

SCRAPS
1990
AND EARLIER

*Expedition c. 1963
This was written in the 80's
Use in Last PTScan*

ECLIPSE.WP6

95/02/13

I would like to recount a personal experience with this second aspect of darkness that made me come to feel that we have been too quick to equate darkness with evil.

Some thirty years ago, we were able to put together a new type of eclipse expedition. There was to be a total eclipse of the sun whose path crossed northern Canada. We were able to obtain a large jet plane and modify it to carry our telescopes, spectrographs, and other instruments. There were two ideas involved. First, to improve observing conditions by getting above as much of the atmosphere as possible. We were going to be able to fly at almost 50,000 feet. And second, we would fly east along the eclipse path and thus extend the time of totality by more than 30%

On the day of the eclipse there was a heavy cloud bank covering most of northern Canada, and we were thankful that we were assured a view of the eclipse by being thousands of feet above the clouds. As the time for the eclipse approached we got to altitude and took course at top speed along the eclipse path. We could look back and see in the distance a darkness beginning to cover the cloud bank. As we watched this darkness swept toward us at an incredible speed, like some devouring monster it blackened all in its path. It swept on and soon engulfed us, and we looked up and saw that the sun was gone and it was time to go to work.

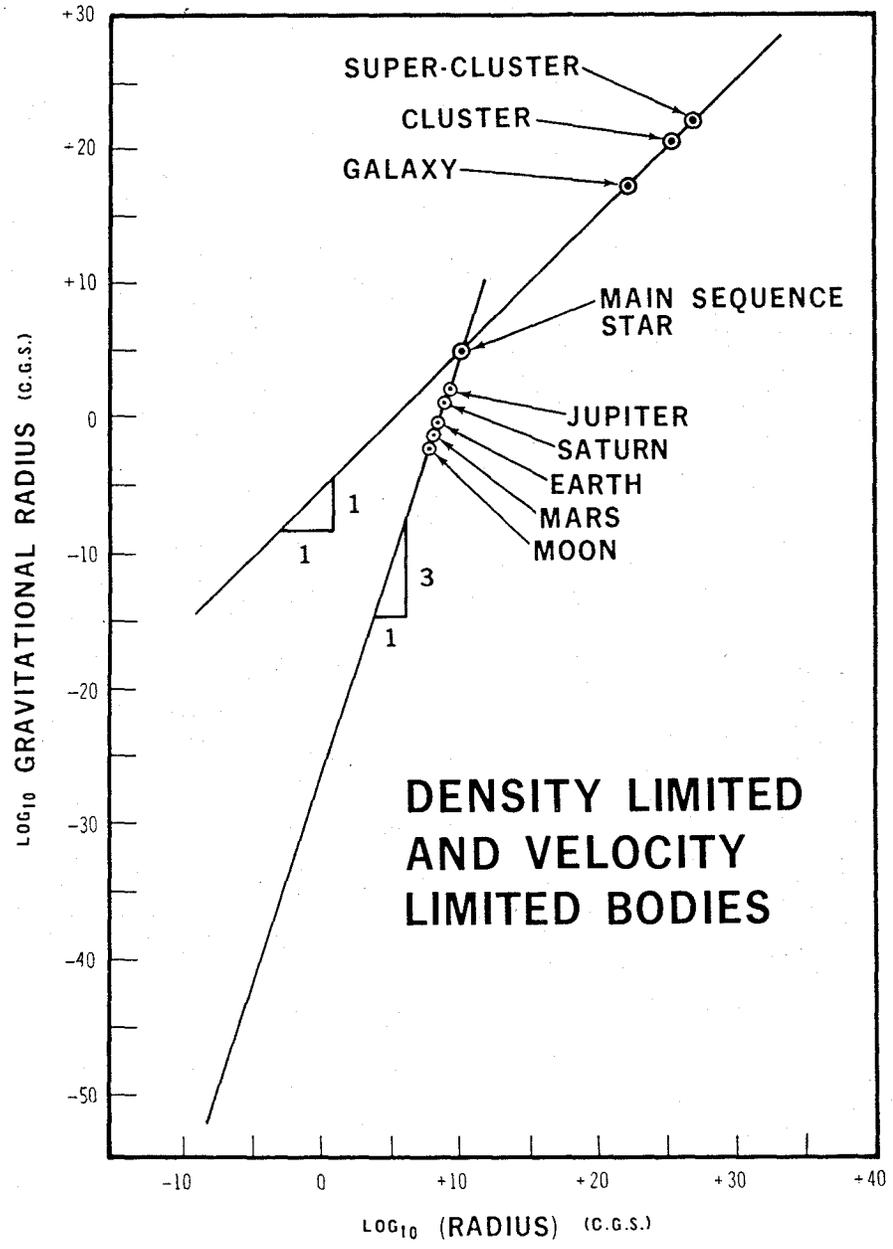
Our project involved taking several short exposures with various filters in different wave lengths. We were so busy with our instruments that we could not tell what was going on. About half way through, it was necessary to change film. This was my partner's job and I had the privilege of a few

seconds direct view of the spectacle. Here we were suspended half way between heaven and earth and there was the amazing corona of the sun and adjacent were stars and planets that would not be visible again until another time of year. The whole universe was displayed above and beneath us. I had the strongest feeling that if I could just look at this spectacle long enough I could penetrate further into the truth than with all the data we could ever collect with our instruments. In that moment of deep darkness, I felt for the first time the oneness of all things, the earth, the sun, the stars, and we ourselves in the middle of it all. This was enlightenment. This was a glimpse of God.

You know, today I can't remember what the purpose of our observations was. We collected and reduced our data, wrote and published the report and it sits on some shelves in some libraries. But that does not matter. The exploration began with a telescope, but the message was received with the heart. For me now darkness is not fearful nor depressing. It has become through the path of knowing a way to the mystic's 'cloud of unknowing'. And this is what the darkness of Advent can be.

I often think about the astronauts and their encounter with darkness. In outer space all is black. But this is curious because space is filled with light. Light is everywhere and nowhere, and only when it strikes a bit of matter does it manifest itself. This give us a different way to look at light and dark, perhaps closer to the way it was before God separated the light from the darkness to make day and night. It is only on the surface of the earth that light and dark are so separated. Elsewhere they are intimately intertwined. I think this is why it is said that 'to God light and dark are as one'. I feel the time has come for us to venture into the darkness knowing that in its depths we will find a light greater than any we have known.

integrity
Safety
Maintenance and services
Self induced congestion



MORPHOLOGY AND MODULARITY

On the day that John Glenn made his historic three orbit flight of the earth, there was a particularly bad traffic jam on the west side of Los Angeles. I recall listening to progress of Friendship Seven on the car radio while embedded in the creeping glacier of traffic. While Glenn crossed Africa, the Indian ocean, Australia, and part of the Pacific Ocean, we moved eight blocks. There was something contrasting in this situation that bothered me. I began to feel on that morning that we were not only getting a preview of the new capabilities which our technology was developing for the conquest of space, but we were also getting a preview of the consequences that unstructured use of technology was piling up for the conquest of us. For me this contrast was a warning that there were some serious deficiencies in our understanding of what was really happening as a result of the process of applying science and technology unexaminedly to the multifarious specific problems which attracted us. The cause of this and other unbalanced situations in our culture is not clear. Was it that we sought out and found challenge only in glamour problems such as the development of new capabilities to fly higher, to see further, to compute faster, finding little satisfaction in tackling the garbage problems like air pollution, traffic stagnation, and what it is that is most needful of being computed. or were there limitations to our methodologies for solving problems. Perhaps those we had already developed were only useful for certain classes of problems, like figuring out how to fly faster, and our

methodologies could not cope with broader classes of problems. or was it simply that we were not taking into consideration for some reason, some very important parameters. An engineer riding with us saw no problem. "It is all very simple. The speed varies inversely as the density of the medium through which one moves. If you take the ratio of the density of matter and space where Glenn is, the density here on the freeway, take the square root; you will come up with approximately our ratio of speeds." Some parameter seems to be missing there too.

A few weeks ago, the world's largest oil tanker of 120,000 tons was wrecked off the east coast of England, releasing thousands of tons of crude oil which came ashore and destroyed hundreds of miles of beaches in a way which has tragically affected the means of livelihood of thousands of people, and cruelly contaminated the environment for hundreds of thousands more. Again, something important appears to have been left out of consideration in the application of our scientific and technical knowledge. I do not mean that we do not understand how properly to design large tankers and are overlooking some design factor; our engineering is undoubtedly sound, based on well established and proven principles. Even now we are building a tanker of 300,000 tons and designing one of 500,000 tons. Furthermore, the economics of the large tanker is sound. The savings accrued in bulk transport of oil are apodictic. Yet, navigational disasters may befall any vessel, no matter how large or how well

~~MDR~~
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White Notebook #1

Now

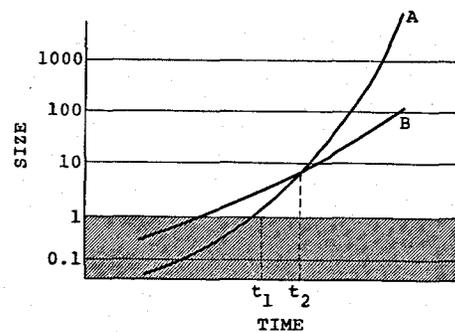
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designed. These disasters striking from the environment we traditionally call "acts of God;" the large dominating the small, the universal controlling the particular, the whole determining the part. How can we possibly be responsible for that over which we have no control? This brand of theology is hardly any longer acceptable. The precarious level of technological development which we have recently reached in which we have the power to significantly alter our environment without having the power totally to control that environment imposes the greatest of responsibilities on what we choose or do not choose to do with our capabilities.

This disaster to the shores of England prompted our Secretary of the interior to comment, "The environmental backlash we confront today cannot be eliminated just by applying more of the same science and technology that put us in our present predicament." Some scientists would support this indictment of science and technology, and agree that Mr. Udall has placed the blame squarely where it belongs. Other scientists would object that it is grossly unfair to hold science and technology responsible for such a situation for there is, at present, no scientific knowledge which can answer the question, "What is the maximum size of tanker which should be built?" This type of question is not even amenable to scientific treatment. Mr. Udall speaks of, "the same science and technology that put us in our present predicament". This phrase has the implication that there may exist, if not other types of science and technology, then possible developments in science

and technology which would provide the understanding that would avoid the creation of such predicaments. If this be so, then the search for the unincluded parameters whose omission is creating these problems is itself a legitimate research task. We can at least start by adopting this hypothesis and looking for possible ways to formulate the question.

One of the deficiencies in the present practice of application of science and technology is the failure to note that at some level of the state-of-the-art, how big we can build a tanker, and how big we should build a tanker, take on different answers. The problem may be formulated in very simple terms for purposes of illustrating this point.



In Figure 1 curve A is a capability curve showing how large a tanker may be constructed in accordance with the state-of-the-art as a function of the year. Curve B may represent some environmental tolerance or some second capability which in our present illustration may be measured by the number of tons of oil on beaches which we can in some way successfully neutralize. Let us assume that these curves cross in 1965. Assuming the economic incentive is always toward larger tankers, prior to 1965 the choice of what size tanker to build is governed

entirely by the technological limitations to tanker size; after 1965, if we allow for the possibility of disasters, we can weigh the economic gains of size against the losses in the event of a disaster, and make a choice as low as curve B and as high as curve A.

This naive two parameter formulation in no way reflects the real complexity of the problem, nor all of the interrelations which must be taken into account. It serves only to point to the fact that there exists two regimes; first, the regime of limited though developing capability, developing to the level where a solution is realizable. And second, the regime in which capability has reached a level demanding choice. Attitudes nourished in a regime of limited capability in which the choice is always made for the limit of capability, tend to carry over into the second regime. The difficult problems of choice are ignored by still opting for the limit of capability. Chambers of Commerce are still trying to attract population growth to their communities, an endeavor that made good sense in frontier days.

This formulation of the how big problem in terms of capability and environmental tolerance has also been used by some in their approach to nuclear strategy. In Figure 1, if the level of destruction is read for size, we have

the current nuclear situation. Curve A represents the capability of nation one, or nation two, to impose a given level of destruction. Curve B represents the level of tolerance to destruction of nation one or nation two. The fact that the two capability curves and the two tolerance curves are not precisely identical is a negligible matter with respect to the level of destruction involved. In past wars the level of tolerance was always higher than the level of any enemy's capability for destruction. However, in the past two decades this order has been reversed. The implications are clear, but capability choices still derive from first regime thinking.

The phenomena of regime change is well understood by many business and government leaders. We have learned in this symposium some of the powerful new methods which are available to decision makers, allowing them to confront the full complexities of their problem and optimize their choices. Unfortunately, many in a position of responsibility still fail to recognize the nature of the change from the limited capability regime to the ^{mandator} choice demanding regime, and this, to the peril of us all.

