure several parameters. Although the electron volt is basically a unit of energy, it can be used to measure mass, frequency, wavelength, and other physical parameters. Energy can be used as a basic measure whenever another physical parameter, such as mass or frequency, can be dimensionally equated to energy through functions of the fundamental constants, c, G, $\hbar$.

That is, E^n = function(c,G,$\hbar$), where n is an exponent of the energy, E, c is the velocity of light, G is the gravitational constant, and $\hbar$ is Planck's constant. Specifically:

Planck energy, $E = \sqrt{(\hbar c^5/G)}$.
Planck frequency, $\nu_0 = \sqrt{(c^5/\hbar G)} = E/\hbar$
Planck wavelength, $\lambda_0 = \sqrt{(\hbar G/c^3)} = \hbar c/E$
Planck mass, $m_0 = \sqrt{(\hbar c/G)} = E/c^2$
Planck power, $p_0 = c^5/G = E^2/\hbar$
Planck force, $f_0 = c^4/G = E^2/\hbar c$
Planck density, $\rho_0 = c^5/\hbar G^2 = E^4/\hbar^3 c^5$

PART I ENERGY UNIT CONVERSIONS:[1]

One electron volt = 1.602 177 x 10^{-12} ergs or 1.602 177 x 10^{-19} joules.
        [Note this value = 10 $\sqrt{(\hbar \alpha/c)}$ joules]
In terms of logarithms to base 10,

        a) one ev   = -11.795290 ergs = -18.795290 joules
        b) one Mev = 10^6 ev = -5.795290 ergs = -12.795290 joules
        c) one Gev = 10^9 ev = -2.795290 ergs = -9.795290 joules

Hence, to convert:

        Energy in ev to ergs subtract 11.79529; to joules subtract 18.79529
        Energy in mev to ergs subtract 5.79529; to joules subtract 12.79529
        Energy in Gev to ergs subtract 2.79529   to joules subtract 9.79529
        Energy in ergs to   ev add 11.79529   Energy in joules to   ev   add 18.79529
        Energy in ergs to mev add 5.79529   Energy in joules to mev add 12.79529
        Energy in ergs to Gev add 2.79529   Energy in joules to Gev add   9.79529

For example, the log value of the energy of the Planck Particle is 16.291442 ergs.
        16.291442 + 11.795290 = 28.086732 ev = 22.086732 mev = 19.086732 Gev

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[1] The electron volt is the amount of work required to move a unit charge through a potential difference of one volt. Other units commonly used to measure energy:

The erg = 1 dyne centimeter (cgs)
The joule = 10^7 ergs (SI),
The kilowatt-hour = 3.60 x 10^{13} ergs , $\log_{10}$ = 13.556303
The calorie = 4.19002 x 10^7 ergs, $\log_{10}$ = 7.622216
The BTU = 1.05587 x 10^{10} ergs, $\log_{10}$ = 10.023610

○

PART II CONVERTING ELECTRON-VOLTS TO OTHER PARAMETERS:[2]

ELECTRON-VOLTS TO FREQUENCY:
$\nu = E/\hbar$, where E is the energy in e-volts, ν is the frequency in hertz, and $\hbar$ is Planck's constant.
- The frequency in hertz = the energy in electron volts + 15.181634
- The frequency in hertz = the energy in mev + 21.181634
- The frequency in hertz = the energy in Gev + 24.181634

ELECTRON-VOLTS TO WAVELENGTH:
$\lambda = \hbar c/E$, where E is the energy in electron-volts, λ is the wave length in cm, $\hbar$ is Planck's constant, and c is the velocity of light.
- The wavelength in centimeters = –(the energy in electron volts + 4.704812)
- The wavelength in centimeters = –(the energy in mev + 10.704812)
- The wavelength in centimeters = –(the energy in Gev + 13.704812)

ELECTRON-VOLTS TO MASS:
$m = E/c^2$, where E is the energy in electron-volts, m the mass in grams, and c is the velocity of light.
- The mass in grams = the energy in electron volts –32.748931
- The mass in grams = the energy in mev –26.748931
- The mass in grams = the energy in Gev –23.748931

ELECTRON-VOLTS TO POWER:
$p = E^2/\hbar$, where E is the energy in electron-volts, p is the power in watts, and $\hbar$ is Planck's constant.
- The power in watts = the energy in (electron-volts)^2 + 3.386344
- The power in watts = the energy in (mev)^2 + 15.386344
- The power in watts = the energy in (Gev)^2 + 21.386344

ELECTRON-VOLTS TO FORCE:
$f = E^2/\hbar c$, where E is the energy in electron-volts, f is the force in dynes, $\hbar$ is Planck's constant and c is the velocity of light.
- The force in dynes = the energy in   (ev)^2 –   7.090475
- The force in dynes = the energy in (mev)^2 +   4.909525
- The force in dynes = the energy in (Gev)^2 + 10.909525

ELECTRON-VOLTS TO MASS DENSITY:
$\rho = E^4/\hbar^3 c^5$, where E is the energy in ev, $\hbar$ is Planck's constant, and c is the velocity of light.
- The density in grams/cm^3 = the energy in (ev)^4 – 18.634493
- The density in grams/cm^3 = the energy in (mev)^4 + 5.365507
- The density in grams/cm^3 = the energy in (Gev)^4 + 17.365507

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[2] $\log_{10}$ values are used for all conversion formulae.

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ELECTRON-VOLTS TO TEMPERATURE:

Boltzman's constant, $\sigma = 1.380658 \times 10^{-16}$ ergs/ degree Kelvin, log $= -15.859914$

One Gev $= 1.1604 \times 10^{13}$ K   or $\log_{10} = 13.064608$ K

The temperature in degrees Kelvin = the energy in ev   +   4.064608

The temperature in degrees Kelvin = the energy in mev + 10.064608

The temperature in degrees Kelvin = the energy in Gev + 13.064608

PLANCKUN.WPD   January 13, 2000   Rev March 28, 2006

PLANCK UNITS

σ

NAME	DIMENSIONS	SYMB	FORMULA	$\log_{10}$ cgs	electronvolts	$\log_{10}$ Gev *
ENERGY	$[ML^2/T^2]$	ϵ_o	$(\hbar c^5/G)^{\frac{1}{2}}$	16.291442	ϵ_o	+19.086732
MASS	$[M]$	m_o	$(c\hbar/G)^{\frac{1}{2}}$	- 4.662199	ϵ_o/c^2	-23.748931
LENGTH	$[L]$	l_o	$(\hbar G/c^3)^{\frac{1}{2}}$	-32.791545	$\hbar c/\epsilon_o$	-13.704812
TIME	$[T]$	t_o	$(\hbar G/c^5)^{\frac{1}{2}}$	- 43.268366	$\hbar/\epsilon_o$	-24.181634
FREQUENCY	$[T^{-1}]$	ν_o	$(c^5/\hbar G)^{1/2}$	+43.268366	$\epsilon_o/\hbar$	+24.181634
MOMENTUM	$[ML/T]$	p_o	$(\hbar c^3/G)^{1/2}$	5.81462	ϵ_o/c	-13.272111
FORCE	$[ML/T^2]$	k_o	c^4/G	49.082989	$\epsilon_o^2/\hbar c$	+10.909525
POWER	$[ML^2/T^3]$	w_o	c^5/G	59.559810	$\epsilon_o^2/\hbar$	+21.386344
DENSITY	$[M/L^3]$	ρ_o	$c^5/G^2\hbar$	93.712439	$\epsilon_o^4/\hbar^3c^5$	+17.365507
PRESSURE	$[M/LT^2]$	y_o	$c^7/G^2\hbar$	114.666081	$\epsilon_o c^3/G^3\hbar^3$	+95.579345
TEMPERATURE		θ_o		32.151340	ϵ_o/σ **	+13.064608
CHARGE^2	$[ML^3/T^2]$	q_o^2	$\hbar c = e_o^2/\alpha$	- 16.500103	$\epsilon_o^2 G/c^4$	-54.673569
VOLTAGE	$[ML/T^2]^{1/2}$	v_o	$c^2/G^{1/2}$	24.541496	$\epsilon_o/c^{1/2}\hbar^{1/2}$	+5.454762
CURRENT	$[ML^3/T^4]^{1/2}$	i_o	$c^3/G^{1/2}$	35.018315	$\epsilon_o c^{1/2}/\hbar^{1/2}$	+15.931583
RESISTANCE	T^2/L	Ω_o	$(\hbar G/c^7)^{1/2}$	-53.745187	$\epsilon_o G/c^6$	-72.831921
VELOCITY	$[L/T]$	c	c	10.476821	$\epsilon_o^{\circ}c$	10.476821
ACTION	$[ML^2/T]$	$\hbar$	$\hbar$	- 26.976924	$\epsilon_o^{\circ}\hbar$	–26.976924
G	$[L^3/MT^2]$	G	G	-7.175705	$\epsilon_o^{\circ}G$	–7.175705

* The value in the shaded cell is the Gev for the Planck particle:

$\epsilon_o = 2.795290 + 16.\,291442 = 19.086732$

The other values in this column can to be added to or subtracted from ϵo^N where $N = -1,0,1,2,4$, to give the values in the $\log_{10}$ cgs column. These $\log_{10}$ Gev values are valid not only for the Planck constant but in general for other ϵ_o's.

** The Boltzman constant $\sigma = 1.380658 \times 10^{-16}$ ergs/K° ; $\log_{10}$ value = -15.859914

EVEQUATE.WPD   March 30, 2006

ELECTRON–VOLT EQUATIONS

DERIVATION OF ϵ_0 EQUATIONS:

| MASS: | $E \cdot Y = M,$ | $Y \cdot ML^2/T^2 = M,$ | $Y = T^2/L^2$ |
| | $\epsilon_0 \Psi = M$ | | $\Psi = 1/c^2$ $\epsilon_0/c^2 \rightarrow$ mass |

| POWER: | $E^2 \cdot Y = ML^2/T^3,$ | $Y \cdot M^2L^4/T^4 = ML^2/T^3,$ | $Y = T/ML^2$ |
| | $\epsilon_0^2/\hbar = ML^2/T^3,$ | | $\Psi = 1/\hbar$ $\epsilon_0^2/\hbar \rightarrow$ power |

| LENGTH: | $Y/E = L,$ | $Y \cdot T^2/ML^2 = L,$ | $Y = ML^3/T^2$ |
| | $\hbar c/\epsilon_0 = L$ | | $\Psi = \hbar c$ $\hbar c/\epsilon_0 \rightarrow$ length |

| DENSITY: | $E^4 \cdot Y = M/L^3,$ | $Y \cdot M^4L^8/T^8 = M/L^3$ | $Y = T^8/M^3L^{11}$ |
| | $\epsilon_0^4/\hbar^3 c^5 = M/L^3$ | | $\Psi = 1/\hbar^3 c^5$ $\epsilon_0^4/\hbar^3 c^5 \rightarrow$ density |

DIMENSIONALITY CONVERSIONS:

Definition: One Gev = –2.795290 ergs = ϵ_0 ;
inversely, one erg = +2.795290 Gev, $\therefore$ to convert energy in ergs to Gev add 2.795290
[e.g. The energy of the Planck particle is 16,291442 ergs or ϵ_0 = 19.086732 Gev]

MASS CONVERSION:
 $M = \epsilon_0/c^2$ = –2.795290 –20.953642 = –23.748931
[e.g. For the Planck particle: 19.086732 –23.748931 = –4.662199 grams]

POWER CONVERSION:
$W = \epsilon_0^2/\hbar$ = –5.590580 + 26.976924 = 21.386344
[e.g. for the Planck particle: 38.173464 + 21.386344 = 59.559808 watts]

LENGTH CONVERSION:
$L = \hbar c/\epsilon_0$ = 2.795290 –16.500103 = –13,704813
[e.g. for the Planck particle: –19.086732 –13.704813 = –32.791545 cm]

DENSITY CONVERSION:
$\rho = \epsilon_0^4/\hbar^3 c^5$ = –11.181160 + 49.500309 –20.953642 = 17.365507
[e.g. for the Planck particle: 76.346928 + 17.365507 = 93.712435 g/cm^3

CONSAWAR.WPD   April 5, 2006

SOME NOTES AND QUESTIONS REGARDING CONSCIOUSNESS

THE FOUR DIACHRONIC MYSTERIES ARE:
        EXISTENCE [1], CONSCIOUSNESS, RANDOMNESS, GOD

ON CONSCIOUSNESS:
        What is the role of consciousness in ontology?
                Is existence a necessary condition for consciousness or vice versa?
                Or are they mutual and inseparable?
                It was said by the ancients that God and the world did not exist until they were
                self-referenced by the consciousness of humans.
                There must be a dialogue between two entities in order for them to exist or
                possess consciousness.

                Eddington has noted that uniform sameness is the equivalent of non-existence.
                In other words variety and differences are a prerequisite to existence.
                Pythagoras also maintained that ONE of anything could not exist.
                Only multiplicities existed.
                But perhaps it would be better to say that uniform sameness precludes awareness
                rather than existence. That awareness and consciousness derive from differences.
                Or is there a regression?

Nothingness	0 or 1
Existence	2 or more
Awareness	4 or more[2]
Consciousness	N or more, a mix of alike and unalike

        Another approach is that consciousness is an attribute of an aggregation.
                An aggregation of neurons or neural networks, as brain researchers propose.
                Or perhaps an aggregation of individual brains?
                Note the phenomenal behavior of flocks of birds, schools of fish
                Is not their ability to maneuver together a manifestation of some form of
                consciousness? Of collective consciousness?
                Jung speaks of a collective unconscious, is there not also a collective conscious
                [collective ==> multiplicity or aggregation]

        What are "higher states" of consciousness? "Altered states" of consciouness?
        Does evolution effect an increase in complexity? in diversity? in consciousness?

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        [1] Existence is about the species of somethingness and the species of nothingness or
oneness.

        [2]Four are needed: There must be at least 2 a's for a's to exist and at least 2 b's for b's to
exist. [Pythagoras]   And a's must be different from b's. [Eddington]

EASTER 2006

I no longer go to church.

It is not that I no longer need community, but that my community is with all of those who have departed. An eternal community, of which, they assure me, I am a member.

I no longer go to church.

It is not that I no longer worship. I worship no idols. I worship only the Great Mystery, that which cannot be imaged, gravenly or otherwise. And from time to time from the depths of the mystery I receive a glimpse of what cannot be articulated.

I no longer go to church.

It is not that I no longer give alms. It is about the old question, Who is my neighbor? In today's world the suffering and needs of our neighbors can be thousands of miles away. Our alms must go where they are needed. It is difficult to have to decide whom to help. Would it be that it could be all.

I no longer go to church.

It is not that I have no faith. It is that for me it is counter productive to imprison faith in doctrine or dogma. I believe in miracles, those salutary events that cannot be standardized, scheduled, or predicted, but occur at random. But RANDOM is one of God's names.

The institutional church
is the narthex of the spiritual church

In the narthex we are sheep, not pilgrims

I no longer go to church because church
is a distraction from the spiritual path

POSTPROT.WPD   May 9, 2006

THE POST PROTAGOREAN AGE

"MAN IS THE MEASURE OF ALL THINGS." –PROTAGORAS[1]

The painful transition taking place in the world today lies in our having to graduate from the Protagorean era, (which really predates Protagoras by millenia, but appropriately bears his name). It is the belief that man is the center and purpose of all creation. That man's destiny is to subdue and master all else. Man's "Gods of Power and Might" have been anthropomorphic projections of his vision of power. And this world view of Man dominating all has been applied by man not only to the natural order but to his own kind, not in the sense of self control, but in the sense of subduing other humans.

> God said to man: Subdue the earth and have dominion over every living thing that moves on the earth.
> —Genesis 1:28
> There are many wonderful things, and nothing is more wonderful than man.
> —Sophocles in Antigone

A few centuries ago an awakening began. First, Copernicus demonstrated we were not the center of the universe, then Darwin in the 19th century demonstrated that man was not only related to other life forms but had evolved from them. But in the 20th century the human ego struck back with the Anthropic Principle, 'the universe was created in order for us to be here'. Now, in the 21st century, the war of Man and his Gods against Cosmos and Brahman is in full force. Will Man win or have to surrender and agree to belong to the world rather than control the world? Or will Man commit atomic suicide rather than give up his lust for power?

History teaches that in all cultures the will to power possesses two components:

      1) Power dedicated to possess and control whatever exists.

      2) Power over nature from knowledge.

The challenge in both politics and religion has been to gain power over others through beliefs, laws, and/or force. The challenge in both philosophy and science has been to gain power over nature through knowledge and innovation.. Each challenge resulted in appropriate tools and methods. Politics and religion fabricated <u>eristic</u> methodologies to win over or subdue others. e.g. the creation of divisive and distractive issues, meaningless rhetoric, ad hominems, rules which could be followed or broken in order to win, and if needed weapons of violence. Philosophy and science, on the other hand, fabricated <u>dialectical</u> methodologies to penetrate the mysteries of Nature and Life. e.g. questions/answers, aggregation/synthesis, hypotheses/empirical tests. But both the eristic and dialectical traditions are dedicated to the pursuit of power, and regardless of who wins in the emerging struggle between "Protagoras and Plato", both will be transformed.

Issves to questions

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[1] Protagoras (c. 500 B.C.) was probably the first Sophist. He reputably was the one who first discriminated parts of speech, formalized grammar, and posed the beginnings of logic. He emphasized education for debate, disputation, and winning controversies.

Subj: **FW: Regarding your article on the DaVinci Code today**
Date: 5/12/2006 4:19:09 P.M. Pacific Standard Time
From: jpurcell@coraclegroup.com
To: AIW1871@aol.com

HELP!
I hope I didn't pop off my mouth much. She called me today, looking for comment from regular churchgoers (not spokespeople for the usual suspects) and I basically asked her to emphasize the two questions at the end of the third paragraph. Think this was okay?
I'm a little concerned that my clients (Muslim, Jewish and Christian) could raise eyebrows, so I tried to keep the quotable stuff innocuous.
Judy

From: Judith Purcell [mailto:jpurcell@coraclegroup.com]
Sent: Thursday, May 11, 2006 10:13 AM
To: 'lgoodstein@nytimes.com'
Subject: Regarding your article on the DaVinci Code today

Not for publication

Hello Ms. Goodstein—
I just read your article, "Christian Foes of DaVinci Code Debate How to Fight It."
http://www.nytimes.com/2006/05/11/us/11davinci.html?_r=1&th&emc=th&oref=slogin
Although the text states, "Whether Roman Catholic or Protestant, Orthodox or evangelical, they agree that the book attacks the pillars of Christianity by raising doubts about the divinity of Jesus and the origins of the Bible," I see no quotes from moderate or progressive Christians who do NOT see the DaVinci code as a threat. (Right-wingers in the Catholic and Protestant churches are more like each other than most of those in their own denominations, and are very good at getting headlines. That leaves most moderates—the bulk of Christians--out of the news.)
As a Christian, I—and many others I know—see no harm in this book, which is thought-provoking fiction. It does pull back the rug on the early history of the church and raises many questions, something that conservative Christians are not comfortable doing. But religion must work for the intellect as well as the heart. If it does not stand up to questioning, what good is it? How authoritative can it really be?
Is it any wonder that the early teachings of Jesus were misunderstood by many, who were not ready for his advanced message? We still struggle with applying his teachings to our lives today. As recent news suggests, the discovery of important archaeological, religious and artistic artifacts enlightens us on the tortuous routes they often take to the surface due to the ways in which mere human beings handle precious knowledge and valuable objects. Those who feel the church has all the answers and the Bible is historical fact often ignore the sectarian power struggles, censorship and editing, repression, and political context that were part of living in the early centuries after Christ, just as they are now.
The fact that millions of people are seeking something higher and better and that the DaVinci Code resonates with them is a hopeful sign. If the church has not adequately helped these people along their spiritual paths, then organized religion has failed—not every one of Dan Brown's readers—and the church should be learning from that.
How about restoring the feminine to religion? (Jesus was a radical who encouraged women believers.) Why shouldn't individuals work toward higher levels of consciousness and goodness? (Jesus challenged the corrupt and complacent of his time.) Why can't we dig deeper to understand more about Jesus's real message? (His parables have multiple interpretations.)
The right wingers need to get over it. They alone do not control the good news. Their attempts to denigrate Dan Brown's approach simply help to prove his point that many viewpoints have been suppressed.

Regards,
Judy

Saturday, May 13, 2006 America Online: AIW1871

JSPREPLY.WPD   May 13, 2006

An excellent response!   Good thinking and good writing. Your message is needed.

       I have been concerned about these same issues long before the appearance of "The DaVinci Code". Why are people so obsessed with the messenger and overlook the message? It is like worrying whether the postman's shoes were shined, whether he is wearing a wedding ring, and is he related to the postmaster general, and forgetting to open the letter he delivered. If one's weltanschauung, faith, and value system are all based on details about the messenger's life, and some long accepted details have been shown to be wrong, then it is time to look at the message itself.

Your two questions: "Why shouldn't individuals work toward higher levels of consciousness and goodness?" and "Why can't we dig deeper to understand more about Jesus' real message?" are basic ones. The church was supposed to support each individual's spiritual path, instead it chained people to dogma and burned those at the stake who saw more depth in the message. And still today, for the most part, the institution has replaced its mission. If the discoveries at Nag Hammadi, the Judas book, and the Da Vinci Code pull the rug out from under a power structure that has put a lid on people's spiritual growth, it is long overdue.

At the Mount of the Transfiguration, Jesus appeared with Moses and Elijah. All three had brought a new theophany, and the message was that there would be ever more theophanies, new messengers, bringing the timeless message but with deeper understanding.

In the Gospel of Thomas, Jesus says: "If there be those anywhere who suffer, then I suffer."
In the Koran, Muhammed says: "If any Muslim suffers, then all Islam suffers."

Jesus said to his disciples: "You too can do all that I have done and more too."
The Buddha said to Ananda; "You have learned all that I have taught, go now and light a new lamp."

Compare the Tao de Ching (c 550 BCE) with the Sermon on the Mount (c 80 AD):

He that humbles himself shall be preserved entire. He that bends shall be made straight. He that is empty shall be filled. He that is weary shall be renewed. He who has little shall succeed. He who has much shall go astray.	Matthew 5:5 Blessed are the meek: for they shall inherit the earth. 5:6 Blessed are they which do hunger and thirst after righteousness: for they shall be filled. Blessed are the poor in spirit: for theirs is the kingdom of heaven

There are many postmen who have brought the same letter.

KRASNIK   72

An axial period is an interval of transformation, the closing of a door to the past, a period of restructuring, then the opening of a different door to the future. Ecologies, species, societies, and individuals all have axial periods. Cultures, religions, ideas, concepts also encounter axial periods.. A planetary axial period occurs with the impact of an asteroid, a period of genetic disorder, then a radiant of new species. Barbarians impact an empire, it fragments, new kingdoms emerge. A caterpillar spins a cocoon, enters a period of isolation, then emerges with wings.. The second law of thermodynamics breaks down a system, high entropy, followed by an innovative synthesis. This "two door" process is basic to the laws of change, not to the laws of motion, nor to the laws of growth, but to the laws of evolution. *but to the laws of transformation* *not*

. Without the intervention of an axial interval of disruption systems freeze and stagnate. Between axial periods systems converge toward uniformity and a status quo. A single species obtains dominance (eg dinosaurs or humans). One city becomes an empire (eg. Babylon or Rome). . Politics impose lock step (eg. Third Reich or Dictatorship of the Proletariat), Cultures comport conformity (eg consumerism or purdah). Science and Philosophy design cognitive processes which seal them into boxes. All of this leads to stagnation. However stagnation does not imply inactivity, it implies repetitive activity, doing the same things over and over.

Conformity hides behind the illusion of superficial differences. Attention is directed to synchronic arguments that do not threaten the status quo. These distractive disputes engage the energies of the populace in win/lose games: wars on an international level(capitalism vs communism), politics on a national level(conservative vs liberal), sports on the city level(Giants vs Dodgers), and religions proselyte to become the one true religion (eg Christianity vs Islam). However in all the games of conflict, sometimes there is revolution(eg replacing Romanov czars with Marxist czars), sometimes there is agreement to disagree, sometimes there is even compromise, but there is never synthesis. All of these dyadic distractive differences seek convergence to oneness. To Ein Volk, Ein Reich, Ein Fuhrer, to One God, One Faith, One Church. Hence the need for axial intervals.

Paleontology and history record time between axial periods, but the confused high entropy intervals during axial periods has not been recorded, so we have little knowledge of the details of what has been termed the "Fourth Law of Thermodynamics"– the creation of novel (not just new) information and its interlacing with energy. Our question is: Can we get out of the box without having an axial interval?   What is the source of novel information? What are the ingredients necessary for emergence of a novel ecology, a novel species, a novel weltanschauung? Is this what the ancients metaphorically named, "virgin birth"?