The above is particularly evident in the number of existing nuclear warheads

Synapse
or
Node

Theory of Structures

3(1-7)

A. G. Wilson
12/7/67

TRAFFIC DENSITY AND SYNAPSE DENSITY

It is suspected that there exists a bound to the ratio of the traffic density in the neighborhood of a synapse to the mean spatial density of the synapses themselves. Such a bound appears as the possible explanation of Zipf's Law and the Scott Effect, relating the brightest star in a galaxy to the number of members of the galaxy.

We shall assume a spherical aggregate of N spherical synapses, each of mass M and radius A . The radius of the aggregate will be taken as R . The mean spatial density of synapses will be

$$(1) \quad \bar{\rho} = \frac{3NM}{4\pi R^3}$$

There is assumed to exist a flow of traffic into or out of each synapse. This traffic may take the form of mass particles, energy packets, information packets, or field effects. For example, if the synapse is a city, the traffic may be aircraft, motor vehicles, or telephone messages. If the synapse is a star, the traffic may be material particles (protons, electrons.....), photons, neutrinos, or gravitons. If the synapse is neural, the traffic may be nerve impulses. This traffic is channeled by the nature of the nexus which connects the various synapses. For a city, the nexuses may be the highways, the rail lines, or the air routes leading into the city. In the nervous system the

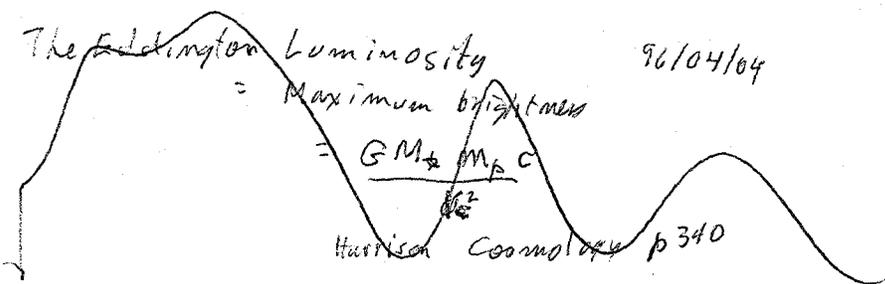
The Edington Luminosity

96/04/04

= Maximum brightness

$$= \frac{GM_* M_p c}{R_*^2}$$

Harrison Cosmology p 340



nexuses are the nerves themselves. For a star, the nexus is the field space surrounding the star. This may be ordinary Euclidean space with the nexus permitting a 4π solid angle or it may have more restrictive geometric and topological properties.

I. 4π Nexus

Let us assume that the energy packets may be represented by equivalent masses \underline{m} . The flux \underline{F} of these packets will be proportional to the number \underline{n} crossing a surface of radius \underline{r} in time \underline{T} . If v is the velocity of the packets at the surface r , then the energy flux per unit time per unit area will be,

$$(2) \quad F = \frac{n(mv^2)}{4\pi r^2 T}, \quad [F] = \left[\frac{M}{R^3} \right] \gamma^3 \left[\frac{M}{T^3} \right]$$

From Equations (1) and (2) the ratio γ of the traffic density F to the synapse density ρ is

$$(3) \quad \gamma = \frac{F}{\rho} = \frac{n}{3N} \frac{m}{M} \frac{R^3 v^2}{r^2 T} \quad \text{with } [\gamma] = \left[\frac{L^3}{T^3} \right]$$

i.e., the dimensionality of the density ratios is that of a velocity cubed. This dimensionality is bounded in relativistic physics by the quantity \underline{c} . We therefore assume (4) $\gamma \leq c^3$.

99/07/21

$$E \propto t^{-2}$$

$$E \propto k t^{-2}$$

$$\text{Power} = \frac{dE}{dt} = -2 k t^{-3}$$

Power $\propto G \rho$

Comments

density

but $t^{-2} \propto G \rho$

Red Giant $\rho \downarrow$ but $L \uparrow$

Example:

The traffic is the radiation leaving a star. In this case the energy packet mv^2 becomes $h\nu$. Substituting in (3)

$$\gamma = \frac{nh\nu R^3}{3NM r^2 T}$$

But the bolometric luminosity of a star, $L = nh\nu/T$, i.e., the total energy per unit time (take $T = 1$ sec.), hence

$$\gamma = \frac{L}{3NM} \frac{R^3}{r^2} < c^3$$

But r is arbitrary so long as $r \geq A$. We may, therefore, take r as equal to A .

For a star $\frac{GM}{c^2 A} < 1/2$. Thus setting $r = A$, we obtain

$$\frac{2}{3} \frac{GL}{c^2 N} \left(\frac{R}{A} \right)^3 < \gamma < c^3$$

or

$$(5) \quad L < \frac{3}{2} N \left(\frac{A}{R} \right)^3 \frac{c^5}{G}$$

The expression (5) says that the energy emitted per unit time is less than a constant times the ratio of the volume occupied by the synapses when close packed to the volume actually occupied.

The maximum value of the bound is when the synapses are close packed. In this case we get the maximum luminosity, \hat{L} ,

$$(6) \quad \hat{L} < \frac{3}{2} \frac{c^5}{G}$$

The right member of expression (5) can be evaluated. Assume the following values:

$$\log N = 11.6$$

Stars in a galaxy

$$\log A = 10.84$$

Radius of star

$$\log R = 21.8$$

Radius of galaxy

$$\log c = 10.48$$

$$\log G = -7.16$$

Giving $\log L < 38.46$ ergs/sec.

Using the relation,

$$M_{bol} = M_{bol \odot} - 2.5 \log (L/L_{\odot})$$

with $\log L_{\odot} = 33.59$ and $M_{bol \odot} = 4.72$

(3.90×10^{33} erg/sec) Allen p. 161

$$M_{bol} = -7.45$$

The maximum absolute magnitude of galactic novae is

$$M_{pg} \sim -7.5 \quad (\text{Allen p. 214})$$

(using $\log L_{\odot} = 33.59$ and $M_B = 5.41$)

$$M_B = -9.676$$

Hence the bound given by the assumption (4) is in excellent agreement with the maximum value of absolute magnitude observed in the galaxy. (Super giant stars have $M_{pg} = -6.8$.) Supernovae will be discussed separately.

It is of interest to evaluate the maximum possible luminosity of a radiating object under the assumption (4). This may be done in equation (6). Using the same values as before, we obtain

$$\log \hat{L} < 59.74 \text{ ergs/sec}$$

This is essentially the power value for quasars, according to the cosmic distance hypothesis (Hoyle and Fowler). We thus have as a consistent interpretation of equation (6), that whenever a set of stars are close packed (or one star not a member of any aggregate), that the luminosity can be a maximum and has the value $10^{59.74}$ ergs/sec. This does not permit the mass of the quasar to be derived, but it suggests that quasars may possess a wide range of masses all having essentially the same luminosities. It is accordingly their lifetimes that vary with mass not their luminosities.

Equation (6) may alternately be derived by setting $r = R$, the radius of a galaxy, and using

$$\frac{GNM}{c^2R} < 1/2$$

which gives (6). This would lead to the conclusion that quasars are ~ galactic mass.

Let us evaluate L in equation (5) under the same conditions of N , R , etc., but assume that A , the stellar radius is that of a giant star instead of a main sequence star, i.e., $\log A \sim 10^{13.2}$ cm

	R_{\odot}	cm
ζ Aur	190	$10^{13.12}$ cm
32 Cyg	353	$10^{13.37}$ cm

From equation (5) we get

$$L < 10^{45.5} \text{ ergs/sec}$$

or

$$M_{\text{bol}} \sim -24 \text{ or } -25$$

This corresponds approximately to the luminosities of supernovae.

(The values of N and R should be selected for other galaxies.)

It thus appears that supernovae correspond to giant stars and novae to main sequence stars under assumption (4).

Equation (5) shows that for a fixed type of star (A fixed), that the maximum luminosity depends on the density of the galaxy in

which it is located, such that the greater the density the brighter the maximum. However, since $2GM \sim c^2 R$, the mass increases with R not with R^3 . Hence for a given type star, i.e., A, M fixed, $\frac{N}{R^3} \sim \frac{1}{R^2}$. Hence the bigger the galaxies the less luminous their giants. This is consistent with the maximum population II stars being fainter than the population I stars and the elliptical galaxies being more massive than spirals.

THE SEARCH

One of the principal challenges of this of this century is to explore, generate, and validate alternative modes of community, work, education, and individual growth. In the generation of alternatives we must encounter face to face many of humanity's deepest and oldest core beliefs, beliefs that in shaping, our ideas of ourselves and the world have also intervened in our destiny. The periodic examination of core beliefs is an essential part of man's search to discover his role in the cosmos, a search that began before the first tool was fashioned or the first poem was sung. In our search we must identify and protect that which nurtures humanity, identify and restructure that which can be adapted to the service of humanity, and identify and dismantle that which threatens or oppresses humanity. Although this search has led to plateaus of partial attainment where mankind properly paused for reintegration, there may never be a final summit. If not, dedication to an unending search is not the entrance to a Sisyphean hell, but rather the discovery of that blend of confidence and humility that tunes our own pulse to the pulse of the universe. Ultimately, in the process of searching for his cosmic role, man will have created one--the role the searcher. This role is certainly dignified enough and challenging enough for man until his true role be found. The role of searcher is indeed dignified enough and challenging enough for all time if no other role is ever found.

from the EOMEGA COVENANT, 1969

the dying
 The last words heard that Tolstoy uttered were:
 "To seek, always to seek"

Searchl. wpd

10/30/94



reprinted from American Institute of Aeronautics
and Astronautics Lecture Series, Volume 12,
A.D. Emerson, ed. 1973

5
see also
1993 #36
2002 #18

THE FUTURE OF THE CITY: MEGALOPOLIS OR MERISTOPOLIS?

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Abstract

The technological, economic and psychological forces that attract people to or repel people from urban centers are undergoing fundamental changes. The balance between the forces of aggregation and those of diffusion is shifting. No longer can extrapolated growth curves be taken as reliable guides to the city's future. In view of the increasing ability to create an urban culture outside of large population centers and in view of the increasing difficulties in maintaining an urban culture within large population centers, the future of the city as we have known it is in serious doubt. This paper identifies and discusses the growth of fragmentive forces and the decay of the aggregative forces that have historically shaped the city. Will the projected trend to megalopolis materialize or will a net of meristopolis arise through the fragmentation of present cities into smaller, more uniformly distributed centers of population?

Modern approaches to problem formulation and solving, such as Operations Research and Systems Theory, caution against the common error of defining a problem within too narrow a context. Those who focus on the improvement of the steam locomotive suddenly find that their solutions are irrelevant in a railroad technology switching from steam to diesel power. Those who design faster ocean liners find their solutions aborted by transoceanic air travel. Those whose chips are on higher octanes lose their shirts when kerosene preempts the motor fuel market. The rapid and radical changes of these times provide us with an abundance of examples that teach us to look both broadly and deeply into our problems, not only asking what it is that we are really trying to do, but whether what we are trying to do will be meaningful by the time we are able to do it.

I believe any exploration into alternate solutions for the current problems of urban transportation

must take as boundary conditions nothing less than the basic forces that define the city and govern its growth and decay. This especially since a decade has become the typical span of time for the implementation of most programs for new urban transportation systems. An analysis of the forces shaping the city must include not only the economic and logistic factors but the cultural and psychological factors. The fact that many of these components are not easily measured and quantified does not reduce their importance. Our tendency to stress what we can measure and massage mathematically and ignore what we cannot causes us to substitute operations with methodologies for operations on the problems themselves, usually with highly discrediting results.

The evolution of the city is shaped by an interplay of forces and images. The forces are the inertias of past practices and present investments. The images are the visions and models of the future. The forces are the imperatives generated by the

individual and collective needs and wants of those who choose to live in or off of the city. The images are mental distillations of the individual and collective ways of viewing and experiencing the city. Since subjective modifications of objective realities are ever creating the future through distorting the present, it is important to recognize the four basic subjective approaches that provide the dynamic for societal structuring and restructuring.

A fundamental anthropological invariant is the structuring of societies, both primitive and advanced, around four basic social functions, which echo their origins in the four psychological types. In India a strong caste system traditionally differentiates the levels of priest, prince, warrior and tradesman. On the opposite side of the globe in the pre-columbian city of Uxmal in Yucatan the same basic division of function according to priest, prince, warrior and craftsman was made architecturally an integral part of the urban plan. At the present time the bushmen of the Kalahiri in Southwest Africa adopt a similar fourfold structure--shaman, headman, weaponman and supporter--for their hunting parties. Thompson ⁽¹⁾ has shown how in highly developed societies these four groups are modified through finer differentiations, but still maintain their basic identity.