O

BODESLAW.WPD   May 28, 2006

THE TITIUS-BODE LAW

This relationship approximating the distances of the planets from the sun was first noticed by Titius of Wittenberg in 1766, then independently by Bode in 1772. It may be developed as follows:

1) Form the sequence: 0   3   6   12   24   48   96   192   384   768
   each number after 3 being doubled

2) Add 4 to each number: 4   7   10   16   28   52   100   196   388   772

3) Divide by 10   0.4 0.7 1.0 1.6 2.8 5.2   10   19.6   38.8   77.2

The sequence in 3) closely approximates the distances of the successive planets from the sun as measured in astronomical units (earth = 1)

PLANET	DISTANCE IN A.U.	BODE VALUE
MERCURY	0.3871	0.4
VENUS	0.7233	0.7
EARTH	1.0000	1,0
MARS	1.5237	1.6
CERES (ASTEROIDS)	2.767	2.8
JUPITER	5.2028	5.2
SATURN	9.540	10
URANUS	19.18	19.6
NEPTUNE	30.07	38.8

This relation made important contributions to the history of astronomy, leading to the search for Uranus and the discovery of the asteroids. Uranus was discovered in 1781 having a distance in good agreement with the Bode sequence. But there still was a gap. No planet in the 2.8 position. This lead to a search that discovered the first asteroid, Ceres, on Jan 1 1801, followed by the discovery of hundreds of others that filled in the gap. A planet that fragmented? Or never coalesced?

Since Neptune and Pluto and all beyond disregard the sequence, and having no physical basis, Bode's Law lost its status of being a law and became sort of a curiosity. None the less, its numerical regularity with approximate fits to each of the eight existing planetary objects nearest the sun requires that its be kept on the table of discourse. When data from other planetary systems is available, there might turn out to be a "Bode Zone" in which planetary distances from their principal star, follow a similar sequence.

According to our way of describing the world, a "law" requires that a relationship be valid for all phenomena of the same type. The idea that there might be different laws for different places and times is contrary to our monolatry tradition.

THE DIVINE PROPORTION

The Divine Proportion or Golden Section: A : B :: B : A+B

Set A = 1 and B = x, the proportion becomes: $x^2 - x - 1 = 0$
This quadratic equation has two solutions: $x = (1+ \sqrt{5})/2$ and $x = (1- \sqrt{5})/2$
The quantity, $(1+\sqrt{5})/2$, is customarily designated by Φ and stands for the Golden Section
The negative of the second solution, $(\sqrt{5} - 1)/2$, is usually designated by ϕ.
Numerically, $\Phi = 1.6180338887....$ and $\phi = 0.6180338887......$ $\Phi = 1 + \phi$ and $\Phi = 1/\phi$

The Divine Proportion is mathematically related to the Fibonacci Sequence,
F[1,1] = 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597 ......
Which is generated by the recursion formula, $F_{n+2} = F_{n+1} + F_n$
One connection of the Fibonacci sequence to Φ is through the ratios of successive terms.
The lim as n $\rightarrow \infty$ of $F_{n+1} / F_n = \Phi$ and the limiting ratio for $F_{n+2} /F_n = \Phi^2$, for $F_{n+3} /F_n = \Phi^3$, etc

Other relations between Φ and the Fibonacci sequence involve powers of Φ:

For odd exponents:	For even exponents
$\Phi - 1/\Phi = 1$	$\Phi^2 + 1/\Phi^2 = 3$
$\Phi^3 - 1/\Phi^3 = 4$	$\Phi^4 + 1/\Phi^4 = 7$
$\Phi^5 - 1/\Phi^5 = 11$	$\Phi^6 + 1/\Phi^6 = 18$
$\Phi^7 - 1/\Phi^7 = 29$	$\Phi^8 + 1/\Phi^8 = 47$
$\Phi^9 - 1/\Phi^9 = 76$	$\Phi^{10} + 1/\Phi^{10} = 123$
$\Phi^{11} - 1/\Phi^{11} = 199$	$\Phi^{12} + 1/\Phi^{12} = 322$

Both the odd exponent sequence: A[1,4] = 1, 4, 11, 29, 76, 199, 521, 1364 ....
And the even exponent sequence: A[3,7] = 3, 7, 18, 47, 123, 322, 843, 2207 ....
follow the alternate term recursion formula: $A_{n+2} = 3 A_{n+1} - A_n$

If the two sequences A[1,4} and A[3,7] are combined maintaining numerical order, we obtain:
L[1.3]   = 1, 3, 4, 7, 11, 18, 29, 47, 76, 123, 199, 322, 521, 843, 1364, 2207 ....
which is known as the Lucas sequence. The Lucas sequence follows the same recursion
formula, $F_{n+2} = F_{n+1} + F_n$, as the Fibonacci sequence. For both sequences
the lim as n $\rightarrow \infty$ of $F_{n+1} / F_n = \Phi$, lim $F_{n+2} /F_n = \Phi^2$, lim $F_{n+3} /F_n = \Phi^3$, etc

If the F[1,1] sequence is partitioned into two sequences built with alternating terms, viz,
            A[1,2] = 1, 2, 5, 13, 34, 89, 133, 610, 1597 ....
and   A[1,3] = 1, 3, 8, 21, 55, 144, 377, 987, 2584....
These sequences as well as A[1,3] and A[3.7] follow the alternate term recursion formula:
            $A_{n+2} = 3 A_{n+1} - A_n$

Summarizing:
The complete sequences follow the recursion formula, $F_{n+2} = F_{n+1} + F_n,$
The alternate term sequences follow the recursion formula, $A_{n+2} = 3 A_{n+1} - A_n$

DIVPROP2.WPD   June 5, 2006

ON SEQUENCES

Recursion formulae:

F[a,b] $F_{n+2} = F_{n+1} + F_n$ [EVERY TERM]

A[a,b] $A_{n+2} = 3 A_{n+1} - A_n$ [EVERY OTHER TERM]

B[a,b] $B_{n+2} = 4 B_{n+1} + B_n$ [EVERY THIRD TERM]

Note:
The coefficients of the n+1 terms
are members of the Lucas sequence

C[a,b] $C_{n+2} = 7 C_{n+1} - C_n$ [EVERY FOURTH TERM]

D[a,b] $D_{n+2} = 11 D_{n+1} + D_n$ [EVERY FIFTH TERM]

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cf for integers: $I_{n+3} = 2 I_{n+2} - I_{n+1}$

$\Sigma_{n+3} = 2 \Sigma_{n+2} - \Sigma_n$ Recursion formula for the summation sequences

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Explicit formulae: F[1,1] is the Fibonacci sequence:

F[1,1] = 1,1,2,3,5,8,13,21,34,55,89,144,... $F_n = (\Phi^n - \phi^n)/\sqrt{5}$

Σ[1.1] = 1,2,4,7,12,20,33,54,88,143,... $\Sigma_n = (P\Phi^n - Q\phi^n)/\sqrt{5} - 1$

A[1.3] = 1,3,8,21,55,144,377,987,2584,... $A_n = (P^n - Q^n)/\sqrt{5}$

A[1,2] = 1,2,5,13,34,89,233,610,1597,... $A_n = (\Phi Q^n - \phi P^n)/\sqrt{5}$

L[1,3] is the Lucas sequence

L[1,3] = 1,3,4,7,11,18,29,47,76,123,199,... $L_n = \Phi^n + \phi^n$

Σ[1,3] = 1,4,8,15,26,44,73,120,196,.... $\Sigma_n = P\Phi^n + Q\phi^n - 3$

A[3,7] = 3,7,18,47,123,322,843,2207,5778... $A_n = P^n + Q^n$

A[1,4] = 1,4,11,29,76,199,521,1364,3571... $A_n = P^n\Phi + Q^n\phi$

$\Phi = (1 + \sqrt{5})/2, \quad \phi = (1 - \sqrt{5})/2$ $P = (3 + \sqrt{5})/2, \quad Q = (3 - \sqrt{5})/2$

$\Phi + \phi = +1, \quad \Phi - \phi = \sqrt{5}, \quad \Phi \cdot \phi = -1$ $P + Q = +3, \quad P - Q = \sqrt{5}, \quad P \cdot Q = +1$

$\Phi^2 = \phi^{-2} = P = Q^{-1}$ $Q = P^{-1} = \phi^2 = \Phi^{-2}$

$P^n\Phi = \Phi^{2n+1} \qquad P\Phi^n = \Phi^{n+2}$ $Q^n\phi = \phi^{2n+1} \qquad Q\phi^n = \phi^{n+2}$

FIBSEQ.WPD   June 15, 2006

THE FIBONACCI and LUCAS SEQUENCES

The Fibonacci numbers are a sequence of numbers based on the recursion formula,
$$1) \quad F_{n+2} = F_{n+1} + F_n$$
The initial numbers for the sequence are 1 and 1, leading to the sequence,
$\quad$ F[1,1] = 1, 1 ,2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584,....

A second important sequence based on the same recursion formula but beginning with 1 and 3 is:
$\quad$ L[1,3] = 1, 3, 4. 7, 11, 18, 29, 47, 76, 123, 199, 322, 521, 843, 1364, 2207, 3571,...
This sequence is known as the Lucas sequence.

Whatever the initial numbers are, 1 and 1, 1 and 3, or any n_1 and n_2,
the limiting value of the ratio between two successive numbers, F_{n+1}/F_n, as n increases is
$$\text{always} = (1+\sqrt5)/2$$

This quantity, $(1+\sqrt5)/2 = 1.61803398874989....$, is usually symbolized with Φ and is called
$$\text{THE GOLDEN SECTION} \quad \text{or} \quad \text{DIVINE PROPORTION}$$

In addition to defining sequences by <u>recursion</u> equations, such as 1) $F_{n+2} = F_{n+1} + F_n$
it is also possible to define sequences by <u>explicit</u> equations in which the value of F_n is given
directly as a function of n. The explicit formula for the Fibonacci sequence, F[1,1], is
$$2) \quad F_n = (\Phi^n - \phi^n)/\sqrt5 \qquad \text{where } \phi = (1 - \sqrt5)/2$$
And the explicit formula for the Lucas sequence L[1,3] is
$$3) \quad L_n = \Phi^n + \phi^n$$

Also of interest are the sequences giving the term by term sums of the above sequences.
The recursion formula for the summation sequences is   4) $S_{n+3} = 2 S_{n+2} - S_n$

For the Fibonacci sequence,
S[1,1] = 1, 2, 4, 7, 12, 20, 33, 54, 88, 143, 232, 376, 609, 986, 1596,....; $S_n = F_{n+2} - 1$
The explicit formula for this sequence is: 5) $S_n = (\Phi^{n+2} - \phi^{n+2})/5 - 1$

For the Lucas sequence,
S[1,3] = 1, 4, 8, 15, 26, 44, 73, 120, 196, 319, 518, 840, 1361, 2204,.....; $S_n = L_{n+2} - 3$
with explicit formula   6) $S_n = \Phi^{n+2} + \phi^{n+2} - 3$

EPIONTLEV.WPD   June 17, 2006

EPISTEMOLOGICAL–ONTOLOGICAL LEVELS   *cf Bacon's Idols*
(An Outline)

I. PERSPECTIVES

Sensory inputs and limits   Senses = messenger, experience = message
Sameness vs awareness and existence, [Eddington]
differences and change,
Retained and recorded inputs, what is noticed
the repetitive and regular [Whitehead]
frequency of occurrence and width of "now"

II. CONNECTIONS

Reality = an interpretation
From perspectives to pictures   Monolatry
Zones, non-localities in space and time vs universals and "Truth"
Regression of contexts
Fixations on continuity and contiguity
Causality and consistency
Aggregation of experience   Theory vs opinion
Sets and elements
Convergence vs Divergence
Diversity vs multiplicity
e pluribus unum vs ex uno plures

III. SEMIOTICS

Representations, language, image, music, rituals, forms
Abstraction vs generalization
Dialectics vs Eristics   philosophy vs sophistry
Searching vs disputing
Win/lose games
certainty and doubt

IV. CODES

Communication metaphors
Nature's code: Number, mathematics   Logic vs intuition
Mystical and sacred codes: Recognition

V. LAWS OF CHANGE

Openness and divergence
Fragmentation and emergence
Shelf life
Search for the diachronic: religion and science
Universals vs Invariants
The unexpected, innovation, "Virgin Birth"

RECURSION FORMULAE RELATED
TO THE FIBONACCI AND LUCAS SEQUENCES

The following notations will be used:

In refers to the natural numbers:

$$1,2,3,4,5,6,7,8,9,10.11.12.13.14.15.16.17.18.19.20.21....$$

Fn refers to the Fibonacci sequence:

$$1,1,2,3,5,8,13,21,34,55,89,144,233,377,610,987,1597,2584,....$$

Ln refers to the Lucas sequence:

$$1,3,4.7,11,18,29,47,76,123,199,322,521,843,1364,2207,3571,...$$

The customary recursion formula for Fn or Ln is: $F_{n+1} = F_n + F_{n-1}$

This is but one of many "symmetric" recursion formulae each valid for both Fn and Ln.
Others include:

$$F_{n+1} = 1 \cdot F_n + F_{n-1}$$
$$F_{n+2} = 3 \cdot F_n - F_{n-2}$$
$$F_{n+3} = 4 \cdot F_n + F_{n-3}$$
$$F_{n+4} = 7 \cdot F_n - F_{n-4}$$
$$F_{n+5} = 11 \cdot F_n + F_{n-5}$$
$$F_{n+6} = 18 \cdot F_n - F_{n-6}$$

Note that the coefficients of F_n are members of the Ln sequence. This fact allows
the general formula for the sequence of symmetric recursion formulae to be written as:

$$F_{n+r} = L_r \cdot F_n + (-1)^{r+1} \cdot F_{n-r}$$

where n designates the nth Fibonacci term and r = 1,2,3,4,5,.... And where L_r takes on
the rth value of the Ln sequence. Since $L_r = \Phi^r + \phi^r$, the general formula may also be
written as: $F_{n+r} = (\Phi^r + \phi^r) \cdot F_n + (-1)^{r+1} \cdot F_{n-r}$

Other interesting recursion formulae interrelate the Fn and Ln sequences:

$$1 \cdot L_n = F_{n+1} + F_{n-1} \qquad\qquad 5 \cdot F_n = L_{n+1} + L_{n-1}$$
$$1 \cdot L_n = F_{n+2} - F_{n-2} \qquad\qquad 5 \cdot F_n = L_{n+2} - L_{n-2}$$
$$2 \cdot L_n = F_{n+3} + F_{n-3} \qquad\qquad 10 \cdot F_n = L_{n+3} + L_{n-3}$$
$$3 \cdot L_n = F_{n+4} - F_{n-4} \qquad\qquad 15 \cdot F_n = L_{n+4} - L_{n-4}$$
$$5 \cdot L_n = F_{n+5} + F_{n-5} \qquad\qquad 25 \cdot F_n = L_{n+5} + L_{n-5}$$

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$$Fr \cdot L_n = F_{n+r} + (-1)^{r+1} \cdot F_{n-r} \qquad 5 \cdot Fr \cdot F_n = L_{n+r} + (-1)^{r+1} \cdot L_{n-r}$$

The richness of the interrelations between these sequences may be one reason they occur so often
in nature. In fact, such sequences may be nature's natural numbers, rather than the sequence of
integers that are basic to human cultures. In contrast, integers appear to have only one recursion
formula: $I_{n+1} = 2 \cdot I_n - I_{n-1}$

APHORISMS RE SEMIOTICS

Symbols participate in the reality which they represent.
            –Paul Tillich

The symbol has meaning which transcends the object symbolized.
            –Tobias Dantzig

Those societies which cannot combine reverence to their symbols with freedom of revision, must ultimately decay either from anarchy, or from the slow atrophy of a life stifled by useless Shadows.   –Alfred North Whitehead

Words both express and condition thought. What we already know governs what we can think and both directs and limits what we can learn and discover.

Language by its nature tends to distort experience.
            –Joyce Carol Oates

A word is the abstract symbol of a class, yet it also has the capacity to evoke an image, a concrete picture of some representative element of the class.
            –Tobias Dantzig

Disparate objects can, by the use of abstraction, be seen to be visually related.
            –Howard Steinberg

The affective structures of the human being, though unconscious, are expressed in words, fantasies, metaphors, dreams, and symptoms. Clearly these are not structures of behavior; they are closer to what others call cognitive structures or primitive beliefs.

In attempt to make experience intelligible, analogy [or metaphor] plays a fundamental role. By means of it what is already familiar or understood is appealed to in order to make clear the unfamiliar and unexplained.   {This works because of the redundant and fractal and recursive nature of the world.)   –Munitz

We begin to understand an inherent ethical catch in the new
technical order in its obligation to rely on the misuse of symbols.

The bomb is a symbol for the worst of modernity.
            –Spencer Weart

There is a hopeful symbolism in the fact that flags will not wave in a vacuum.
            –Arthur C.Clark

Jung points to the difference between a sign and a symbol.

A sign is less than the concept it represents
i.e. it truncates the concept
e.g. STOP — The concept is truth/e safety
[from the conscious]

A symbol carries more meaning than
its immediate meaning.

It carries the "aura" of the concept
e.g. the flag carries { related concepts }
The country, its history, sacrifices, visions...

[from the unconscious]

June 28, 2006

Today the sky manifested its spiritual powers: diversity, diversities, everywhere. On ordinary days the sky exhibits but one species of cloud–cumulus, stratus, cirrus or perhaps none at all. But today the diversity of species and the diversity of form within each specie revealed a splendor of nature that reaches down and rescues us humans from our synchronic tyrannies. There was fog, orographic mists, thunder heads, cumulus, alto cumulus, and meta cumulus recursions, and above all, thin high cirrus. And the hills were the supporting cast in this great drama of clouds, along with the grass, the trees, the groves, and the forests. All joined together, a melodic chorus.

I wanted to reach up and embrace the sky, but it was not necessary for the sky had already embraced me. I was loved and I was in love. I found oneness with the Sky and Earth Goddesses, surrounded by their choirs of attendants all singing and inviting us humans to join with them.

Oneness revealed itself, not as a completed whole or a One to be praised and worshiped for what it is, but as an ever expanding diversity that was to be joined with and accompanied in exploring and creating ever greater diversities of beautiful forms and relationships. A new theophany!

DIAPHANTINE ARITHMETIC

ADDITION	EVEN + EVEN = EVEN	EVEN + ODD = ODD	ODD + ODD = EVEN
SUBTRACTION	EVEN - EVEN = EVEN	EVEN - ODD = ODD	ODD - ODD = EVEN
MULTIPLICATION	EVEN x EVEN = EVEN	EVEN x ODD = EVEN	ODD x ODD = ODD
DIVISION	EVEN / EVEN = EITHER	EVEN / ODD = EVEN	ODD / ODD = ODD
		ODD / EVEN = NEITHER	

FULNUMB1.WPD   July 21, 2003   August 19, 2003   July 20, 2006

FULCRUM NUMBERS

Number Theory is the branch of mathematics having to do with the properties of the positive integers, often referred to as *natural* numbers. Number theory is devoted to the relations between integers and sub-classes of integers, such as *perfect* numbers, *prime* numbers, *Pythagorean* numbers, *Fibonacci* numbers, etc, etc.   In this essay the properties of a special class of integers called *fulcrum* numbers will be investigated. Fulcrum numbers are those integers, **B**, which "balance" the sum of a sequence of integers immediately less than **B** with the sum of a sequence of integers immediately greater than **B**.

Examples: The number 16 is a fulcrum number since the sum of the four integers less than 16 is equal to the sum of the three integers greater than 16.

$$54 = 12 + 13 + 14 + 15 \quad [B = 16] \quad 17 + 18 + 19 = 54 \qquad \text{also,}$$

$$100 = 9 + 10 + 11 + 12 + 13 + 14 + 15 + 16 \quad [B = 17] \quad 18 + 19 + 20 + 21 + 22 = 100$$

In general, an integer is a fulcrum number, **B**, when,

$$1) \qquad \sum_{D}^{B-1} n = \sum_{B+1}^{H} n$$

where D is the least integer in the lower series and H is the greatest integer in the upper series. Setting $D = B - L$ and $H = B + U$, where L is the number of numbers in the lower series and U is the number of numbers in the upper series, equation 1) becomes,

$$2) \qquad \sum_{B-L}^{B-1} n = \sum_{B+1}^{B+U} n$$

This equation may be rewritten,

$$3) \qquad \sum_{1}^{B-1} n - \sum_{1}^{B-1-L} n = \sum_{1}^{B+U} n - \sum_{1}^{B} n$$

Using the general summation formula: $\sum_{n=1}^{N} n = N(N+1)/2$

Equation 3) becomes:

$$4) \qquad 2B(L-U) = U^2 + U + L^2 + L$$

Setting $E = (L-U)$, in equation 4) gives:

$$5) \qquad B - U = \frac{U(U+1)}{E} + \frac{E+1}{2}$$

as the formula for fulcrum numbers in terms of U and E.

CASE I. E = 1
When $E = 1$, equation 5) becomes,
$$B = U^2 + 2U + 1 = (U + 1)^2$$
Which says that B is a perfect square for all values of U. That is, all integers that are perfect squares, 4, 9, 16, 25, 36.... are fulcrum numbers.

CASE II. E = 2
When the lower sequence is **two** greater than the upper sequence, equation 5) becomes
$$B - U = \frac{U(U + 1)}{2} + \frac{3}{2}$$
Whatever integer value of U, the right member can never be an integer. U(U+1) will be even whether U is even or odd. Hence U(U+1)/2 will be an integer. This leaves the non-integer value 3/2 in the right member. Therefore there can be no fulcrum numbers when E = 2.

CASE III. E = an odd integer. 3, 5, 7, 9, 11, 13, ...
Equation 5) takes the form,
$$B - U = \frac{EVEN}{ODD} + \frac{EVEN}{2}$$
when the first term on the right is divisible it will be an even integer. The second term is always divisible and therefore an integer. Hence, whenever E is an odd integer, fulcrum numbers are possible.

CASE IV. E = an "even-even" integer, that is an even integer which divided by 2 is still even.
  $E = 4, 8, 12, 16, 20, 24, ... = 4 \cdot N$, where N is any integer.
$$B - U = \frac{EVEN}{4 \cdot N} + \frac{ODD}{2} = \frac{EVEN + 2 \cdot N \cdot ODD}{4 \cdot N} = \frac{EVEN}{EVEN}$$
The numerator on the right is even, hence fulcrum numbers are possible whenever E = 4·N.

CASE V. E = an "odd-even" integer, that is an even integer which when divided by 2 is odd.
  $E = 2, 6, 10, 14, 18, 22, ... = 2 + 4 \cdot N$, where N is any integer.
$$B - U = \frac{EVEN}{2+4 \cdot N} + \frac{ODD}{2} = \frac{EVEN + (1+2 \cdot N) \cdot ODD}{2+4 \cdot N} = \frac{EVEN + ODD + EVEN}{EVEN} = \frac{ODD}{EVEN}$$
Since ODD/EVEN can never be an integer, there are no fulcrum numbers for E = 2 + 4·N.

FULCRUM NUMBERS AS FUNCTION OF E and U   JULY 21, 2006
TABFUL.MCD

$E := 1, 2 .. 50 \qquad U := 0, 1 .. 90$

$$B(E, U) := U + \frac{(E+1)}{2} + \frac{(U^2 + U)}{E}$$

$$B_{E,U} := B(E, U) \cdot (1 + \text{floor}(B(E, U)) - \text{ceil}(B(E, U)))$$

U

E

B =

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	4	9	16	25	36	49	64	81	100	121	144	169	196	225	256
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	0	6	9	0	17	22	0	34	41	0	57	66	0	86	97
4	0	4	6	0	0	15	19	0	0	34	40	0	0	61	69	0
5	3	0	0	0	11	14	0	0	0	30	35	0	0	0	59	66
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	4	0	0	0	0	0	16	19	0	0	0	0	0	43	48	0
8	0	0	0	9	11	0	0	0	0	0	0	32	36	0	0	0
9	5	0	0	0	0	0	0	0	21	24	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	6	0	0	0	0	0	0	0	0	0	26	29	0	0	0	0
12	0	0	9	0	0	14	16	0	0	23	0	0	0	0	38	0
13	7	0	0	0	0	0	0	0	0	0	0	0	31	34	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	8	0	0	0	0	15	0	0	0	23	0	0	0	0	36	39
16	0	0	0	0	0	0	0	19	21	0	0	0	0	0	0	0
17	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

BEYOND DYADIC THINKING

From brain wiring, millennia of experience, and some other causes, humans habitually think in terms of two values: true/false, good/evil, win/lose, us/them. To abet this dyadic thinking normal distributions are culturally converted into bi-modal distributions: majority/minority, left/right, liberal/conservative, etc. While reduction of alternatives to two makes thinking and decision making simpler, history shows that the results of dyadic thinking are conflicts at all levels of violence and endless repetition of "solutions" that never work.

Societies with a substantial middle class are more stable than those bi-modally divided between wealth and poverty. That is, a gaussian or normal distribution of wealth and education in society is more stable than a bi-modal distribution. But while conventional wisdom may favor moderation and the stability of the middle way, it is to the advantage of power players to channel choices to the extremes. Whereas it is claimed that societies are built to enhance and develop the welfare of their members, the opposite is true. The members are exploited to enhance the government, which is distinct from society. It has been said that everyone possesses some *control freaks* intrinsic genius, but most present and past human societies have been designed to enhance only those whose genius lies in the exploitation of others. Of course it was the genius of exploiter types to create bi-modal societies in the first place.

The first step to overthrow the bi-modal paradigm, is to escape our prison of dyadic thinking, that is to begin to think "orthogonally". Disavow the left and the right, and even the middle, and search orthogonal to the distribution for new values and parameters.

Millennia ago Confucius began such orthogonal thinking. He recognized that those who wanted political power would continue to create ego driven power structures which suppressed their members and were constantly at war with others. His proposal: "Any who desire political power must automatically be disqualified to hold it." The politically elite should be selected from those whose genius lies in some other field. [It is not surprising that the Maoists are trashing everything Confucian.] Plato also adopted this orthogonal approach when he proposed "philosopher kings" as the decision makers for human societies. Genius in any field should be drafted to serve in some other field than that in which the genius is manifested. Inefficient? Perhaps, but outsiders frequently perceive solutions overlooked by the experts within the field. They bring in orthogonal perspectives, to replace the time outworn "solutions" that are the only ones imaginable to the inside "experts".

Unless humans begin to understand that the important differences among us are not those of race, nationality, religion, ethnicity, etc. but are those between our different psychological types, we remain at the mercy of the authoritarian egos that have ruled and exploited human societies and organizations in one form or another throughout recorded time. Our enemies are not those of other nationalities, races, religions or political persuasions. Our real "enemies" are those who contend with one another to rule us but basically are driven by ego gratification and create divisiveness among us to advance their agendas. In the atomic age in order for humanity to survive, those belonging to the dominate others psychological species must be blocked from all political power.

THEO1945.WPD   August 6, 2006

THE THEOPHANY OF 1945

Today is the Feast of the Transfiguration commemorating Jesus' appearance on the mount with Moses and Elijah, with the One Above announcing that the teachings of Jesus were a new theophany, "Listen to him".

August 6, 1945, Hiroshima.   Sixty one years ago this day an atomic bomb was dropped on the city of Hiroshima. Was this act in some sense also a new theophany? If so, like all previous theophanies, it has been ignored, distorted, and exploited for mundane purposes. But the teaching implicit in the theophany of 1945 is not one of "good news". It is a dire warning, a warning that has been almost totally ignored. The promise of the Transfiguration was that God was ever with us and would reveal more to us as our understanding matured. But our response, like the Hebrews of the Old Testament, was to pursue other gods. A human archetype! Today, as then, prophets warned and were ignored. Human business as usual ignores warnings and resents diachronic interruptions. The diachronic is tolerated only because it can be exploited for business purposes. But the 1945 theophany, appropriately labeled "Trinity", is not ignorable. It has been said, "We have nothing to fear but fear itself." It would be closer to the mark to say, "We have nothing to fear but our selves." It is not 'them' that it the enemy, it is 'us', all of us. The challenge is real and is final. Grow up and shape up or it is over.

But how can we grow up to be something different when our only role model is the past? We keep doing over and over what doesn't work and has never worked, but we do not have any alternative. Not so, alternatives abound. But those bound and blinded by tradition and habit cannot see. And the most binding tradition, the one so internalized we are not aware of it, is our mode of thinking, even that which we regard as 'logical'. (Even our most distinguished justices seem to be unable to distinguish an element belonging to a set from the set itself.) Our culture is obsessed with the win/lose dichotomy, whether in games, war, or business. And this is so even when the definition of winning is totally detached from any advantage. But dichotomies do not end with win/lose or us/them, they pervade all our thinking. Aristotle's true/false dichotomy is inescapable for us. Anything else just doesn't make sense. And this is just the point. What is wrong is that what for us makes sense is invalid outside its limited cultural context. We can no longer project what we locally have arranged or agreed upon onto our outer or inner contexts. This not only for the societal and political, but for the scientific and physical. Laboratory physics may not be universal, terrestrial phenomena may not be cosmic. There may be no universals, no absolutes, no Truth.   Too scary, we have to have our "blanket", we must have certainty. But human survival does not come from certainty, rather from the ability to live with ambiguities, to not only tolerate diversity, but to treasure it. When we can make these changes in our mode of thinking, then and only then, we will no longer have to fear ourselves.

TOPICS06.WPD   August 8, 2006

FUNDAMENTAL DYADS

BRAHMAN
       The One and the Many
HERAKLEIDOS w PARMENIDES
       Doing w Being,   Change w Stasis
APOLLO w DIONYSUS
       Order w Random   Pure random w Polluted Random [from the 2nd Law]
CONTINUOUS w DISCRETE
       Aleph ≥ 1 w Aleph 0
CONVERGENCE w DIVERGENCE
       Closed w Open
PHILOSOPHY w SOPHISTRY
       Searching w Eristics
PROTAGORAS w PLATO
       Controlling w Belonging   I s s ue,   to   questions
CONTEXT w CONTENT
       Set w Element
GENERALIZATION w ABSTRACTION
       Sets w Macros
TOP DOWN w BOTTOM UP
       General to specific (deduction) w Specific to general (induction)
GENERAL SYSTEMS THEORY w SYSTEMATICS
       Common attributes into Sets w Pre-Frameworks
JUXTAPOSITION w DISCRIMINATION
       Linking w Spliting
INCLUSION w RESOLVING POWER
       Big picture w Details
MESSAGE w MESSENGER
       Signal w Carrier   Vehicle w Tenor
ESSENCE w REPRESENTATION
       Facts w Symbols   Experience w Language
REPETITIVE w RANDOM
       [see Apollo w Dionysus, above]   Repetitive is a special case of order

FAMREUN.WPD   August 10, 2006

NOTES ON A FAMILY REUNION S

What usually occurs at a family reunion is that those joined by blood find themselves not joined by their interests, values, activities, or visions. This results in the sharing of some memories and stories, but more importantly with sharing the ultimate ingredient that holds all groups together: FOOD.

However, a reunion like a birthday, a bar mitzvah, a wedding, or a funeral is a ritual. While rituals are useful for rendering the synchronic diachronic or making the diachronic visible to the synchronic, family reunions do not do this very well. A reason for this is that a family reunion is for celebrating, not one event, but many events, not one person, but many persons. . The family reunion brings together people joined genetically, legally, or cohabitly–together with their in-laws. It might be that a reason family reunions have not received some of the traditional cultural accouterments, such as cards and songs that go with birthdays and weddings, is that family reunions are too anthropologically diverse.

This is not to say that family reunions are a waste of time, not at all. Members discover things about each other they never knew, and find opportunities to cut new business deals or exchange contacts. So even beyond the gossip level, the bottom line improves.

But there are philosophical (diachronic) as well as business (synchronic) gains. There are insights into our identities and negative identities that help us find who we are (and aren't). And we begin to wonder why instead of genetic family reunions we don't have mutual interest reunions, mutual values reunions, and mutual vision reunions. But perhaps that is what churches, temples, and mosques are for.

Personally, I still hope for a reunion with those whose cognitive processes are like mine. But it is unlikely such a group, like two other groups, The International Society of Procrastinators, and the Brotherhood of Anarchists, will ever come to be.

Society of lone wolves

THE ZONE–IVERSE

We are accustomed to the idea that when we cross a political boundary the rules change. That is, language may change, clothing may change, which side of the street on which to drive may change. Our political and cultural world is divided into zones which support such diversity. This being so, why does science insist that the rules of the universe be universal? Why cannot the physical universe also have zones? Why does science assume that terrestrial laboratory results are universally valid, that baryons are everywhere alike, that light everywhere follows our local laws of optics, that the law of gravity obeys but one equation, etc?. Cosmologists have adopted the so called Cosmological Principal: "The local is universal", and the Perfect Cosmological Principal: "As it was in the beginning it is now and ever shall be" What justifies the projection of the rules found to work in our neighborhood onto the cosmos as a whole? Well, for one thing, it makes everything simpler. And it also allows us to call our cosmology a valid description of the universe, which of course it cannot be. *cf Bacon's idols of the Tribe*

But projection of the local onto the universe is running into trouble. To account for the stability of clusters of galaxies, we hypothesize "dark matter", which does not seem to exist locally. To account for stellar systems whose age predates the big bang, and to preserve a universal clock, we inject arbitrary factors and constants into the equations. And the assumption that the Doppler effect accounts for all red shifts is in trouble. Instead of accumulating additional ad hoc hypotheses, would it not be simpler just to admit that the rules themselves may vary from place to place? Local clocks may tick at different rates, and different kinds of matter may bend space-time differently in different places, and there may be multiple causes for red shifts.

The ancients had no trouble with different gods being in charge in different realms or zones: Poseidon with the seas, Dis with the underworld, Apollo with the sun. But with our enlightened progress toward monotheism, we converge in lockstep to ein Logos, ein Chronos, and ein Kosmos. And a reason for this is that if there be many truths, instead of One Truth, then we can no longer protect ourselves from reality by surrounding our minds with walls of certainty.

> The measure of maturity is the ability to live with ambiguity.   –Freud

But awakening is occurring. Differing zones of rotation are photographed in spiral galaxies, inferring varying roles for gravity; and the sacred scientific canon of predictability has been obfuscated by chaos theory. And here come "parallel universes", those that may be self consistent but not consistent with ours. [This idea was originally proposed, not by a scientist, but by a poet, Jorge Luis Borges.]. The evidence for diverse zones is beginning to topple the idol of Universal Truth. Where this will end epistemologically, ontologically, axiologically, and theologically cannot be predicted. But, as noted, prediction itself is a part of the collapsing of certainty. *the Alpord*

THE MYSTERY

The Mystery is the total embracing context that encompasses all matter, all life, all thought, and all time. We encounter the Mystery daily, but fear to engage it for it is a realm of uncertainty and confusion. However, when we do have the courage to enter the Mystery we experience a brief glimpse of a euphoric essence. Sometimes this brief glimpse is of our familiar world but perceived from an entirely different perspective. Sometimes the glimpse is a bridge between our familiar material world and a world of unfamiliar but beautiful images. We cannot grasp or capture these glimpses, nor can we even begin to articulate them, but somehow we recognize that they possess a profound reality. They escape the prisons of continuity and contiguity that delimit material reality, and they transcend the consistencies imposed by logic and reason. Yet the residue they leave in our consciousness is euphoric, and their uncertainty is far more reassuring than any of the certainties associated with our material world. What a strange paradox: A reassuring uncertainty!

The MYSTERY w MONOLATRY
WHOLENESS w ONENESS

Confronting
Engaging the MYSTERY leads to PEACE
WHOLENESS

WHOLENESS TRANSCENDS CERTAINTY

But we choose to Confront each other
Engage
which brings conflict
war
destruction
termination

We seek certainty through oneness, the obliteration of alternatives

Whereas the MYSTERY contains all alternatives
yet gives a security that
is devoid of certainty

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September 16, 2006

Dr. A. G. Wilson
P. O. Box 1871
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Dear Dr. Wilson,

Re: Harry Bateman

I am writing a biography of Harry Bateman. I know that you received your MS and PhD in mathematics from Caltech, and I have seen it stated that you were a student of Bateman. Is that correct? If so, did he supervise your work towards both degrees? (I know that he died in 1946 before your PhD was awarded.) Did you publish the results of your theses? I know that your PhD was on thermal stresses: did the topic come from Bateman?

I would be interested to know what Bateman was like. He is always described as 'shy' but what was he like as a teacher and as an adviser?

Thank you for reading my letter. If you have any information or anecdotes about Bateman, I would be glad to receive them.

Yours sincerely,

Dr. Paul A. Martin
Professor of Mathematical
and Computer Sciences

Professor P. A. Martin
Colorado School of Mines
Golden, Colorado

Dear Professor Martin,

I am most pleased that you are writing a biography of Harry Bateman. He was a very powerful and independent thinker and his life and contributions should be made available to a wider audience. While it is difficult after more than 60 years to supply you with an accurate account of the times, I can pass on a few anecdotes and personal impressions.

My first encounter with Bateman was in his graduate course in analysis. Our text was "Modern Analysis" by Whitaker and Watson. Each class would begin when Bateman walked into the room and, without looking at the class, go straight to the blackboard and start writing equations. He began in the upper left hand corner of the first board and continued until he had completely filled all three blackboards. He would then look at the class and ask if it were ok to erase the first board. We had all been copying down everything he wrote as fast as we could so were copying board three and said ok to erase board one. Bateman would then erase board one and begin to fill it with equations, on and on. There was very little dialogue and most questions were answered by writing additional equations. On several occasions when Bateman was writing on the blackboard he would suddenly stop, stand back, and take a card from his pocket and jot down something from the blackboard and mumble "This is a new result". So Bateman was doing research even while he was sharing previous results.