The institutions of religion, science and education derive from the shaman function; government and management from the headman function; the military and defense establishments from the warrior function; and the sector of business, industry and art from the tradesman-craftsman function. The universality of this fourfold structure of social organization gives weight to the primacy of the four analogous causes usually credited with being responsible for the origin and continuance of cities: Cities are for generating, storing and disseminating culture and learning; for governing and administering the state; for protection and security; and for providing centers for manufacturing and markets for trade. While detailed economic, physical, psy-

chological and cultural advantages and disadvantages of cities can be elaborated, the existence of cities for over six millenia has depended on the satisfactory servicing by the urban form of the requirements of these fundamental social functions. So long as the urban form fulfills these functions, cities will presumably continue to exist. But it is precisely this issue that throws doubt on the future of cities as recorded history has known them.

The technological revolution of the past two centuries and especially its recent accelerated phase since World War II has done more to challenge the basic institutions of society than any set of events since the neolithic revolution of 10,000 years ago ⁽²⁾. Even the family and the timeless tradition of freedom to procreate are challenged by the condition of today's world. By and large technology has contributed to the centralizing forces that have resulted in the aggregation of increasing percentages of the population in urban centers. The economies of centralized production of energy, mass production of needed goods by a limited number of centers, and non-competitiveness of family agriculture have all contributed to the urban implosions of the 19th and 20th centuries. But it is only to a point that technology has enhanced the centripetal forces enlarging cities. More recently the effects of technology seem to be switching to the other side, enhancing the centrifugal forces that tend to diffuse and erode cities.

First, the matter of protection and security. Certainly the walled city of ancient and medieval times provided fairly good security from the brigandage of nomadic bands, at least until technology introduced the cannon and the walls came tumbling down. Since then both technology and nomadic bands have done quite a bit of evolving. Today the city has become a stack of chips in a game called "Nuclear Deterrents" and the only protection it offers is that of flash incineration over the slower radiation death of the down wind rural areas. As for security, Atilla the Hun has abandoned the countryside for the streets and parks

of the city. It is a well established statistic that the level of crime and violence goes up with the density of population reaching its maximum in our largest cities. It appears that the traditional function of security is today better met outside urban areas than within.

Second, the changes in transportation and communication technologies have reversed the implosive trends in manufacturing and marketing. Decentralized industrial parks are springing up at various distances from urban centers in suburbs and in smaller communities. Fewer people must go to the central city for work. In Westchester County New York 70% of the people no longer commute to New York City and the number who do is decreasing sharply. Trucking and "piggy-back" carriers have liberated manufacturers from the umbilical cord of the railroad track and its centralizing restrictions. Containerization requires large amounts of open space and contributes to the forces of decentralization and value of lower density. Branch merchandising bringing the top name stores to suburban shopping centers results in fewer shoppers undertaking a hajj to the central city. Developments of the past 20 years have clearly demonstrated that manufacturing and marketing can be as effectively or more effectively conducted in smaller semi-urban areas than in the city.

Modern communication and transportation technology has also removed the necessity for concentrating government into a small area. We are governed from California, Florida, the Maryland Hills and jet aircraft about as well as from Washington D.C. Administrators can meet more conveniently and securely on beaches and in mountain retreats than in cities. The weapons of the nuclear age have made both decentralization and mobility desirable design features of government, with physical propinquity being replaced by wires (both direct and attached) in the administration of the affairs of state.

Perhaps the greatest impact of modern technology has been on the function of the city as the

source and storehouse of learning and culture. For over a century the university has replaced the city as the womb of new knowledge. And while today non-academic research centers and think tanks are the runners to which the torch is passing, neither the campus nor the research institute needs the city. With the libraries, theaters and museums in the central city becoming increasingly difficult to reach, the media are decentralizing the storage and dissemination of culture. TV has shown the feasibility of bringing culture directly into every habitation. We all look forward to the time when this demonstrated feasibility will be implemented. The spread of the do-it-yourself movement from house repairs to the crafts and arts and most recently to the performing arts, has created a new amateurism that could care less for the historic sanctity of a centralized professional culture. (It might be added that this feeling is reciprocated.) Technology has struck a deep blow at the cultural function of the city.

From this brief sketch, which is primarily to bring to mind your own examples of how the technological revolution is rapidly modifying the historical functions of the city, we see that aggregating forces are becoming diffusing forces and centripetal forces are being replaced by centrifugal forces. At the present time we are witnessing a curious paradox in the summoning of the know-how of technology to help save the city that technology is rendering obsolete. Technology is asked to come up with new fuels, new engines, new vehicles and new systems to overcome the disruptive effects brought into being by technology itself. Can a specific application of technology overcome its total impact? Vaccination has not been known to work after the disease has struck. Can a few mercenaries hired from the forces of an invading army turn back the invasion? Those who feel technology has its own imperatives and that humans are no longer in charge will answer no. Those who feel that technology can overcome everything--even technology, will try. I personally am with those who choose to try, not from an illusion of the ultimate restorability of the city

to its former place, but as a holding action to make the transition to new approaches to security, administration, business and culture as painless and expeditious as possible.

What about the Future:

There is reason to suspect that tomorrow's developments will be even more unsupportive of the city than today's. First is the matter of energy shortage and the admonition that we are going to have to "cool it". Present cities are not organized to minimize the amounts of energy necessary to provide needed goods and services to all the inhabitants. Cities require more miles of transport, more storage, refrigeration, loading and unloading, etc. than needed to feed the same population living at a lower density adjacent to open agricultural spaces. But efficiency as regards energy consumption has not been a critical value in the past and, if some of the exotic new sources of energy now on the drawing boards become feasible, it may not be a critical matter in the future.

Nuclear fusion as a common source of energy may prove to be one of the greatest centrifugal social forces yet introduced by technology. The fuel--probably heavy water--will not require pipe lines, tankers, or a heavy duty transportation system. A few pounds will go a long way. If the reactors are small, it is likely that independent generators will take the place of large distribution networks and we may see for the first time an abundance of non-polluting energy wherever it is wanted liberated from large central generating plants and distributing networks. The effect of this will be that people can live wherever they wish yet have a reasonable standard of living. Abundant energy will permit all kinds of recycling and other economies with resources. The amenities now found mostly in urban areas will be available on mountain tops, islands or wherever people might wish to live for esthetic or other self actualizing reasons.

As said earlier, the future of the city will result from the interplay of forces and images. The forces appear to be shaping against the city. What about the images? The image of megalopolis is a negative one for most people. A Gallup poll taken in 1968 found the preferences of Americans distributed as follows: For cities, 18%; for suburbs, 25%; for small towns 29%; and for farms 27%. That is about 80% of Americans do not prefer the city.

Images of the future city showing architectonic multi-level shopping arcades with fountains and greenery, connected by moving sidewalks and individual monorail cars fail to energize the support needed for their realization. And if an image does not energize it will not materialize. The positive images of the city are now found mostly amid the growing heap of nostalgia for the good old days. The charm of the shops, the excitement of the streets, the magnificence of the buildings are only in the memory. They are obscured with lurking crime, snarling traffic and choking smog. So perhaps even more negative than the technological and social forces mounting against the city is the fact that the American image of the good life has emigrated from the city and now resides in the open spaces amid green trees, clean water, clear air and still skies. A net of small pluralistic communities, each surrounded by unspoiled or reclaimed open space--a meristopolis--fits more closely both the force future and the image future than the megalopolis predicted a decade ago.

- (1) Thompson, William Irwin, At the Edge of History Harper and Row, N.Y. 1971
- (2) Plumb, J. H., "An Epoch That Started 10,000 Years Ago Is Ending." HORIZON, Summer 1972, page 4.

AESTHETICS AND HUMAN ASPIRATIONS

Aesthetics--what we select as being beautiful--has its roots deep in the human psyche. It springs from our fundamental nature. from our hopes, our fears, our aspirations. It is not clear in just what way our primary urges and aspirations determine our criteria concerning what is beautiful. But it is possible to start with our basic urges and needs and derive some aesthetic "meta-principles" from which the rules of beauty in turn may be derived.

First, humans are fearful. To have a sense of certainty and security we need constant reference to the familiar. This is why we demand explanations of new and hitherto unexperienced phenomena, for explanation basically amounts to relating the new to the comfort of the already familiar. Second, we get bored. We tire of the familiar. While we need the reinforcement of repetition and re-exposure to the familiar, we also need variety and surprise. From these two basic aspects of human nature we see that Art must contain both the familiar and the novel, or Art must be structured around a Toynbee-like departure and return process, an oscillation between the predictable and the surprising. While we like to be surprised, we also like to be able to retreat quickly to the security of the cave, the familiar, in order to digest and process the surprise.

The creativity we call Art consists of variations within a specified set of constraints. For example, the free color and pattern combinations allowed for kimonos and obis but within a severe constraint on form. The constraint supplies the familiar, the variations supply ^{the} novel--this is art.

The alteration of the familiar with the surprising is a meta-principle finding specific form in all of the arts. In music there is the alteration between consonance and dissonance, resolving to the familiar, which is the most consonant. There are variations on a theme, changes in registration, changes in key, in tempo, ...surprises all, but all within the context of the familiar.

Another question, how does prediction and the satisfaction derived from successful predicting enter into the dialog between the familiar and the surprising? When both prediction and surprise occur, a combination of the familiar and the novel, we are most pleased. However that which is novel and surprising throughout turns unaesthetic. Too much surprise begins to lose its edge, perhaps because of the Weber-Fechner Law.

The optimum joy comes from a certain measure of successful prediction followed by something unpredictable which surprises

and shows there is still more to learn, more adventure and more challenge left to life. Each artistic episode exhibits then a sort of "ontogeny recapitulates phylogeny". Each event or situation acquiring the flavor of the aesthetic retells our own basic story, our accomplishments thus far, i.e. the familiar but also what is unknown, the mysterious challenge of new dimensions, new horizons, an unknown future. The dialog of the familiar and the unknown is most basic to human life.

Whatever suggests new events, suggests coming, suggests dawn, a light hidden on a curve in the path, or any device that creates anticipation of a surprise draws attention and pleases. That which suggests there is more beyond resonates with our desire to explore and that which suggests more in the context of the familiar is aesthetic to the full.

Looking through a bower, a grill, a room divider is pleasing because there is the suggestion of more beyond, but at one with the security and bounds of the cave, the familiar.

Whatever shows higher dimensionality, the effects of space and depth--rich as snowflakes falling, trunks of trees in a forest, or lamps hanging from the ceiling of a room, all point to a higher dimensionality in the world, and therefore to the existence of worlds beyond the known and to greater challenges and surprises.

We thus see how the primary aspects of the human psyche begin to be translated into specifics such as soffit lights, room dividers, pole lamps, ... through the intermediate principles of creating the effects of "there exists more beyond". These are higher dimensions and mysteries occurring even in the midst of the most familiar.

A very important mood which must be created by an aesthetic device is **expectancy**. A tension we find to be of the most delicious sort. Expectancy and repose alternate as do surprise and the familiar.

Architecture should have its inception not in function, but in mood. Though we need a kitchen, a bed room, a bathroom, what we fundamentally need are spaces to tune to our moods. Sometimes our primary need is for a cozy enclosed space, protecting us from the vicissitudes of the natural and societal contexts, a place that is secure and familiar. At other times we need to be exposed to the natural order in a space that brings us close to trees, rocks, still and running water. Each dwelling should be able to enhance these two basic human moods. There are others: a place of quiet and peace, privacy and meditation, for letting the inner world come to awareness and reach fulfillment; a place where *gemutlichkeit* reigns, warmth, fellowship, food, fire, song, and hearty cheer--togetherness and love. Then there must be the flexibility of blending these moods and achieving them in various degrees, for example, to behold the storm from a secure vantage

point. Each dwelling must have an open exposed area, exposed to the horizon, to the elements. But there must also be an enclosure, a court yard, an atrium, with no roof. There must be exposure to the horizon with roof, wet verandas and enclosed verandas with portions properly enclosed all of the way down to a secure alcove with a place for fire and warmth for maximum protection and "return to the womb".

The courtyard--the view shut out, but the sky exposed, an inverse to the roof with view. It is interesting to compare peoples who employ these different forms of exposure and containment. Perhaps something like this --the atrium and court of Latin homes vs. the porch of northern homes reflects not only a difference of climate but different indigenous dispositions, (or do the dispositions derive from the form?)

Vertical exposure,,horizontal security
Horizontal exposure,,vertical security
Front yards, outer directed USA
Court yards, inner directed Latin

A multi-mood house may be divided into detached sections, each functionally complete. The variety of mood would relieve much of the drabness and monotony of life as it is now lived. People who live in multimood homes and cities would not be driven to the irritability which causes violence.