Unlike most courses with a prescribed text in which the instructor successively works through each chapter, Bateman assumed we had already mastered the current chapter and built more math on its contents. He seemed oblivious to the fact that we students were always a day behind what he was presenting. We would spend each evening using Whitaker and Watson to figure out what he had written that day and hope to be able to keep up the next day.

As a teacher, Bateman was poor at expostition, but this was because he projected onto the class his own intelligence and perspicacity. That is, he treated us as his equals, not in knowledge, but in intelligence. While a group of professional educators might give him bad marks as a teacher, on a deeper level he was a great teacher. He set standards for us, he inspired us, and above all he shared with us a diachronic vision of the inclusiveness and beauty of mathematics.

I cannot analyze Bateman's method of thinking. But his extensive knowledge of specifics and details together with an ability to see commonalities and relationships in what most people would not even consider juxtaposing led to a rich enlargement of analysis. The Bateman Project ,which after his death tried to put together his unpublished results, had to give up after five volumes, so extensive was the material.

Page 1

One interesting anecdote, reminding us of Bateman's English roots, occurred during the visit to Caltech of the mathematician, G.H. Hardy. Hardy was lecturing in the main auditorium to a math and physics audience. Bateman sat in the front row of seats and stretched out his legs and leaned back feigning sleep as Hardy spoke. This of course, is standard practice in Commons when a member of the opposition is speaking. At the end of his lecture, Hardy thanked the audience and asked if there were any questions or comments. Bateman woke up and stood up and said, "With Professor Hardy's permission I would like to point out a matter in his final result." Bateman then went to the blackboard and starting with Hardy's equation showed that if a certain variable were replaced by such and such, the result would be the more general equation, p = q. Which Bateman then reminded the audience he had published in the Annals three years past. Hardy turned red and left the room. This was when I learned that the most devastating insult one mathematician can give to another is calling his results a special case.

On a more personal level. I wrote my master's thesis on Frechet Differentials in Banach Space and decided that for a doctor thesis I wanted to do something in applied rather than pure mathematics. I asked who would be a good person to work for. I was told that Bateman would be the best. I went to him and asked if I could have an applied project with him. After a week or so he called me in and suggested thermal stresses in a semi-infinite solid. I started the project, but then was called up by the war. When I returned, I learned that Professor Bateman had died. Professor Epstein took over and I finished the thesis. Thermal stresses in a semi-infinite solid seemed rather irrelevant in 1944, when it was suggested by Bateman, but by August of 1945, the study had applications.

Finally, I have heard rumors that a chap studying the aerodynamic properties of airships was taking measurements in the tail of one of Britain's dirigibles and that the ship crashed and only those in the tail end survived, and that Bateman was that chap. I do not know the source of this story, it may not be true, but if you are doing a biography maybe you could check it out.
On August 24, 1921 the R38 crashed in the Humber River, could that be a connection?

I hope some of this is helpful to your book. If there are any other points to be brought up, let me know.

Yours sincerely,

Albert G. Wilson

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October 4, 2006

Dr. A. G. Wilson
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Dear Dr. Wilson,

Thank you very much for replying to my letter and for sharing some anecdotes. I particularly like the story about Hardy. I think of Bateman as shy and reticent, but evidently he was not always like that!

I have enclosed a very incomplete draft of what I have written so far: perhaps it will provoke further memories. I expect to write a section on integral equations and I have begun one on variational methods. I also expect to add more to what I already have, as I read more. For me, one purpose is to learn some new mathematics, so I am not in a hurry.

Now, let me come to your rumour. I had previously heard something about this but your letter encouraged me to look deeper. It is true that there were five survivors of the R38 crash, and one of them was H. Bateman. However, he was a different H. Bateman! Coincidentally, there was a scientist of that name working in the Aerodynamics Department of the British National Physical Laboratory. He was an experimentalist, and he did experiments with airships. Astonishingly, "our" Bateman wrote one paper (a NACA report) on airships.

Thanks again.

Yours sincerely,

Dr. Paul A. Martin
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October 20, 2006

Dr. A. G. Wilson
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Dear Dr. Wilson,

I have enclosed a draft piece surrounding your Hardy anecdote. It seems certain to me that the Bateman–Hardy "conflict" concerned the Bateman polynomials which Hardy had rediscovered.

It would be interesting to know *when* Hardy gave his lecture. Would it have been in 1941, soon after you arrived at Caltech?

I imagine that it must have been difficult to travel from England to the US after the war started. In addition, Hardy had a heart attack in 1939, but he did like to travel.

Thanks again.

Yours sincerely,

Dr. Paul A. Martin
Professor of Mathematical
and Computer Sciences

p.s. I hope you received my draft, and that you found something of interest.

G. H. Hardy

The great English mathematician, G. H. Hardy (1877–1947), spent six weeks at Caltech in early 1929. On a later visit, his lecture was witnessed by A. G. Wilson (letter to the author, dated 23 September 2006):

> Hardy was lecturing in the main auditorium to a math and physics audience. Bateman sat in the front row of seats and stretched out his legs and leaned back feigning sleep as Hardy spoke. ...At the end of his lecture, Hardy thanked the audience and asked if there were any questions or comments. Bateman woke up and stood up and said, "With Professor Hardy's permission I would like to point out a matter in his final result." Bateman then went to the blackboard and starting with Hardy's equation showed that if a certain variable were replaced by such and such, the result would be the more general equation, $p = q$. Which Bateman then reminded the audience he had published in the *Annals* three years past. Hardy turned red and left the room. This was when I learned that the most devastating insult one mathematician can give another is calling his results a special case.

In this anecdote, Bateman is referring to his work on the polynomial $F_n(z)$ (now known as Bateman's polynomial); see Section ??.??. He had defined these functions and given many of their properties in a series of papers between 1933 and 1937, including two in the *Annals* [?, ?]. Hardy wrote a series of four papers between 1939 and 1941, with the title 'Notes on special systems of orthogonal functions' followed by various subtitles. The third of the series [2] contains Bateman's orthogonality relation for F_n, (??). In fact, Bateman described Hardy's paper for *Mathematical Reviews* [1], and he discussed it further in a later paper [?] (where he also gave an erroneous orthogonality relation for the Bateman–Pasternack polynomials, $F_n^m(z)$; see [?]).

References

[1] H. Bateman, Review of Hardy [2]. *Mathematical Reviews* **1** (1940) 141.

[2] G. H. Hardy, Notes on special systems of orthogonal functions (III): a system of orthogonal polynomials. *Proc. Camb. Phil. Soc.* **36** (1940) 1–8. Reprinted in *Collected Papers*, vol. IV, Oxford University Press, 1969, 552–559.

October 28, 2006

Professor Paul A. Martin
Department of Mathematics
Colorado School of Mines
Golden, Colorado, 80401-1887

Dear Professor Martin,

Thank you for sending me a copy of your draft of the Bateman book. You have done excellent research on both the biographical and mathematical levels. I learned much I never knew about Bateman, (and some things new to me about mathematics too). It is more difficult to do a biography of a mathematician than, say, of a physicist or biologist. Concepts in physics or biology can be communicated in the vernacular, but concepts in mathematics require being supplemented with equations and that immediately reduces the size of the audience. But with or without equations, Bateman needs a biography and you are doing an impressive job.

With regard to Hardy's visit, it was either 41 or 42. I cannot tie it down with my personal memories. So my guess was autumn of 41 before Pearl Harbor, but that is a guess, not a fact.

There is another matter that your draft touches on which has interested me. There seems to be a difference between Oxford-Cambridge England and Manchester-Liverpool England, (besides dialect). It is a difference in the emphasis on what problems were considered central, especially in physics. But that is true in this country too. Universities vary in emphases and obsessions, depending on the faculties' respective backgrounds. The "crisis" in string theory is a current example of this in cosmology and astrophysics. There may have been some similar factors playing a role in Bateman's returning north after his period at Cambridge.

And, returning to dialect, [I would definitely not include this in your book], is it possible that dialect played a role in Bateman's return to Manchester and motivated his later leaving England to come to the United States? Fred Hoyle (a Manchesterian) mentioned to us on one occasion that the United States seemed free of dialect prejudices. And I guess the England of 1960, where Hoyle became, Sir Fred, is quite different from the Edwardian England of Bateman's youth. [But, I repeat, even if dialect played a role in Bateman's decisions, it probably does not belong in your book.]

I want to thank you for a "side effect" of your Bateman project. You have put me and my old friend and colleague Dom Edelen in touch again. We each disappeared over the other's horizon decades ago, but, thanks to you, have found one another again.

Sincerely yours,

Albert G. Wilson

MUTUAL CONTAINMENT PART I

The relation between parts and wholes has been a topic of interest to both philosophers and mathematicians since classical times. The whole is equal to the sum of the parts is a mathematical cliche. The whole is greater than the sum of the parts is an ontological cliche. And in the 20th Century, car thieves discovered that the sum obtained from selling the parts of a car is greater than the sum obtained from the selling the whole car. But the sum of the parts is greater than the whole, is not yet a cliche.

Also in the 20th Century the traditional tautology that the whole contains the parts was updated with the discovery of instances where parts contain the whole; as for example, each cell in the body contains the information for replicating the whole. We are thus confronted with the notion of **mutual containment**. But the concept of mutual containment is not new, it has been around since classical times. For example, in the Gospel of Thomas Jesus says, "If there be anywhere those who suffer, then I suffer." And Mohammed writes, "If any Muslim suffers, then all Islam suffers." Both of these statements infer a mutual containment of the individual and the collective. But we note that the individual does not contain the collective in the same sense, or by the same parameter, as the collective contains the individual. And in the example of cells that contain the information for replicating the whole body, we note that the body spatially contains the cells and the cells informationally contain the body. In both examples mutual containment requires different parameters for containment.

Is it possible for there to be mutual containment with the same parameter?
Consider the case of the "twin paradox" which occurs in special relativity. A and B synchronize their clocks and find they run at the same rate. Then A and B separate and move with respect to each other at a relative velocity of **v**. A then notes that B's clock ticks slower than his clock and conversely B notes that A's clock is running slower than his. While twin A remains on earth and ages according to the earth's clock, twin B races between planets at high speeds with a slowed rate clock.. According to the paradox, when traveling twin B returns he finds that A has aged say 20 years while he himself has not even aged a year. However, since special relativity does not allow any origin or fixed frame by which to measure velocity, there being only relative velocities, then the earth has been moving about at the same high speeds relative to B that B has with respect to the earth.. So why should B not be older than A as well as A being older than B?

Also in special relativity, A and B compare their meter sticks and find them to be of identical length. Then A and B separate and move with respect to each other at a relative velocity **v**. A notes that B's meter stick is now shorter than his, and conversely B notes that A's meter stick is shorter than B's. But when B returns A and B again find their meter sticks to be of the same length. No mutual containment. Hence, the paradox is not about A being older than B but why time should be different from space or from collectives/individuals, or genotypes/phenotypes, none of which can be mutually contained with the same parameter.
Is it possible that time by itself can be mutually contained?

SOME THOUGHTS DURING THE HIGH HOLY DAYS

I am not Jewish, but there is something special about the time between Rosh Hashanah and Yom Kippur that pervades the world and leads one to introspection and questioning. I have recorded some of my thoughts during this period of time in 2006:

THE MIDDLE WAY:

We have two basic needs: Our need to take care of others and our need to be taken care of by others. When local, and the others are our family and neighbors these needs become what we call compassion. But when extended to larger groups compassion ofttimes becomes dysfunctional. The need to take care of and protect others distorts into the need to dominate and control others. The need to be taken care of by others distorts into the need to belong, go along, follow orders. The social order splits into bullies and victims, control freaks and wimps. Compassion is the middle way between these two extremes. How do we preserve the wisdom of this middle way as the size of community increases?

SEARCH AND QUEST:

We sooner or later always turn Search into quest; turn open ended exploration into looking for some specific. Perhaps in ancient times going fishing was a search, but soon became a quest. And in the past pilgrimages started as searches then became quests. Now in our times, pilgrimages have been replaced by tourism. But tourism seems to be a return to the Search, to experience whatever is there, so that paradoxically current secularism is leading to a re-opening of Search. We think of science as both search and quest. Astronomy, for example, began as a search, what is out there? But then it became a quest for the answers to specific questions. And NASA designs its probes to find the answers to earth based questions rather than design for open ended exploration. But since Search always turns into a quest, how do we restore Search after its having been converted to quest?

CONTIGUITY AND CONTINUITY:

Our collective experience of living on earth's surface has transplanted spatial contiguity and temporal continuity into our brain wiring. And as expressed in our thinking, contiguity has been formalized as consistency and continuity as causality, with the result that consistency and causality define and limit our processes of reasoning. This may explain why our experience with non-contiguous and non-continuous phenomena such as those on the quantum level make no sense to us. Contiguity and continuity also define what we think of as order, whereas what we consider to be order may be only a very special case of the totality of possible well organized systems. And this may account for why we have yet no understanding of what we call randomness. When we look up and see the clouds, we see a world without contiguity and continuity, a world of transient forms, without consistency and with interrelations not amenable to a linear temporal causality. Is it random?

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NATURE AND HUMAN NATURE
By Arnold Toynbee

On an occasion I saw the mighty Himalayas, and my vision of them has made an ineffaceable impression on my mind. I was overwhelmed by their beauty, and their majesty, and at the same time I realised that here Nature was revealing to me something that is beyond herself. The splendour that shines through Nature is imparted to her from a source which is beyond Nature and which is the ultimate reality. If there were not this invisible spiritual presence in and beyond the visible universe, there would be no Himalayas and no mankind either; for mankind is part of Nature, and, like non-human Nature, we owe our existence to the reality that is the mysterious common source of non-human Nature and ourselves.

Man has polluted and marred the more easily accessible parts of the land and water surface of our planet wherever we find this to be economically profitably and militarily advantageous. This brutal treatment of non-human Nature has now been carried to extreme lengths in many countries, but it was Britain that was the birthplace of the Industrial Revolution that has spread all round the globe within the last two hundred years. Within these two centuries, Man has enormously increased his power by harnessing the inanimate forces of Nature on an unprecedented scale. But he has only just begun to realise that, in enslaving Nature, he is threatening to liquidate himself. Man is a part of Nature, and he will not be able to survive if he destroys the natural environment in which his pre-human ancestors became human in the act of awaking to consciousness. From the beginning of this human chapter of his history, Man has been bent on mastering Nature, and he has now succeeded in mastering the whole of terrestrial Nature except himself. This is an ironical achievement and an ironical failure. Self-mastery is, for Man, the key to happiness, to welfare, and to survival. Yet human nature is still recalcitrant to Man's command, and this unregenerate human nature is a threat to Man's existence, now that Man has armed himself with inanimate Nature's titanic forces.

Man has now fallen into conflict with human and non-human Nature alike. This is why, today, his enhanced power and wealth are causing him increasing anxiety and unhappiness. But this present-day disharmony dates only from the invention of mechanised industry. Pre-industrial Man, the hunter and the cultivator, managed to make Nature minister to his needs without going to War with her. Till the Industrial Revolution in England, only two hundred years ago, Man still lived at peace with Nature. He still felt the awe of Nature that he had inherited from ancestors who had been at Nature's mercy. Cannot we regain this lost ancient concord between Man and his environment?

Since Man became conscious, he has been aware that he himself is not the spiritually highest presence in the universe, and he has been seeking to communicate with this higher form of reality in order to put himself into harmony with it. His earliest avenue of approach to it was through his natural environment. He worshiped the ultimate reality through the manifestations of it in mountains, forests, springs, rivers, and the ocean. At the Western end of the Old World and in the Americas this earliest form of religion has been killed by monotheism in the forms of Judaism, Christianity, and Islam. But in India and Eastern Asia the worship of ultimate reality through the medium of Nature still survives.

Preface by Toynbee
Book on the Himalyas

Dear Al,

   Sit down! This is a voice out of the past - about 40 years ago. A young man (Dr. Paul Martin) is writing a biography of Bateman, and contacted me about you since you were one of Bateman's students. That is how I came about your address; serendipity often strikes in unexpected places.

   I retired here to Galveston in 1993, and have remained semi active -- several publications a year. My current work is on immersions of 4-dimensional space-times in flat spaces of higher dimensions. The work is interesting and keeps me busy.

   I hope the years have been kind to you, one of the truly gentle men whose association magnified me.

Best wishes to an old friend and colleague,

Dominic Edelen
3503 Avenue P
Galveston, TX 77550

October 15, 2006

Dear Dom,

As Confucius said, there is great joy in hearing from old friend. I do agree!
The last I had heard from you, you had disappeared into the mists of Lehigh, decades ago.
And now you are in one of my old stomping grounds, or rather old swimming beaches.
When I was at Rice we went to Galveston every opportunity that the curriculum allowed.

My past is catching up. Last summer a request about my time at Lowell Observatory, last month
a request about my time with H. Bateman, and now hearing from my old colleague and friend at
RAND. I did talk with Dan Ellsberg a few weeks ago. He lives near here and comes up to SSU to
give lectures. But most of my RAND news is sad. I think you knew Stan Greenfield, he lived
near here, passed away two years ago. And my wife Donna passed away in 1998.

I have long since drifted from math (although I still play around in number theory), and now my
thinking is mostly about value systems, dialectics, parts and wholes, and stuff usually called
philosophy. I too stay busy and try to keep up with what is going on, but after reading the daily
news, I have to seek refuge in the works of Boole, Popper, and Wittgenstein.

I had a heart attack three years ago, but have come back fairly well. All in all I am happy and
cherish the memories of all the wonderful friends I have had. And, thank you, Dom, for
reminding me, I still have.

With highest regards,
wishing you Blessings and Joy

alw1871@aol.com

WARPEACE.WPD   October 5, 2006   rev November 6, 2006

WAR AND PEACE

The law of the excluded middle no longer applies to the conditions traditionally termed war and peace. We can no longer say that we are at war or we are at peace. Current relations between nations and the nature of modern weapons force upon us conditions beyond the two-fold Aristotelean True of False, War or Peace. We now also live in conditions that might be called both war and peace and neither war nor peace.   cf Trotsky & treaty of Brest Litovsk

An early twentieth century example of this is when WWI ended on the Eastern front the Red government signed the peace treaty of Brest Litovsk with Germany. Although the Germans had signed the peace treaty they continued to invade further into Russia. The Red government was at a loss, they wanted peace, but had to resist. Trotsky solved the problem by declaring that a condition of both war and peace existed.

When Mussolini joined Hitler declaring war on France and Britain on June 10, 1940, President Roosevelt decreed a change in the status of the United States from neutrality to **non-belligerency**, that is, a condition of both war and peace.

While WWII was clearly war and clearly stopped when surrenders and peace treaties were signed, the so called Cold War between the Soviets and the West was not a declared war, nor was it peace, it was better termed, neither war nor peace. There was no violence, but violence could occur at a moments notice. The situation was mutual deterrence. And it may be useful to label deterrence, neither war nor peace.

If we consider violent action without a formal declaration of war as a condition to be called both war and peace, then Israel and Palestine have co-existed in a state of both war and peace for decades.

The 2002 preemptive invasion of Iraq by the US was an officially declared war which supposedly ended after three months with a proclamation of "mission accomplished". But "shock and awe" did not accomplish the mission, instead it converted a war into both war and peace. So it was quickly announced that we were at a war which might last for decades with mission possibly never to be accomplished. And that is a good definition of both war and peace. And that is exactly the conflict situation adopted by the terrorists with their attack on 9/11.

William Lind has called the war against terrorists "fourth generation warfare". It is random on and off strikes at random targets with random weapons at random times. So perhaps the best definition of terrorism or fourth generation war is both war and peace. We conclude that experience in the 20th and 21st centuries has taken us beyond the law of the excluded middle with respect to war and peace. Deterrence is neither war nor peace. Terrorism is both war and peace..

HUMAN SOCIETIES

We have created four interlaced societal worlds:
  1) The <u>synchronic</u> world–the world of kings, warriors, merchants, and peasants
                              government, pentagon, corporations, workers
  2) The semiotic world of the cosmos, the natural order–the world of scientists,
                              physicists, chemists, biologists.
  3) The semiotic world of human creativity–the world of artists, inventors, engineers,
                              novelists, actors, economists, lawyers, clergy
  4) The semiotic world of human imagination and speculation–the world of philosophers,
                              theologians, mathematicians.

The semiotic worlds seek to simulate a postulated diachronic world, the world that is the context of all others.

The tradition among human societies is that the synchronic world dominates. That is, the content seeks to control its context. The synchronic feels its relation to the diachronic, its context, is to dominate rather than to belong.

The king carries the fiction of a divine right, meaning the king is the god of the synchronic world. This is manifested in today's world by honor and status being bestowed by the king, as knighthood in England, the Nobel Prize in Sweden, or reception at the White House in the U.S. [It is interesting to note that Newton's work did not do him honor, only when given a political office, master of the mint, was he considered honored. It is also interesting that in order to honor Einstein he was offered the presidency of Israel. Which he refused]

> *The crowning imbecility of the Anglo Saxon breed is the dumb belief in public office or administrative position as the supreme honor for a man of intellect*   *–E.T.Bell*[1]

At one time priests were viewed as highest, then kings rose to equality, and now except for a few political mullahs, the politician is considered to be the pinnacle.

Why is it that humans bestow decision making power on the ego driven instead of on intellect? It is because our social paradigm is that life is a contest, a competition, a game, to be won or lost. It is not the one who creates and increases new wealth who is rewarded, it is the one who succeeds in a fight to take existing wealth that is rewarded. Eristics has triumphed over philosophy, Authority over empiricism, Ego over intellect, and Might over facts.

Macht geht vor Recht

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[1]Men of Mathematics p112

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November 23, 2006

A NEW VALUE FOR   Newton's Constant, G   *superceded*
All values are $\log_{10}$(cgs)

Present values: m_p = mass of proton = -23.776602, m_o = planck mass = - 4.662199

$$m_p/m_o = -19.114403$$

However, $\alpha^{12} \cdot \mu^2 = -19.114202$ [= also $(\alpha\mu/S)^{1/2}$]

where α = the fine structure constant, -2.136835 and μ = proton/electron mass ratio = 3.263909

α, μ, and m_p have been determined to six or more places, while m_o, involving G, is less accurate.

<u>Assume</u> the value for $m_p/m_o = \alpha^{12} \cdot \mu^2 = -19.114202$,   rather than the current $= -19.114403$

then   1) $m_o = m_p \, \alpha^{-12} \cdot \mu^{-2} = (\hbar c/G)^{1/2}$,

where $\hbar$ is planck's constant $= -26.976924$ and c is the velocity of light = 10.476821

Solving equation 1) for G:

$$2) \quad G = \hbar c \cdot \alpha^{24} \cdot \mu^4 / m_p^2 = -7.175303$$

as against the current value, $G = -7.175705$, $\delta = 0.000402$

VALUES FOR PHYSICAL PARAMETERS INVOLVING THE NEW G:

planck mass	$m_o = (\hbar c/G)^{1/2}$	**−4.662400**	[M]
planck length	$l_o = (G\hbar/c^3)^{1/2}$	**−32.791345**	[L]
planck time	$t_o = (G\hbar/c^5)^{1/2}$	**−43.268166**	[T]
heisenberg bound	$\hbar/c = m_o \cdot l_o$	**−37.453745**	[ML]
schwarzschild bound	$c^2/G = m_o/l_o$	**28.128945**	[M/L]
	c^3/G	**38.605766**	[M/T]
planck force	c^4/G	**49.082587**	[ML/T²]
planck power	c^5/G	**59.559408**	[ML²/T³]
planck energy	$\epsilon_o = (\hbar c^5/G)^{1/2}$	**16.291242**	[ML²/T²]
planck density	$\rho_o = m_o/l_o^3$	**93.711635**	[M/L³]
electron radius	r_e	**−12.550068**	[L]
electron mass	m_e	**−27.040511**	[M]
proton mass	m_p	**−23.776602**	[M]

DIMENSIONLESS CONSTANTS
All values $\log_{10}$

$(S/\alpha\mu)^{-1/2}$ = **-19.114202** = $m_p/m_o = \alpha^{12}\mu^2$

$(S/\alpha\mu)^{1/2}$ **19.114202**

$(S/\alpha\mu)$ **38.228404**

$(S/\alpha\mu)^{3/2}$ **57.342606**

$S^{1/2}$ **19.677739**

S =   **39.355478** = $r_e m_o/m_p l_o$ = $\alpha^{-23}\mu^{-3}$ = $\alpha\mu(m_o/m_p)^2$ = $(\alpha\mu)^{-1}(r_e/l_o)^2$

$S^{3/2}$ **59.033217**

S^2 **78.710956**

S^3 **118.066434**

$(\alpha\mu S)^{1/2}$ =   **20.241276** = $r_e/l_o = \alpha^{-11}\mu^{-1}$

$(\alpha\mu S)$ **40.482552**

$(\alpha\mu S)^{3/2}$ **60.723828**

$(\alpha\mu)^{1/2}$	**0.563537**	$\alpha^{1/2}$	**-1.068417**	$\mu^{1/2}$ **1.631954**
$(\alpha\mu)$	**1.127074**	α	**-2.136835**	μ **3.263909**
$(\alpha\mu)^{3/2}$	**1.690611**	$\alpha^{3/2}$	**-3.205253**	$\mu^{3/2}$ **4.895864**
$(\alpha\mu)^2$	**2.254148**	α^2	**-4.273670**	μ^2 **6.527818**
$(\alpha\mu)^3$	**3.381222**	α^3	**-6.410505**	μ^3 **9,791727**