Re the City

Automobiles must be excluded from most of the city. As the dwelling must be able to tune to private and personal moods, so the city must be able to tune to the public moods. There must be parks which contain forests, streams and lakes. There must be a market place, with a fountain, there must be a plaza with a monument, a place of majesty where the people can gather and savor their history, exhilarate their present and dream their future. There must be a great cathedral or temple where the city can find its vertical umbilical cord renewing its faith, restoring its hopes, and sealing the ties of its community. There must be a great theater, where the city can reference its soul through drama, dance, and music. Then there must be places of business and bustle, where the life and energy of the community becomes specifically visible. Thus a city is also to be designed for moods as well as for functions, [but in a city mood and function begin to blend.]

THE PRESENT bustle
the mall, square, forum, market place
for community: taverns, theaters
THE PAST inspiration
the memorials, monuments, cemeteries
THE FUTURE transformation
temples, libraries, academies
FOR ALL TIME repose
parks, open space, vistas, lakes, fountains

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Let us first review some of the releases on Harmonic Convergence:

HARMONIC CONVERGENCE

August 16,17 1987

According to the Great Mayan Calendar, August 16 and 17, 1987 is the time of Harmonic Convergence. This is a time when people will be coming together all over the world to celebrate a new era and a new age.

The last period of 52 years, the end of the period of the nine hells, will be the summer of 1987. Eugene Johnson of Dallas, Texas in his manuscript, Ancient Mexican Prophecy for the New Age says that Teotihuacan will be the focus of the subtle energies which will infuse the Earth this summer during the transition from the Fifth Sun to the Sixth Sun. The nine days of August from August 16 to August 24 wil recapitulate the last 468 years of history, and will serve as a gestation phase for the embryonic development of the new age. Humanity as a whole will begin an initiation into higher consciousness.

Jose Arguelles in his best seller, The Mayan Factor: Path Beyond Technology, says that this summer we shift into the final stage of accelerated vibratory subtle energies involving a radical quickening of energy and consciousness that will last 25 years until December 21, 2011--the final date in the prophetic Mayan Calendar. A critical point occurs at sunrise on the morning of Sunday August 16. On this day will begin what he calls Harmonic Convergence. If more than 144,000 self-selected people will spend 12 days of purification and then celebrate the Harmonic Convergence at sunrise on August 16, then the Earth will come into harmony with the galaxy. The Earth has been passing through a beam of galactic energy 5125 years wide since 3113 B.C. It will pass out of the beam in December 2011, which will mark the beginning of the Sixth Sun.

What are we to make of such statements? What do they mean, if anything? How should one respond to this sort of thing? How may we put it into proper perspective? Trudeau's Doonesbury cartoons it as "National Fruit Loops Day" Lots of windchimes. It is being ridiculed and it is being taken seriously. It is being ignored and it is sweeping across the country like a prairie fire, grabbing thousands of people.

To understand what is being called Harmonic Convergence, we must view it from the perspectives of the Historian, the Anthropologist, the Psychologist, the Astronomer, and the Occultist. We must look at historical records and current events, look at the cultures of pre-columbian meso-America and at our own culture, look at the the psychology of mass phenomena, of myths and archetypes, look at numbers, calendars, and celestial phenomena, and finally project

ourselves into the viewpoint of the supposed gods who control the destiny of the Earth.

First, let us note that this is not a unique type of happening. We are living in a time in which many are proclaiming the end of an age and the beginning of a new age. The terms New Age and Aquarian Age are household words, although no one knows exactly what they mean or can assign specific dates to their beginning. Some of the "prophecies" filling the air these days:

1) Millennialism

In 1000 A.D. a fever of anticipation swept Christendom. The zeros in the date brought on many prophecies. We can understand this. We even feel something special is happening when several zeros come up on our car's odometer. The end of the first 1000 years had seen the completion of the Christianizing of Europe with St. Olaf's mission to the Scandinavians and St. Vladimir's mission to the Russians (988). Something very special was about to happen--perhaps the Second Coming.

Today, as the year 2000 approaches it is the same. But there are other anniversaries:

The 500th anniversary of the the discovery of America 1492-1992.

The 200th anniversary of the Constitution of the United States 1787-1987,

There are Second Coming Prophets and Prophecies too.

Benjamin Creme reports that the Christ has returned and is living in East London, and waits only the proper support of the media to make the announcement.

Claire Prophet who is in touch with St. Germaine and the Hidden Masters announces January 1, 1987 as the critical date and warns all of her people to be out of Southern California by June 1, 1987.

The most pervasive millennialists are those of the 'Religious Right'. (see Convergence, Spring 1987) These people not only believe we are in the last days as evidenced through their peculiar interpretations of the Book of Revelation in the New Testament. They even feel that nuclear war is to be welcomed because it is the Armagedon of the Apocalypse. There will be a great tribulation of seven years of convulsion, during which God will unleash his wrath on unbelievers ending in the Great Battle of Armagedon in which the USSR will be totally destroyed. But before the fire and brimstone begin there will be what they call the "Rapture" in which the 144,000 righteous will meet Jesus in mid air and be saved. After the destruction they will return with Him and rule for 1000 years in His Kingdom which will have no unbelievers, no atheists, no gays, and no secular humanists. Jerry Falwell says, "Born-again Christians should not fear the coming war with Russia. If you

know the Lord Jesus as your Savior, none of this should bring fear to your heart, because we're going up in the Rapture before any of it occurs."

Then there are the prophecies of Nostradamus and Edgar Cayce fortelling imminent catastrophic occurrences. Nostradamus, writing over three centuries ago, fortells the destruction of the City of Paris in the 1990's by fire from the air, delivered by a people who live in Central Asia. Cayce predicts the beginning of the end when certain geophysical events--the eruption of Vesuvius or Pelee occur. The East and West coasts of the United States will be inundated and the pole itself will be realigned.

The Hopi also have prophecies fortelling the end of this world. Three earlier worlds were destroyed when corruption made them unviable. The present world has also become corrupt and will now be destroyed. Only those people who return to their original teachings will escape destruction. On August 7, 1970 Hopis met at Prescott, Arizona to announce the coming end of an age.

Finally, the special prophecies from which the Harmonic Convergence takes its inspiration are those of the Nahuatl peoples of meso-America, the Olmecs, Mayans, Toltecs and Aztecs, which describe and even give dates for the end of the world. It is these prophecies that have been amplified and publicised by Arguelles and his colleagues and which we shall examine in more detail shortly.

THE HISTORICAL EVENTS

Prophecies and anniversaries aside, recorded history, and especially current events give credence of themselves to the notion that unprecedented change is taking place.

When we view the historical evidence for the several changes in world view and their consequence, we find a remarkable "radiant" occurring about 600 B.C. It is an amazing phenomenon that such great teachers and innovators as Lao Tze and Confucius in China, Mahavira and Siddharta in India, One of the Zarathustras and Cyrus in Persia, the Second Isaiah and compilers of the Old Testament in Judea, Pythagoras and Thales in the Mediterranean, and perhaps one of the Quetzalcoatl in Mexico were all alive and teaching at the same time. This epoch is really the beginning of the world as we know it. Our religions, our sciences and our political institutions began to take their present forms at this time.

Several subsequent sub-epochs mark major changes in our world views. The foundings of Christianity and Islam, and more recently the spectrum of cultural events converging on the present time. The great changes clustering about 1500: Gunpowder, navigation, printing, Copernicus, Columbus, Luther. The discovery of America, the Reformation, the beginnings of modern science. Another great

sub-epoch occurred early in this century: Radioactivity, Relativity, Quantum Mechanics, Planck, Einstein, Schrodinger, and the outward manifestations: the automobile, aircraft, and radio. And on its heels, another sub-epoch in the 40's: TV, super drugs, the Bomb. And another in the 60's: Space, the pill, computers. All with imperatives revolutionizing our life styles and worldviews.

But what is inescapable is the increasing rapidity with which these epochs of change occur. (And needless to say we have not kept pace with their assimilation nor with their implications.) A plot of these epochs against time shows that they are converging on an 'end point' whose exact date is not precisely definable, but which is clearly located within the next decade or so.

The present year has taken on unmistakable symptoms of departure from 'business as usual'. This seems to be the year of unravelling and shredding. There are many examples:

- Character collapses in secular and religious leaders
- Shredding of traditional values and morals
- Escalation of terrorism--private and public

Transportation seems to be unravelling as well. On the airlines, once on board, equal time for in the air and for on the ground. On the freeways, too fast- a ticket, too slow- a bullet.

And nature is getting in on the act as well. There is the totally incomprehensible record high temperature of the water in one of the great lakes, and the mysterious and possibly dangerous shredding of the ozone layer in Antarctica. The planet wide exponentially escalating death of trees. Signs of a major and perhaps precipitous climatic change. And then there are AIDS, drugs and the bomb.

There is no question that wild things are happening and happening in a highly accelerating manner. While we might not be able to perceive all of these events, we are all aware from what we do perceive in our own communities that things about us are visibly unravelling.

There is thus both historic and current event evidence that we are approaching an "eye of the needle", and it is not surprising that any type of prophecy that speaks to this condition is looked on as being confirmed by what is happening.

A PERSONAL ASIDE

Before looking at the Mayan prophecies and the ideas behind the Harmonic Convergence in detail, I feel I should say a few words about my own history in connection with this area. I have been interested in the pre-columbian meso-American peoples and their cultures since I was a boy. One of my earliest projects while still in grammar school was an exposition of the Aztec Calendar Stone with which I had become fascinated on a trip to Mexico City in

1929. I remember having an overwhelming deja vu experience while visiting a replica of the Governors Mansion of Uxmal at the Chicago Worlds Fair in 1933. It was then that my life long interest in Mayan astronomy, their glyphs and number system began. In 1956 we undertook an expedition to Yucatan to study the Corocol at Chichin Itza on the day of the vernal equinox. We made no great discoveries but ascertained how the structure could have been used for accurate observations.

Much later when I was associated with the Mt. Wilson and Palomar Observatories, I discovered two "Apollo Asteroids". These are asteroids whose orbits intersect those of the Earth and which at times can come quite close, the same kind of asteroid which was probably accountable for the Cretaceous/Tertiary extinction event of 60 million years ago. Once a definitive orbit has been determined, the custom is to permit the discoverer to name the asteroids. The custom at that time was to always use the names of Greek or Roman deities. In the case of objects crossing the earth's orbit, the names of male deities, for the others, female deities. Hence the generic name "Apollo" asteroids. When asked for the names of these two asteroids, I felt that since they had been discovered at an observatory in America by Americans, it would be more to the point to name them after deities indigenous to our continent. I chose the names 'Quetzalcoatl' and 'Tezcatlipoca'. The Nahuatl gods of dawn and darkness. Shortly thereafter I received a visit from an astronomer who is a friend of Portillo the Presidente of Mexico. We had a most interesting discussion of the nature of these gods, their meaning to history and what some of the prophecies were. He informed me of the great interest of Portillo in these matters and of his pleasure in the appearance of these gods in the guise of asteroids.

I do not have the orbital data for these objects handy and cannot say when Quetzalcoatl will return. But that is not the issue at this time. We are concerned here with the return of the god himself, not with an asteroid named for him.

I should add that in my studies I came across some of the prophetic aspects contained in the Nahuatl legends. I cannot remember for sure when I first learned of the particular prophecy which is central to the present time, but it was definitely before my second coming to California in 1957. What I always came across was this: The beginning of the end of the Age of the White Man will take place in 1986, and an explicit date was given as September 16, 1986. I never bothered to check this out, but when in the spring of 86, I first heard of Arguelles' overlays to the prophecy and of his dates of August 16-17, 1987, I was puzzled. Recently I did bother to check. Let me say here all of the notions of subtle energies, galactic beams, and harmonic convergence are those of Arguelles, not of the Mayans or Aztecs, and on carefully calculating the dates, Arguelles dates of August 16-17, 1987 are his alone and are in error as far as the Mayan cycles are concerned. We will return to this later.

ON PROPHECY AND ARCHETYPES

Prophecy is fascinating to a great many. This, not because prophecy foretells what actually will happen, but because of the feeling that prophecy is a valid exercise in influencing what will happen. But there is a paradox: While we want to influence the future, we do not want to know the future. In areas where it is felt that there is no possibility of influence, as say in earthquakes, prediction is definitely unwanted.

Contemporary usage has equated 'prophecy' with 'prediction' and a prophet with a forecaster of the future. But prediction is only one facet of prophecy. In its fuller meaning, 'to prophesy' means to make manifest or reveal something that is hidden, especially to make manifest deeper or hidden meanings. The future is only one realm that is hidden, but this special case of making manifest the hidden has preempted all others and 'to prophesy' has thus come to mean 'to predict that which is hoped for or feared' in the future. Unfortunately, we have lost sight of the more important role of the prophet, for there is much that is hidden and needful of understanding beside the future.

One of the most important roles of prophecy ^{is to} describe and interpret archetypes. This role of prophecy ^{also} associates it with prediction because of the relation between archetypes and time. But before we can explore this, we must first find out what archetypes are.

It was Plato who first emphasized the importance of archetypes. As in the Allegory of the Cave, Plato would have that archetypes are patterns that throw those shadows which we call phenomena onto the wall of the cave which we call reality. But archetypes exist apart from the cave though we can know them only through the shadows they cast.

Next to emphasize the central importance of archetypes was C.G. Jung, picking up on Plato two thousand years later. Jung gave a name to the domain in which the archetypes exist--the collective unconscious. And archetypes are those templates imprinted in the collective unconscious that surface in the phenomenological world (Plato's Cave) as patterns of behavior. How the archetypes originated or got imprinted, neither Plato nor Jung say.

Employing the language of systems theory, we might say that archetypes are structures of 'pure information' which exist independently of any material or substantive embodiment. Like photons, archetypes are experienced only through their interaction with matter. They are like scripts which may be acted out on many different stages by many different actors in many different costumes, but whose theme is recognizable in each case. Those scripts that have played sufficiently often to become readily recognized even acquire names. An archetype may be of

long or short duration, limited or universal, cyclical or irregular. Of particular interest in the case of the Mayan calendar are the class of archetypes that repeat at regular intervals of time--cyclical archetypes.

The archetype and its manifestations exist in two different worlds. The archetype itself dwells in the primordial (Eliade) timeless world of pure spirit (or pure information). Its manifestations are incarnated into time and matter, into the world of our common sense experience. It is not surprising that two languages have evolved for the description of archetypes.

The archetype itself is most frequently described in the language of myth but sometimes in the language of poetry and art, its manifestations are described in the records of history, science, and psychology.

It should also be noted that the temporal sequences which we attribute to causal relationships are but projections of the structure of an archetype. There is no imperative causality in the material world.

We come to see that prediction really means the foretelling of the occurrence of an archetype. In the case of a cyclical archetype, prediction is simply a matter of the proper measurement of time. In the case of an irregular archetype the prediction of occurrence depends on recognition of other archetypes which may customarily precede it or depends on recognizing the archetype at its earliest stage of unfolding.

The archetypes of the Maya are cyclical archetypes and their onset may be predicted by scrutiny of the cycles and rhythms of their tzolkin and haab. The millenialists are at a disadvantage in this respect because the prophecies believed to be held by the Biblical Book of Apocalypse, contain no cycles or calculable dates. Thus the prediction of a second coming of Quetzalcoatl is a matter of calculation, while a prediction of the second coming of the Lamb of God is speculative and dependent on the nigh impossible task of correctly interpreting historic events in the terms of the archetypal pattern. I believe that one of the explanations for the energized response to the Harmonic Convergence is due to the definiteness possible in dating. There is a large pool of hapless humanity out there waiting for Scotty to beam them up. The Harmonic Convergencers have stolen the Millenialists thunder and following by having a definite date for a definite occurrence. And Jose Arguelles proposal of a transformation to higher consciousness is more appealing and less threatening than the risky business of being snatched up a split second before the first nukes go off. I would say the score is Arguelles 1, Falwell 0, ^{on} at this point. I would also say that neither of them are saying anything about either Quetzalcoatl or the Lamb. What they do seem to have in common, however, is the mysical number of the 144,000.

THE NUMBERS AND THE CYCLES

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

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

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

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

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

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

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

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

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

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

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

THE MYTHS AND ARCHETYPES

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

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

and Water for the first four suns.

In addition to the long count and its relation to the creation and destruction of worlds, the short count based on the 52 year cycle, called the *xiuhmolpilli* by the Aztecs, also had its mythologic associations. This cycle is centered primarily on the two gods Quetzalcoatl and Tezcatlipoca whose relationship was partially adversary, partially complementary, and partially dialectical. They fit into the archetype of the returning god, like the avatars of Vishnu, the incarnations of the Buddha, or the manifestations of Zarathustra. Quetzalcoatl also fits the archetype of the savior to come: the Hebrew Messiah, the Second Coming of the Christ, or Maitreya the Buddha of the future.

Quetzalcoatl is the feathered serpent or the serpent that flies. The symbolism is parallel to that of the lotus for the Buddhists. That which crawls the earth or is buried in the mud can work its way up through obstacles to reach a higher consciousness and sail or blossom in the clear air above. But this principle has a shadow side symbolized by a smoking mirror: self-deception, illusion, and trickery. This is the smoking mirror: Tezcatlipoca.

As in all cultures, the Nahuatl mixes myth and history, and it is difficult to discriminate the mythic Quetzalcoatl from historic Quetzalcoatl. But the manifestation of an archetype oftentimes provides the best description of the archetype. About 1000 A.D., ten *xiuhmolpilli* before the coming of the white man, one of the mythic/historic Quetzalcoatl appeared among Toltec peoples. This was Prince Ce Acatl Tolpiltzin who founded the city of Tula about 968 A.D. Tolpiltzin-Quetzalcoatl was a great craftsman and taught the people many skills. He was loved and ruled wisely, but Tezcatlipoca, the traditional god, became jealous and designed a trick to destroy the peoples trust in their prince. He was seduced by drink and becoming drunk committed incest with his sister. Upon awakening he was devastated and felt he was no longer worthy to lead his people. He abdicated and departed naked on foot to the eastern sea. Many begged him to stay but he was adamant. He did say however that he would return in the year Ce Acatl after ten 52 year cycles.

The year Ce Acatl, the day Ce Acatl, ten *xiuhmolpilli* elapsed, Good Friday in the Year of Our Lord 1519. Quetzalcoatl returns. The Toltecs have vanished, their sacred codexes deliberately destroyed. As Roman empire replaced Greek culture, Aztec empire replaced Toltec culture. But the gods and the prophecies remain. Only the names have been changed to protect the guilty.

The Chronology:

February 10, 1519	Hernando Cortez sets sail against orders from Cuba.
March 22, 1519	Landing in Yucatan
April 21, 1519	Arrive Mexico
April 22, 1519	Land at Vera Cruz, it being Good Friday

August 16, 1519	Depart for the interior
November 8, 1519	Arrive at Tenochtilan
	Cortez and Moctezuma meet
November 14, 1519	Cortez seizes Moctezuma as hostage
June 29, 1520	Cortez murders Moctezuma
June 30, 1520	La Noche Triste
.....
1552	The sacred codexes of the Mayans deliberately destroyed.

"These people also made use of certain characters or letters, with which they wrote in their books their ancient affairs and sciences, and with these and drawings and with certain signs in these drawings they understood their affairs and made others understand them and taught them. We found a great number of books in these characters, and, as they contained nothing in which there was not to be seen superstition and lies of the devil, we burned them all, which they regretted to an amazing degree and which caused them great affliction."

Diego de Landa

The final destruction and enslavement of the Nahuas and Mayas was not completed for another century.

THE QUETZALCOATL/TEZCATLIPOCA ARCHETYPES

The archetypes implicit in the myths and stories of the 52 year calendar round, or xuihmolpolli, include the archetype of the Returning God, the archetype of the Expected Savior, and the archetype of Encounter with self and other.

Many religions contain doctrines of the god who will return. It is the archetype that is the carrier of hope and of the possibility of transformation. Each avatar or incarnation of the returning god brings higher consciousness. And the god must return before the consciousness of peoples can increase for the peoples' consciousness is limited by the consciousness of their god. We may describe the process in two ways: As the consciousness of man evolves, it demands revision of his highest aspirations; or The God departs and after a season of purification returns to reinspire man to a higher aspiration. The theological implications of the two descriptions are quite different, but the process is the same.

The returning god must compete with the reigning god, even if the reigning god is his own previous avatar. The returning god is tricked, betrayed, and put to death or flight by the followers of the earlier god. The returning god appears to have failed, but in time man begins to understand the new message and recreates the older god in the image of the higher nature of the newest revelation. And then the recreated god enables man to a higher place. The archetype then repeats.

iterates

Quetzalcoatl is a god who returns. He is a god, who like other returning gods, is destroyed by his less developed self--by Tezcatlipoca. He is rejected because his new message is incompatible with man's present ways. But in time the new revelation is comprehended and assimilated and the god is no longer rejected. But later in time the new god is ^{also} seen to be flawed. When this is perceived, it is then time for a new avatar.

But it is another archetype, the one related in the story of Cortez and Moctezuma that is the central feature of the 52 year cycle of the bundling of the years. This is the archetype of the coming together of two diverse cultures, cultures so unlike as not to be competitive, cultures sufficiently alike to be capable of symbiosis. Cultures that together can provide binocular vision adding another dimension to the perception of the world, out of which can come the potential of transformation and the discovery of the doorway to a higher world. This is the archetype of the encounter of two air masses whose stormy interaction is necessary to produce the rain. This is the archetype of the encounter of two tectonic plates whose diastrophism is necessary to create the mountains. This would be the archetype of an encounter of earth people with extra-terrestrials if that event should ever occur. This is the archetype of the interaction of two ideologies or two religions whose dialogue is necessary to create wisdom. And this is the archetype of the facing of being and shadow whose integration is necessary before there can be either wholeness or holiness.

There are three worldviews of such encounters. First is the Mithraic or Zorastorian. The world is divided into light and darkness, into good and evil, and between the wills of Ahura Mazda and Ahriman. When the Jews returned from the Babylonian captivity they brought this worldview back with them. Its theme is woven through both the Old and New Testaments. Its theme has dominated the West and with Western domination of the world, has dominated the world. We see it in modern terms in our "Westerns", the good guys against the bad guys, with the duty of the good guys to kill the bad guys. We might call this the adversary or cowboy worldview.

A second world view holds that all that exists is harmonically related. The world was created by one omnipotent God, a loving and compassionate God. And since God is good all that he created is good and our task is to come into harmony with Him and his world. The separateness we feel is an illusion, for in reality all is one. This is the worldview taught by both Siddharta and Jesus and its threads run through both Buddhism and Christianity. We might call this the harmonic or lotus worldview. If we associate the cowboy worldview with the West, then the lotus worldview may be appropriately associated with the East.

Finally, there is the worldview that holds that nothing can be created without creating its shadow. We cannot possess without creating the unpossessable. We cannot know without creating the unknowable. We cannot organize without creating ^{disorder} chaos. We cannot harmonize without creating alienation. We cannot actualize without destroying potentiality. Every system will always contain the uncontrollable. Every file will always contain the miscellaneous drawer. There can be no information without entropy. This view holds that we cannot ignore or kill the side effects of what we do. This is a difficult worldview to accept. We can understand that without the hand there will be no shadow of the hand, but we find it hard to accept that without the shadow there can be no hand.

For everything that exists something else must be sacrificed on the altar of non-existence. This is the worldview of Vajrayana Buddhism, of C.G. Jung, and of modern physics. It is the key to the Quetzalcoatl/Tezcatlipoca archetype. It has been suggested that this be called the ~~dyadic~~ ^{dyadic} worldview. It is of neither and of both East and West. This is the worldview of the land that Francis Bacon called the New Atlantis--it is the indigenous worldview of the Americas.

Each of these worldviews has its own resolution of the archetype. The cowboy approach ends in 1) exchange and trade, e.g. Japan and the West 1854; 2) conquest and domination possibly including obliteration of one party, e.g. Spain and Mexico 1519; or 3) in restoration of pre-confluence conditions, e.g. Japan and the west 1607. The harmonization or lotus approach results in assimilation and homogenization, e.g. China and Mongols 12th century, China and Manchus 17th century. The ^{dyadic} ~~christic~~ approach results in the creation of an alloy or an offspring, something entirely new being born, we feel an example of this may be found in the evolving society we call the United States of America.

These are the principal archetypes involved in the xuihmolpolli. They are unquestionably recurring even if they are not precisely cyclic. There are others of importance, but they must be omitted here. But before us lie the challenges of assimilation and response.

HARMONIC CONVERGENCE IN PERSPECTIVE

Arguelles has dismissed his detractors by pointing out, "When Galileo said that the earth revolves around the sun and not the other way around, he ran into problems with the experts of the time." Which is to say, Galileo was right and he was rejected, I am rejected, therefore I am right. This brand of logic runs through all of Arguelles thinking and the consequences speak for themselves. But what is interesting is that Arguelles has not been rejected. The summons to Harmonic Convergence is being received as has no other attempt to marshal human energies to a focus on a worldview change. What are the keys to Arguelles success? Certainly it is not in being right.