$\pi = 0.497150$; $2\pi = 0.798180$; $4\pi/3 = 0.662089$; $4\pi^2 = 1.596360$; $e = 0.434294$

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FUNDAMENTAL VALUES All values $\log_{10}$(cgs)

FUNDAMENTAL CONSTANTS:

$c = 10.476821$ [L/T] ; $\hbar = -26.976924$ [ML^2/T] ; $G = -7.175303$ [L^3/MT^2]

$\alpha = -2.136835$ [0]; $\mu = 3.263909$ [0] ; $\alpha\mu = 1.127074$ [0]

$S = 39.355478 = \alpha^{-23}\mu^{-3}$ [0] $S^2 = 78.710956$ [0]

$c^2/G = 28.128945$ [M/L]; $\hbar/c = -37.453745$ [ML];

$(\alpha\mu/S)^{1/2} = -19.114202 = \alpha^{12}\mu^2$ $(\alpha\mu S)^{1/2} = +20.241276 = \alpha^{-11}\mu^{-1}$

THE PLANCK PARTICLE:

$m_o = (\hbar c/G)^{1/2} = -4.662400$; $l_o = -32.791345 = (G\hbar/c^3)^{1/2}$; $t_o = -43.268166 = (G\hbar/c^5)^{1/2}$

$m_o l_o c = \hbar$ $m_o l_o = \hbar/c$ $m_o t_o = \hbar/c^2$ $l_o/t_o = c$

$m_o^2/\hbar = c/G$ $m_o/l_o = c^2/G$ $m_o/t_o = c^3/G$ $l_o t_o = \hbar G/c^4$

BARYON:

$m_p = (\alpha\mu/S)^{1/2} m_o$ $m_p/r_e = S^{-1}c^2/G$ $m_p r_e = \alpha\mu\,\hbar/c$ $r_e = (\alpha\mu S)^{1/2} l_o$

$m_p = -23.776602$ $r_e = -12.550068$ $m_e = -27.040511$ $m_n = -23.776004$

CANDIDATE DARK MATTER:

In reference to the planck particle:

$M_D = m_o (S/\alpha\mu)^{1/2} = 14.451802$ $R_D = l_o (\alpha\mu S)^{1/2} = -12.550068$

$M_D/R_D = (\alpha\mu)^{-1} c^2/G = 27.007870$ $M_D R_D = S\,\hbar/c = 1.901733$

In reference to the baryon:

$M_D = m_p (S/\alpha\mu)$ $R_D = r_e$

$M_D/R_D = m_p/r_e\, S/(\alpha\mu)$ $M_D R_D = m_p r_e\, S/(\alpha\mu)$

STANDARD STAR:

In reference to the planck particle:

$M_\star = m_o (S/\alpha\mu) = 33.566004$ $R_\star = l_o (\alpha\mu S) = 7{,}691207$

$M_\star/R_\star = (\alpha\mu)^{-2} c^2/G = 25.874797$ $M_\star R_\star = S^2\,\hbar/c = 41.257208$

In reference to the baryon:

$M_\star = m_p (S/\alpha\mu)^{3/2}$; $R_\star = r_e (\alpha\mu S)^{1/2}$

$M_\star/R_\star = m_p/r_e\, S/(\alpha\mu)^2$; $M_\star R_\star = m_p r_e\, S^2/(\alpha\mu)$

HUBBLE UNIVERSE:

In reference to the planck particle:

$M_U = m_o (S/\alpha\mu)^{3/2} = 52.680206$ $R_U = l_o (\alpha\mu S)^{3/2} = 27.932538$

$M_U/R_U = (\alpha\mu)^{-3} c^2/G = 24.747768$ $M_U R_U = S^3\,\hbar/c = 80.612644$

In reference to the baryon:

$M_U = m_p (S/\alpha\mu)^2$ $R_U = r_e (\alpha\mu S)$

$M_U/R_U = m_p/r_e\, S/(\alpha\mu)^3$ $M_U R_U = m_p r_e\, S^3/(\alpha\mu)$

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<u>THE SUN:</u>

Measured values: $M_\odot = 33.298685$ $R_\odot = 10.842303$

$M_\odot/R_\odot = 22.456832$ approximately $\cong \alpha^{-5} \mu^{-5} c^2/G = 22.493575$ $\delta = 0.036743$

$M_\odot R_\odot = 44.169181 =$ exactly $= S^2 \alpha^{-9} \mu^{-5} \hbar/c = 44.169181$ $\delta = 0.000000$

Values computed from the preceding fundamental constant approximations:

Sun in reference to Planck particle:

$M_\odot = m_o S \alpha^{-7} \mu^{-5} = 33.331378$ $\delta(\text{comp - meas}) = 0.032693$

$R_\odot = l_o S \alpha^{-2} = 10.837803$ $\delta(\text{meas - comp}) = 0.004500$

$(M_\odot/R_\odot)/(m_o/l_o) = \alpha^{-5} \mu^{-5}$ $M_\odot R_\odot /m_o l_o = S^2 \alpha^{-9} \mu^{-5}$

Sun in reference to standard star:

$M_\odot/M_\star = \alpha^{-6}\mu^{-4}$; $R_\odot/R_\star = \alpha^{-3}\mu^{-1}$;

$(M_\odot/R_\odot)/(M_\star/R_\star) = \alpha^{-3}\mu^{-3}$; $M_\odot R_\odot/M_\star R_\star = \alpha^{-9}\mu^{-5}$

Sun in reference to baryon:

$M_\odot = m_p S^{3/2} \alpha^{-15/2} \mu^{-11/2}$; $R_\odot = r_e S^{1/2} \alpha^{-5/2} \mu^{-1/2}$

$(M_\odot/R_\odot)/(m_p/r_e) = S \alpha^{-5} \mu^{-5}$; $M_\odot R_\odot/m_p r_e = S^2 \alpha^{-10} \mu^{-6}$

<u>FORCE RATIOS:</u>

The planck force $= X = c^4/G = 49.082587$

The coulomb force $= Q = \hbar c/r_e^2 = 8.600033$

Gravitation force $= N = G m_p^2 /r_e^2 = -29.628371$

$Q/N = S/\alpha\mu = 38.228404$

$X/Q = \alpha\mu S = 40.482554$

$X/N = S^2 = 78.710956$

$XN/Q^2 = (\alpha\mu)^2 = 2.254148$

$$S = \hbar\alpha c/Gm_p m_e = \alpha\mu (m_o/m_p)^2 = r_e c^2/m_p G = \alpha^{-23} \mu^{-3}$$

$$e^2 = \hbar\alpha c = -18.636938 \, [ML^3/T^2] \; ; \quad m_e^2 = \hbar c/G \; ; \quad e^2/m_e r_e = c^2$$

$$\{ SG/c^3 = 0.749712 \sim 3/4 \, [T/M] \}$$

SPECIES OF FOUR IN CULTURE AND NATURE

Humans organize their cultures and thinking around <u>dyads</u>, such as:

     win/lose; true/false;

Around <u>triads</u>, such as:

     Father, Son, Holy Ghost; Brahma, Shiva, Vishnu; Executive, Legislative, Judicial;

And especially around <u>quadrads</u>, such as:

     4 directions of the compass, 4 phases of the moon, 4 seasons of the year, 4 quarters of a football game.

But fourness manifests itself not only in our cultures and the organization of our thinking as in sociology, philosophy and mathematics, but also in nature, in physics, biology, and psychology.

In sociology:

     The Hindu caste system:

          Brahmans, Kshatriyas, Vaisyas, Sudras

     The Mayan city organization:

          Prince, Priest, Warrior, Merchant

     Current USA:

          President, Supreme Court, Pentagon, Congress–Corporations

     Medieval Education: (The Quadrivium)

          Arithmetic, Astronomy, Geometry, Music

     The Four Generations of Warfare:

Regiment against Regiment	Alexander, Caesar, ... American civil war
Siege and entrenchment	Masada, Byzantium,...World War I
Movement and envelopment	Mongols, Subatai,...Rommel, Patton
Random warfare	9/11, Al Quaeda ....Terrorism, Terrorists

In Philosophy:

     The Presocratics four elements:

          Earth, Water, Air, Fire

     Aristotle's four Causes:

Material Cause	That out of which something is made	Ingredients
Efficient Cause	That by which something is made	Process
Formal Cause	That into which something is made	Product
Final Cause	That for which something is made	Purpose

     Bacon's four Idols:

Idols of the Tribe	Sensory limitations, Preconceptions and Prejudices
Idols of the Cave	Generalizations from local conditions, Universals
Idols of the Marketplace	Semiotic distortions and truncations
Idols of the Theater	Blind acceptance of tradition, custom and authority

In Psychology:

Hippocrates' Four humors:

Sanguine	Cheerful
Phlegmatic	Unexcitable
Choleric	Hot Tempered
Melancholic	Depressed

Jung's Four types:
Sensation
Intuitive
Thinking
Feeling

Buddha's Four Noble Truths
The existence of suffering
The causes of suffering,   attachment, greed, desires
The termination of suffering,   acceptance of impermanence
The eight fold path from suffering

In Mathematics:

Only Four algebraic equations soluble by radicals: [✓s flunk on five]
Linear, Quadratic, Cubic, Quartic

Logic:
Convex Venn diagrams limited to four sets.   [convexity flunks on five]

Pascal Triangle
11^n valid up to $n = 4$ [$n \geq 5$ flunks]

Wolfram's Four Cellular Automata Patterns
Uniform
Fractal   *4 Color Theorem*
Random
Local Patterns

In Physics:

The Four Forces
Gravity
Electric force
Weak force
Strong force

In Biology

The Four Nucleitides   [DNA]
Adenine
Guanine
Cytosine
Thymine   [Uracil in RNA]

4 Spaces

4 Worlds

    Physics
    Bio   each with diachronic
    Semiotic   and synchronic aspects
    Contextual

DEMONS.WPD   December 18, 2006

THE ANCIENTS WERE RIGHT

Again and again in studying the views and worldviews of the ancients I find their ideas more realistic and pragmatic than those of our self-labeled realistic and pragmatic age. As an important example, I agree with the ancients on the existence of demons (ok, daemons). Our so-called Enlightment, the age of science, emancipated us from superstitions and beliefs in gods and demons. How? Because their existence was not testable empirically. Of course not, science can only deal with the repetitive and the regularly repetitive and no demon is going to restrict itself to acting in a regular or predictable manner.

In modern culture the behavior and the behaver are held to be one and the same. [Our dictionaries don't even have a word, behaver]. However, there are a few unenlightened ones, (those people never baptized by the Enlightenment), like Mahatma Gandhi who felt that the behavior and the behaver were distinct and must never to be confused. [The unenlightened, in this sense, also includes a few Jungians and others not following the Psychological Party Line.] What these unenlightened ones are saying is that the human behaver is analogous to hardware while the behavior is analogous to software, the program that the hardware is running. The ancients didn't have the terms hardware and software in their vocabulary, so they used human being for hardware and demon for software.

If we adopt this distinction, then we must allow that there are many types of demons, productive ones and destructive ones, just as there is effective software and software that crashes, (no specifics included *any more fine* here). The human ego objects to this view since it infers that will and intention reside in the demon and not in the person. Further, it implies that the hardware's significance lies not in itself, but in its ability to run software. So, as the ancients proposed, all humans are demon possessed, some running Ahura Mazda's programs, others running Ahriman's programs. The significance of life does not lie in the computers, but in what the software they run effects. Nonetheless, the hardware retains a most important component of will and intent: It *? does it?* selects the software that it runs. All Ahriman's software opposes this view. Ahriman's programs all contain two basic sub–programs: First, Disbelieve that such things as demons exist. Second, The behavior and behaver are identical and inseparable, (i.e. the computer can run only one software).

The empirical test of any worldview lies in the consequences of its adoption. If doing is detached from being, then the true contest is revealed as a war between competing demons, and not between humans. It follows that the killing of humans in war is useless in opposing Ahriman's demons. Destroying computers only deludes one that the dangerous software is gone. Ahriman and his demons will only be defeated when we computers run only the programs given us by Ahura Mazda and his software engineers: Lao Tzu, Kung Fu Tzu, Mahavira, Sakamuni, Isaiah, Plato, Yashuah, Muhammad, ... And not the pirated, distorted, versions.