For example, the dates Arguelles proclaimed for the Harmonic Convergence. August 16 and 17, 1987. This is supposed to be the date Ce Acatl, the year Ce Acatl after nine 52 year periods. (Why nine instead of ten as between Tolpiltzin and Cortez/Moctezuma? Probably because ten lies beyond the terminal date for the Fifth Sun in 2011.) Taking for Ce Acatl in 1519 the Gregorian date April 22, the day of Cortez' landing in Mexico, 468 (i.e. 9×52) years later takes us to April 22, 1987. But the Aztec year is the approximate or vague year of 365 days. This differs from the western calendar by $468/4 = 117$ days put in every fourth year as February 29th. If we add 117 days to April 22, 1987 we get August 17, 1987, the day announced by Arguelles for the Harmonic Convergence. But this date is wrong for two reasons. First the years 1700, 1800 and 1900, in accord with Gregorian reckoning, were not leap years. So the correction is 114 days instead of 117 days. This would make August 14, 1987 the date of Harmonic Convergence. But the other error is more serious. The vague year is shorter than the Gregorian year and 468 vague years terminate before 468 Gregorian years. In other words, Arguelles should have subtracted instead of adding. If we subtract 114 days from April 22, 1987 we get December 30, 1986. So Harmonic Convergence has already occurred. (Incidentally, several seers pointed to this date at the end of 1986 as of great significance, including those who channel the Hidden Masters. Actually a global day for peace prayer was called for December 31, 1986.) Arguelles is not only out of step with establishment logic and arithmetic, he is out of step with others in the occult. So we are intrigued even more with the great response to Harmonic Convergence.

We could explain the response in terms of the mysticism of the odometer, the approach of the magical year 2000, or possibly by the apocalyptic aspects of current events--Armagedon being but a miscalculation away, but definitely part of the explanation lies in the great sense of powerlessness that pervades everywhere and people are looking for something or someone to intervene on humanity's behalf. But if these were the explanations, other calls to new age action would have received responses similar to the response to Harmonic Convergence. It is not, as we have seen, that Arguelles is right and others are wrong. No, there are other factors at work here.

What is different? Part of the phenomenon lies in Arguelles' unshakable belief in his rightness. There is fantastic power in such intense conviction. It can achieve great momentum in spite of extreme error. Not comparing the substances, but noting the power of conviction, we have seen the build up of similar psychic momenta in Hitler's Third Reich and in Khoumini's Iran, inspired by the self-confidence of leaders.

But there is another difference. And this, I believe, is the key. Other summons have originated with popes, preachers, gurus, and

various sect and cult leaders, but this summons was not an ordinary human initiative. It was represented as a cosmic initiative. It is the earth, the galaxy, not Jose Arguelles, that is summoning us to action. Of course, this is not exactly the case. But this is the archetype of the prophet, not the channeler. There is but one galaxy and Arguelles is its prophet. The power of this is indisputable. In itself it is the 'subtle energy', it is the 'galactic beam'.

What will happen? Anything could happen. No question power, the power of focused human belief, has been unleashed. The danger is that unfulfilled expectations will spill the energy into unwanted places. The hope is that, after all, it may be being guided by wise beings such as Quetzalcoatl, who are answering humanity's call.

FESERP1.WP1 DISK ESSAYS 7/9/87

THE FEATHERED SERPENT--1

NOTES 05/15/87

The end of the age of Tezcatlipoca is the time of loss of control. What has worked in the past is no longer working. Each exercise of will results in something not intended. Authority is evaporating and power is decreasingly less effective in producing any desired end. The entropy build up in the system is paralyzing it, and as a consequence anxiety is escalating into outright fear.

→
Ngon - Eq with
Stress to

In a previous transition the priests became frustrated over a magic that no longer worked. Whereas in the past one human sacrifice a year sufficed to acquire the favor of the gods, now tens of thousands are required and the gods are still not propitiated and refuse to restore to the priests their lost power. The call goes out for even more sacrifices.

In the present transition the politicians are frustrated over statecraft that no longer works. Whereas in the past a gunboat and a few marines sufficed to establish hegemony, now trillions of dollars in military expenditures are required and yet there is neither control nor security. The call goes out for even greater expenditures.

Tezcatlipoca will take all of your sacrifices but he will never restore your power. He cannot. For we have crossed a threshold, from "sub-sonic to super-sonic" aerodynamics, as it were. We have crossed a great divide from the east slope to the west slope. The water no longer flows to the Atalantic, it now flows to the Pacific. We have crossed from the Age of Tezcatlipoca to the Age of Quetzalcoatl.

THERE IS A DEPARTURE AND RETURN DIALECTIC BETWEEN
THE SERPENT THAT FLIES and
THE MIRROR THAT SMOKES

Every religion has its Messiahs and Maitras. The god who will come or who will return. The god ever returns, each avatar having higher consciousness. The consciousness of man can increase only after the consciousness of the god has increased.

God creates man
Man creates god
The new God recreates man
Man recreates god
The new God recreates man
.....

We may describe this process in two ways: As the consciousness of man evolves, it demands revision of his highest asperations; or The God departs and after a season of purification returns to reinspire man to a higher asperation. The cosmological implications of the two descriptions are quite different, the process is the same.

Quetzalcoatl is a god who ever returns. He is a god who like others fails in the short term, because his new message is incompatible with man's present ways. But in time the new message is understood and the god is no longer seen as having failed. It is an archetype. Also in time the god is seen to have been flawed, also part of the archetype.

The god himself must acknowledge the flaw

Only the god can acknowledge the flaw

Only the god can remedy the flaw

Only the god himself can abdicate

But through abdication, the god can remain a god of return. Through refusal to acknowledge the flaw and to abdicate the god ceases to be a god. He becomes a demon or disappears. His worship ceases

For many years we have been in a climate in which past experience has not been a reliable guide to the future. The wisdom of the old has become worse than foolishness, it has become the path to disaster. Part of our confusion is over whether nothing is working or everything is working. Perhaps there is no difference. What we are used to is one thing working and deviations leading to trouble. Now many paths lead to trouble while others appear to lead to safety and then the paths switch. It is as though the deterministic ground or stage on which we feel we are free to act, is itself becoming free, while some of our traditionally free actions have become locked. In such a climate, how do we regain our bearings, or do such things as bearings have meaning any more?

We are entering a "singular point". A period between archetypal governances. This is not to be confused with those euphoric moments of "becoming free" which are but parts of an archetype such as revolution. That freedom is not real freedom, it is very restricted and illusory. But now we are encountering the most frightening experience of all--the experience of real freedom. It is not euphoric, it is bewildering, depressing, frustrating. There is the freedom to break out of the recurring cycles, get off of the wheel. But this "window" of freedom will be but of short duration. It will be wasted except by those who understand it, (and some of them will stand by fascinated and paralyzed), and those who don't will welcome return to the security of determinism.

The specific myth which describes this archetype, a myth widely unknown but of which we have been hearing quite a bit lately, is the myth of the Feathered Serpent, the Nahuatl God, Quetzalcoatl.

THE C/M ARCHETYPE (CORTEZ/MOCTEZUMA)

The archetype is the archetype of the storm. Two masses of unlike air meet and at their interface, the turbulence begins. Cortez comes to Tenochtitlan. The Indians hide their idols and openly worship the Virgin but worship Tlaloc in secret. The Indians have gained, the Spaniards have lost. The tension grows. What is kept in secret must break forth. The western continent shakes the layer that Spain and Europe have placed upon it. Revolution sweeps the Americas, North and South. The gods accept their new names, but will not abjure their ancient attributes. The tension again grows. A heavier layer of Europe is plastered on, but the surge will not be suppressed.

HARMONIC CONVERGENCE--POST SCRIPT

12

Last Friday evening I gave a lecture critiquing the Harmonic Convergence. I pointed out that it had no relation to its supposed roots--the prophecies and myths of the Mayans and Nahuatl peoples. Its dates were in error and its selections and interpretations of archetypes were in error. Nonetheless, if for whatever reason, thousands were going to join to celebrate the sacredness of the earth, planetary peace, and a new consciousness to replace the outworn worldview of the troglodyte "brightest and best" I would certainly join in.

I did not have access to one of the counter-establishment's sacred sites, so early on the 16th I drove a few miles to the one remaining open field in the city, where there was an unimpeded view of the range of hills that bordered the valley on the east. There I waited for the dawn and sunrise.

The silent city was not yet awake. The faint glow in the east outlined the profile of the hills. Lone birds were on pre-dawn errands between the scattered trees. Then as the glow spread, groupie birds took to the air. A party of seven centered themselves above and across on a wire, sitting as motionless as the trees. The birds, the trees, the field and I all waited and watched. A halo appeared above the hills and arched skyward, crepuscular rays shot upwards revealing the hidden clouds. All nature focused watching the hills as the expanding halo transformed the sky. Something was about to happen--something that would change the world.

Suddenly the birds took wing as a fire-dragon appeared on the crest of the highest hill and began to crawl along the ridge. A birdsong broke the silence, the hidden became manifest. Where but a moment before there had been only anticipation and hope, there was now assurance and confidence. Life and movement appeared everywhere. There was no longer any doubt as to what would be. The world had changed masters but without, ^{violence or} loss of its earthness.

Was it a special day, a day that occurs only once in 468 years? Yes, it was a special day, a day that occurs once in 24 hours. The magic moment of opportunity and transformation is there every day waiting for us to join the lonely shaman of the First Mesa to greet it and to take up our ^{responsibility} share in shaping the world that can be.

Some thoughts on a visit to the Armstrong Redwood Grove November 10, 1987

Upon entering the grove, one is very aware of entering a different space. The vibes suddenly change. It is difficult to articulate the message one receives. First, one gets the feeling that one is an intruder, not exactly welcome but of necessity tolerated. Then there is the feeling of being regarded somewhat contemptuously, of being judged, or rather prejudged. The mood is most solemn and there seems to be a soporific spell cast on everything. The primary message of the grove is DO NOT DISTURB, a message also passed on by the forestry people who undoubtedly have come under the spell of the grove and serve unconsciously as agents of the giants, independent of any of our national conservation values. My reaction is to try to avoid coming under the spell and maintain "scientific objectivity" which is to say to keep inviolate my own subjective prejudices. Certainly I could not rock their boat if I wanted to.

These giants have created an environment in which they can indefinitely survive. Ring counts reveal many to be over 1300 years old. But the number of species in their ecological complex is surprisingly limited. They are almost a self sufficient species depending only on each other for the preservation of the environment which sustains them. Some mosses and ferns together with their own droppings seem sufficient to maintain the moisture and soil conditions necessary for equilibrium. What prevents a proliferation of other species who would thrive in this type of "rain forest" environment is the absence of light. In fact the giants have removed practically all competition by appropriating all the sunlight and monopolizing the source of energy. But they have also cut off light from their own offspring. Only here and there a very limited number of young redwoods survive. And what is most significant, there is no "middle class". There are only the giants and very young, only those centuries old and those a decade or two or less. Evidently aspirations of the young to become part of the grove are illusory. Upon reaching a certain size their energy requirements can no longer be met and they fail to survive. I am sure that the remains of smaller trees have been removed by man. Only here and there on the forest floor are the remains of giants, who have succumbed to fire, wind or the vandalism of man.

How did such a configuration come about? More typical ecological complexes are dynamic. There is birth, ageing, death and recycling. Young trees sprout,

Copied 10/07/94

grow up, and eventually, if all goes well, reach a maximum size, then in time succumb. The key that differentiates a dynamic ecology from that of the redwood grove, seems to be the limit to maximum size.

Variety is also an important parameter in every complex. The grove ecology appears to function with very restricted variety, but also there are only a limited number of giants. More dynamic ecologies have both a greater variety of species and greater numbers of members within each species. There seems to be some sort of "equipartition" relation between numbers and variety. The number allowed within each species depends on the breadth of the variety of species. The greater the variety, the larger the permitted population of each species.

From one afternoon's observation, I have generalized to the extent of surmising that number within a species, $n(s_1)$, $n(s_2)$,... the variety of species i.e. the number of different species, $v(s)$, the maximum sizes (masses, heights, ...), $m(s_1)$, $m(s_2)$,...and the dynamism or maximum ages $a(s_1)$, $a(s_2)$,...are all parameters of basic ecological significance. **Some functional guesswork:**

I. The equipartition relation:

$$n(s_1) = n(s_2) = n(s_3) = \dots = kv(s)$$

Which is to say the greater the variety, the greater the numbers within each species.

because less variety → more competition

II. The maximum size-maximum age relation:

$$m(s) \text{ varies directly with } a(s)$$

What is revealed here is that there are two basic types of organism. 1) Those that follow Sigmoidal growth curves, reaching maxima, and 2) those whose size appears unbounded. The above relation is for genre 2)

III. The maximum size-variety relation:

$$v(s) \text{ varies inversely with } m(s)$$

It follows from the first relation that $n(s)$ also varies inversely with $m(s)$.

IV. We finally suspect some bound on the entire mass of the complex.

*added 99/07/20 In the Science & the Future Year Book for 2000 p 320
A discussion of Prairie Chickens
Number & Variety
Multiplicity ↑ if Diversity ↑*

emergence

See 95-#51, #65
RECURSI.WP6

see 97 #21

REPETITION [continuous]

THE INPUTS TO THE SYSTEM AND THE OUTPUTS OF THE SYSTEM REMAIN THE SAME.
CYCLES ARE IDENTICAL.
SYMBOL: A CLOSED LOOP.
EXAMPLE: PLANETARY MOTION.
PARAMETERS: CYCLE NUMBER.

Spatial waves, fractals
temporal - cycle
cos(theta) sin(t)

ITERATION [continuous]

THE OUTPUT OF THE SYSTEM BECOMES THE NEXT INPUT TO THE SYSTEM.
WHILE THE SYSTEM OPERATION REMAINS THE SAME EACH OUTPUT IS DIFFERENT.
SYMBOL: A SPIRAL, A HELIX, OR A SET OF CONCENTRIC LOOPS.
EXAMPLE: GROWTH, EVOLUTION, CHAOS
PARAMETERS: CYCLE NUMBER, INPUT, OUTPUT

$e^{x+iy} = e^x(\cos y + i \sin y)$
waves moving automobile

RECURSION * [discrete? continuous?]

PART OF THE OUTPUT OF THE SYSTEM BECOMES THE NEXT INPUT TO THE SYSTEM.
THE 'REINVESTED' CHANGES SCALE, THE RESIDUE COLLECTS OR IS CONSUMED.
SYMBOL: Part becomes whole
EXAMPLE: OM MANI PADME HUM, WHERE HUM = OM MANI PADME HUM ; Homeopathic Medicine
PARAMETERS: CYCLE NUMBER, INPUT, OUTPUT, PART, WHOLE

cf an inverse of holography: part -> whole
A filtering process

NESTING [discrete]

A DISCREET FORM OF ITERATION, set of concentric loops

Recursion -> EMERGENCE

REGRESSION [discrete]

A DISCREET FORM OF ITERATION OR RECURSION fractals

EQUALITY

$A \geq B$ AND $A \leq B$ INFERS $A = B$

Recursion is a part/whole with
i.e. duality matrix

MUTUAL CONTAINMENT

$A \geq B$ AND $A \leq B$ DOES NOT INFER $A = B$
IN FACT WE MAY HAVE $A > B$ AND $B > A$ BOTH VALID.

Example of heat engine
efficiency c 40%

Yield of a sustained comb
c 40%
-> compost

as n ↑ yield -> 40% ?
for Recursive Groups

There are evidently many species of iteration and recursion. Where does transformation fit in?
Where does the Great Dialectic fit in?

* Recursion, the process by which a function or procedure calls itself in order to streamline the performance of special kinds of repetitive tasks.

Turbo Basic p15

add stuff on self-reference

^{TIME}
The role of thought in sentient systems:

Numerous examples have been given in the literature of the effects of positive or negative thoughts on the functioning and the structure of sentient systems. The spectrum of the effects of thought on living matter range from hypochondria through placebos to Christian Science. It is thus reasonable to surmise that those findings of physics and chemistry which have been found applicable to all physical systems, in the special case of sentient systems, must be supplemented with the effects on their functions played by the action of thought. In those sciences which focus on being 'objective' these subjective effects have naturally been either overlooked or ignored.

Model: All physical systems exist in three spatial dimensions. All physical systems also exist in the dimension of sequential time. Living systems, particularly those systems that experience subjective time, also exist in a second temporal dimension in which the 'velocity of the now' moves at variable speeds. Which is to say that if a system experiences a varying velocity of the 'now' (or the present), then that system also exists within a second temporal dimension, which can in distinction be called subjective time. Hence inanimate systems are one dimensional in time, and living, or at least sentient systems, exist in two temporal dimensions.

In the worldview of this model it becomes essential to consider sentient systems as not operating under the laws of ordinary 'objective' physics and chemistry, but under the laws of 'thought-modified' chemistry and physics. These laws are at present not formalized nor well understood. However, their differences from the laws of objective chemistry and physics are explicit in countless anecdotes and in the inferences of many experiments with bio-systems.

The linear time used in objective chemistry and physics ignores the interior of the cycles of which time is composed. It generally restricts itself merely to the counting of the number of cycles involved in phenomena. But if the interior details of the changes in temporal quality within a cycle play a role, as with circadian rhythms, for example, the bio-system must have access to these fluctuations of quality. This is achieved by altering the temporal resolving power, 'zooming' in or out, in effect slowing or speeding the rate of the flow of time with respect to the system. The total count of integral cycles, however, remains the same over a period of linear time as for objective systems.

Whether it is proper to call the power to expand and contract time a second dimension of time is not the question. What is significant is that the ability to expand and contract time infers the existence of a second temporal dimension, just as the ability to introduce curvature between two fixed points on a line infers the existence of more than one spatial dimension. While expansion and contraction of time can be considered analogous to and mappable onto curvature, we may further take the view that expansion/contraction forces displacement into higher temporal dimensions in which are located the attributes which manifest themselves as the quality of time.

cf also Roger Penrose: "Shadows of the Mind"

3 worlds: Physical World, World of conscious Perceptions,

World of Mathematical Forms (Pythagoras)

THE REAL TRINITY

Physical World
Perceptive or Psychological World
Mathematical Forms

PLATO
PYTHAGORAS

Not illusions, rather 3 interrelated worlds

nothingness = openness

nothing = everything

Develop a calculus of Nothing \equiv Everything
eg. yellow highlighting
 $0 \equiv \infty$
and $1 \neq$

See 1994-#3 The interaction of Cycles

when the representation of a cycle by a circle

\Rightarrow all portions identical

but cycles within cycles are not representable
by circles i.e. whenever \exists more than 1 cycle
 \exists "quality" of time.

(cf. curvature change with
position \sim quality, change
with time.)

SIGNIFICATION AND CAREER

DEFINITION:

CAREER: THE PATH YOU CHOOSE IN ORDER TO REALIZE THOSE THINGS WHICH YOU WISH TO BECOME. YOUR CAREER IS NOT TO BE CONFUSED WITH HOW YOU MAKE YOUR LIVING, WHICH IS ONLY A MEANS TO ENABLE YOU TO PURSUE YOUR CAREER.

PART ONE: YOUR CAREER

1. WHAT DO YOU REALLY WANT TO DO WITH YOUR LIFE?
2. WHAT THINGS DO YOU REALLY FIND INTERESTING? SATISFYING?
3. WHAT THINGS DO YOU FEEL ARE IMPORTANT FOR YOU TO DO? FOR SOCIETY TO DO?
4. HOW DOES YOUR LIST OF WHAT IS INTERESTING TO YOU COMPARE WITH YOUR LIST OF WHAT IS IMPORTANT?
5. WHAT ARE YOU GOOD AT? WHAT ARE YOUR SKILLS? YOUR STRONGEST SKILLS?
6. WHAT DO YOU ENJOY DOING? WHAT DO YOU NOT ENJOY DOING?
7. HOW DOES YOUR LIST OF WHAT YOU ARE SKILLED IN COMPARE WITH YOUR LIST OF WHAT YOU ENJOY DOING AND FIND SATISFYING?
8. WHAT ASPECTS OF YOUR CAREER CAN YOU AT PRESENT NOT PURSUE DUE TO ECONOMIC, TIME, OR OTHER CONSTRAINTS?

PART TWO: MAKING YOUR LIVING

GENERAL:

1. WHAT THINGS IN THE ECONOMIC AREA NEED TO BE DONE?
2. WHAT THINGS IN THIS AREA CAN YOU DO WELL?
3. WHAT THINGS THAT NEED TO BE DONE THAT YOU CAN DO WELL ARE NOT ALREADY BEING DONE SUFFICIENTLY BY OTHERS?

PERSONAL:

4. WITH REGARD TO YOUR SKILLS, IN WHAT DO YOU NEED SUPPORT FROM OTHERS? IN WHAT CAN YOU GIVE SUPPORT TO OTHERS?
5. WHAT PERCENT OF YOUR TIME EACH WEEK DO YOU WANT TO DEVOTE TO YOUR CAREER?
6. HOW MUCH MONEY DO YOU NEED TO EARN?
7. WHAT ARE YOUR FEELINGS WITH REGARD TO OPERATING YOUR OWN BUSINESS AS OPPOSED TO WORKING FOR SOMEONE ELSE?
8. WHAT SUGGESTIONS DO YOU HAVE FOR AN ORGANIZATIONAL STRUCTURE THAT WOULD ACCOMMODATE YOUR NEEDS?

LANGUAGE AND META-LANGUAGE

- *He who would gain wisdom must first master all languages, that he might overcome and transcend them.*
- *Each language and meta-language is a different mirror reflecting a different aspect of reality. Some, like mathematics, give a sharp but skeletal view; others, like poetry, afford a fuzzy but fulfilling view.*
- *To know one language too well is to mistake a single view of the world for its totality.*
- *Perhaps music, of all languages, comes closest to capturing the quintessence of reality in its net. But music also possesses the highest degree of isolation of all languages and is the most difficult to translate into other languages. We must conclude that music possesses some self-referential element that affords it an existence at once both part of, and independent of, other reality. Music is thus a meta-language.*
- *In writing, if not in speaking, we come to some realization of the extent to which truth is truncated by the process of casting it in those verbal frameworks necessary for communicating with others. What can be caught in the nets of words is but a bare suggestion of those portions that elude articulation.*
- *The success of human communication infers a large degree of redundancy in the world—a redundancy that renders mere hints effective in conveying keys of recognition from one person to another.*
- *Yet words have an imperative of their own, forcing thought into forms that ultimately become its prisons.*

The file for this has been lost.

See METALANG.WP6 97/07/23

what roles are expressed by what languages?
mathematics
music
poetry
dance
architecture

THIS IS THE STUDYGROUP FILE.
DESIGNATED AS STUDYGRP.WP6
6-5-88 12:22p

NOTES FOR FIRST MEETING OF THE SEBASTOPOL STUDY GROUP

LITERACY: The measure of literacy is the ratio of what we know to what we need to know.

Cultural Literacy: What Every American Needs to Know.
E.D.Hirsch Jr.

COMPLEXITY: The paradigms are obsolete. Einstein's quote
Is anyone in charge?
Lindsay: NYC is ungovernable.

EYE OF THE NEEDLE:

Age of Aquarius
New Age Groups: Mostly revivals or imports
Perestroika: The issue is no longer socialism vs.
capitalism, nor East vs. West, it is Old Think vs. New Think
And time is short, there is a race.

The Cross Dialectic: Double Difference as prerequisite to
dissolving

Ptolemaic Protestants and Copernican Catholics
Today: Arab/Israel and East/West
against the One Issue syndrome.

NEW PARADIGMS AND NEW WORLDVIEW:

Are there any? Paradigms ~ axioms, Worldview ~ theorems
Much has been happening in the 20th Century aside from what
is reported in the media. Beside the journalistic signification
of "Man bites dog".

THE 20th CENTURY ~ 600 B.C. RADIANT
THE PEOPLE, THE CONCEPTS see lists

SIGNIFICATION:

Interesting: personal, psychological (we inhabit an
informational gap)
Important: collective, societal games, cultural
Valid: what works, involves contexts, the natural order (cf
Feynman) yet also is restricted to certain domains.
True: Asymptotic or Multi-leveled, Absolutes, Universals,
Primordial.

NEW THINK:

ANALYSIS: reductionism, focus on parts and differences
SYNTHESIS: holistic, involves contexts, focus on wholes and
commonalities

Newton's moon/apple-

09-09-88 CNSTITN1.WS4
META-CONSTITUTION

Many agree that the Constitution of the United States is a document of wisdom. That it has been widely studied and copied by peoples everywhere and used as a paradigm for other constitutions demonstrates the respect it commands as a contribution to the structure of viable human societies.

09-04-88 CNSTITN1.WS5
THE SECOND REPUBLIC

It is proposed that we look at our country from a five hundred year rather than a four year perspective. From the Iriquois Confederation to the Rainbow Coalition what themes of human community have been evolving in this hemisphere?~

09-04-88 CNSTITN2.WS4
CONSTITUTION AND EUROPE
05/15/87

Pfaff in the 5/15/87 LA Times writes about flaws in the American system. His point of departure is that Europeans cannot understand why events like Watergate and Contragate are such big flaps in Washington. Secrecy and even dirty tricks etc are legitimate instruments of government.~

09-04-88 SECREP1.WS5
SECOND REPUBLIC ONE

The congress has hit a snag on the ratification of the INF treaty. They wish a clause to be included which would disenable the executive from reinterpretations of the treaty. Objections are posed that this would be an unconstitutional restriction on the powers of the executive.~

09-04-88 SECREPA.WS5
APHORISMS

Whether it be a work of art or a significant scientific achievement, that which is great and noble comes from the solitary personality. The most important kind of tolerance, therefore, is tolerance of the individual by society and the state. The state is certainly necessary, in order to give the individual the security he needs for his development. But when the state becomes the main thing and the individual becomes its weak-willed tool, then all finer values are lost.
--ALBERT EINSTEIN~

09-04-88 SECREPB.WS5
"BUY AMERICAN"

The contributions of America to Social Contracts

The earth is sacred. One cannot own the air, the sea or the land itself. We must return to it that which we take from it and be thankful. --The Iriquois Confederation: an American paradigm. (The Swiss Confederation evolved from a defense league of three cantons in 1291, to a formal confederation in 1648. The Iriquois and Swiss independently evolved the concept of confederation.) In the Iriquois Confederation, the men held office, but only the women could vote."

09-04-88 SECREPIN.WS5
THE SECOND REPUBLIC--INTRODUCTION

If I were to try to capture the quintessential element of America in one idea, I do not think I could do better than the editors of Mad Magazine did some years ago. On the cover of this particular issue was a photo of a Kruschew look-alike tearing up Mad Magazine and saying, "This we bury first". Nothing is more American than self-criticism and self-ridicule. No right is more precious to the future of America than the right to dissent, for dissent lies at the heart of pluralism, and pluralism lies at the heart of cultural, economic and political evolution."

09-04-88 SECREPM.WS5
THE SECOND REPUBLIC
META-PRINCIPLES

The question of the purpose of the state leads to fundamental philosophical questions regarding mankind, life, and the cosmos. Since these are open-ended questions for which we must never assume we have final answers, the state must never impede the pursuit of deeper understanding by adopting as dogma any particular world view. It must protect the right of its citizens to a free choice in their religions, their educations, their modes of healing, their associations and their life styles. The right of conscience in all matters must be respected."

09-04-88 SECREPP.WS5
THE SECOND REPUBLIC
PROPOSALS

We need a "House of Sages" to debate and propose policy. The sages would be elected from a qualification slate, a position which must be earned. Terms would be for 7 years. The Delphi method would be used. The present two houses of congress are too much alike.

The state is a support system
doing for its citizens what
they need to band together to effect

There should be two species of courts.
Courts of Law, past oriented and experience based.
Courts of Impact, assessments of where decisions
will lead, side effects, and impact analyses.
Jointly, the task is to provide stability and allow change.-

05/27/88 SECREP1.WS5
THE SECOND REPUBLIC
ISSUES AND QUESTIONS

The question of right to make policy:

The congress has hit a snag on the ratification of the INF treaty. They wish a clause to be included which would disenable the executive from reinterperations of the treaty. Objections are posed that this would be an unconstitutional restriction on the powers of the executive.

What is at issue here is that in normal legislation whenever a matter of dispute arises between the law and some party, such as a private citizen or corporation, the matter is settled by some authorized legal body such as a court. In the case of the ABM treaty, the legal body was some lawyer-

TORCH.WP6 1988

THIS IS THE TORCH FILE.
THIS FILE IS TO BE USED FOR TOPICS RELATED TO THE 600 B.C.
PROJECT AND THE TORCH BEARERS PROJECT..

TORNADO TORCH THE SYMBOLIC APHORISMS OF PYTHAGORAS
COMPILED AND INTERPRETED BY IAMBlichus
from MANLY HALL: THE SECRET TEACHINGS

1. DECLINING FROM THE PUBLIC WAYS, WALK IN UNFREQUENTED PATHS
By this it is understood that those who desire wisdom must
seek it in solitude.

2. GOVERN YOUR TONGUE BEFORE ALL OTHER THINGS, FOLLOWING THE
GODS.
This aphorism warns man that his words, instead of representing
him, misrepresent him, and that when in doubt as to what he
should say, he should always be silent.

3. THE WIND BLOWING, ADORE THE SOUND
Pythagoras here reminds his disciples that the fiat of God is
heard in the voice of the elements and that all things in Nature
manifest through harmony, rhythm, order, or procedure, the
attributes of the Deity.

4. ASSIST A MAN IN RAISING A BURDEN; BUT DO NOT ASSIST HIM IN
LAYING IT DOWN.
The student is instructed to aid the diligent but never to assist
those who seek to evade their responsibilities, for it is a great
sin to encourage indolence.

5. SPEAK NOT ABOUT PYTHAGORIC CONCERNS WITHOUT LIGHT.
The world is herein warned that it should not attempt to
interpret the mysteries of God and the secrets of the sciences
without spiritual and intellectual illumination.

6. HAVING DEPARTED FROM YOUR HOUSE, TURN NOT BACK FOR THE FURIES
WILL BE YOUR ATTENDANTS.
Pythagoras here warns his followers that any who begin the
search for truth and, after having learned part of the mystery,
become discouraged and attempt to return again to their former
ways of vice and ignorance, will suffer exceedingly; for it is
better to know nothing about Divinity than to learn a little and
then stop without learning all.

7. NOURISH A COCK, BUT SACRIFICE IT NOT; FOR IT IS SACRED TO THE
SUN AND MOON.
Two great lessons are concealed in this aphorism. The first is
a warning against the sacrifice of living things to the gods,
because life is sacred and man should not destroy it even as an
offering to the Deity. The second warns man that the human body

here referred to as a cock is sacred to the sun (God) and the moon (Nature), and should be guarded and preserved as man's most precious medium of expression. Pythagoras also warned his disciples against suicide.

8. RECEIVE NOT A SWALLOW INTO YOUR HOUSE.

This warns the seeker after truth not to allow drifting thoughts to come into his mind nor shiftless persons to enter into his life. He must ever surround himself with rationally inspired thinkers and with conscientious workers.

9. OFFER NOT YOUR RIGHT HAND EASILY TO ANYONE.

This warns the disciple to keep his own counsel and not offer wisdom and knowledge (his right hand) to such as are incapable of appreciating them. The hand here represents Truth, which raises those who have fallen because of ignorance; but as many of the unregenerate do not desire wisdom they will cut off the hand that is extended in kindness to them. Time alone can effect the redemption of the ignorant masses.

10. WHEN RISING FROM THE BEDCLOTHES, ROLL THEM TOGETHER, AND OBLITERATE THE IMPRESSION OF THE BODY.

Pythagoras directed his disciples who had awakened from the sleep of ignorance into the waking state of intelligence to eliminate from their recollection all memory of their former spiritual darkness; for a wise man in passing leaves no form behind him which others less intelligent, seeing, shall use as a mold for the casting of idols.-

A NOTE ON PYTHAGORAS FROM MANLY HALL'S SECRET TEACHINGS

Pythagoras declared that the eating of meat clouded the reasoning faculties. While he did not condemn its use or totally abstain therefrom himself, he declared that judges should refrain from eating meat before a trial, in order that those who appeared before them might receive the most honest and astute decisions. When Pythagoras decided (as he often did) to retire into the temple of God for an extended period of time to meditate and pray, he took with him a supply of specially prepared food and drink. The food consisted of equal parts of the seeds of poppy and sesame, the skin of the sea onion from which the juice had been thoroughly extracted, the flower of daffodil, the leaves of mallows, and a paste of barley and peas. These he compounded together with the addition of wild honey. For a beverage he took the seeds of cucumbers, seeds of mallows and purslane, scraped cheese, meal and cream, mixed together and sweetened with wild honey. Pythagoras claimed that this was the diet of Hercules while wandering in the Libyan desert and was according to the formula given to that hero by the goddess Ceres (Demeter) herself.

The favorite method of healing among the Pythagoreans was by the aid of poultices. Pythagoras highly esteemed the medicinal properties of the sea onion, and he is said to have written an entire volume on the subject. Pythagoras discovered that music had great therapeutic power and he prepared special harmonies for various diseases. He apparently experimented with color and attained considerable success. One of his unique curative processes resulted from his discovery of the healing value of certain verses from the Odyssey and the Iliad of Homer. He was opposed to surgery in all its forms and also objected to cauterizing. He would not permit the disfigurement of the human body, for such in his estimation was a sacrilege against the dwelling place of the gods."

TORNADO TORCH

THE 600 B.C. RADIANT

THE FOUNDERS LIFE SPAN	CONTRIBUTION	LOCATION
LAO TZU 604-531 BC	TAO TE CHING	CHINA
KUNG FU TZU 551-479	ANALECTS	CHINA
SIDDHARTHA GAUTAMA 563-483	DAMAPADA	INDIA
MAHAVIRA, THE 24th TIRTHANKARA 599-527		INDIA
	[SAGES OF THE UPANISHADS] [FOUNDERS OF THE SIX SCHOOLS OF BRAHMANICAL PHILOSOPHY] WRITING OF THE RAMAYANA	INDIA
c 510 ZARATHUSTRA 630-553		PERSIA
[HEBREW PROPHETS]		ISRAEL
FIRST WRITING OF THE BIBLE DEUTERO ISAIAH		ISRAEL
c 536 PYTHAGORAS 581-497		SAMOS
[IONIC PHILOSOPHERS]		GREECE
THALES 624-545		MILETUS
ANAXIMANDER 611-546		MILETUS
ANAXIMENES 586-526		MILETUS
HERAKLIDOS 544-483		EPHESUS
ANAXAGORAS 500-428		
PARMENIDES		ELEA
EMPEDOCLES 490-430		
ZENO 490		ELEA
RISE OF ZAPOTEC CULTURE AT MONTE ALBAN c 500 BCE		MEXICO

Notes from RELIGION AND CULTURE OF THE JAINS

Mahavira b March 30, 599 BC near Basarh. At the age of 30 he gave his possessions to charity took vows of asceticism. Twelve years later in 557 BC he attained Kaivalya. He was a senior contemporary of Gautama (who out of respect did not openly preach until after Mahavira's death in 527 BC).

Jainism is much older than Mahavira dating to pre-Aryan times. The Jain Trinity consists of Right Faith, Right Knowledge, and Right Conduct. There can be neither Right Knowledge or Right Conduct without Right Faith. Further, one's work, one's faith and one's joys must never be in conflict. Mahavira taught ahimsa, non-violence, and the reverence for all life, the forerunner of modern ecological thinking.~

TORNADO TORCH

The metaphor for cultural heritage and its propagation is the relay team. As runners successively pass the torch to fresh runners, so the institutional custodians of learning and knowledge pass their heritage through successive institutions. History sees the ancient mystery schools passing their torch of hermetic learning to the Pythagorean School at Croton, which passed its learning to Plato's Academy and Aristotle's Lyceum. The great library and museum at Alexandria was the repository of Western learning until the coming of Islam. The torch did not go out in the so called Dark Ages, it burned brightly under the Caliphs from Baghdad to Samarkand to Grenada.

The same year that the Emperor Justinian closed the Athenian Academy (529 A.D.), St Benedict founded his prototype monastery at Monte Cassino. The fire from the torch burned in the custody of various monastic orders during the Middle Ages, finally passing through the cathedral schools to the universities. Although the torch bearers run side by side for a time, when the flame has been passed the spent runner drops out.

Modern universities began in Padova, Paris, Oxford in the 13th and 14th centuries. Henry the Eighth closed and confiscated the monasteries' lands in 1536.

Next torch bearer - the diachronic think tank

NEW THINK

CONCEPTS [META-INJUNCTIONS]

RECIPE --> COSMOS
NODE/LINK/TRAFFIC/TOPOLOGY
BOOTSTRAP/SPACE STATION
FACETISM
MORPHOLOGY: ALL NOT ONE
HIERARCHY: THE VERTICAL
HERE/NOW VS EVERYWHERE/NOWHERE
MINIMUM REDUNDANCY IS SET BY REPAIRABILITY NOT BY LOAD
SELF REFERENCE

VALUES [INJUNCTIONS]

PRACTICE GANDHIAN GLASNOST
'FRANCHISE' ALL OPERATIONS
INCLUDE SUNSET CLAUSES
HOLD ALL BEINGS IN REVERENCE
DEVELOP DON'T DISSEMINATE
ITERATE DON'T REPEAT

APHORISMS

EVERYTHING IS A SPECIAL CASE

ITEM

TRINITIES
[THE THREE JEWELS]

JAIN RIGHT FAITH, RIGHT KNOWLEDGE, RIGHT CONDUCT
Note: Jaina maps onto Cybernetics
BUDDHIST BUDDHA, SANGYA, DHARMA
HINDU BRAHMA (CREATOR), VISHNU (PRESERVER), MAHESA (DESTROYER)
CHRISTIAN 1. FATHER, SON, HOLY SPIRIT
2. GOD, THE BIBLE, THE CHURCH
3. THE TRANSCENDANT, THE CHRIST, THE IMMANENT
ISLAMIC ALLAH, THE PROPHET, THE QURAN
JUDEAIC GOD, THE HOLY SCRIPTURES, THE HOUSE OF ISRAEL
CYBERNETIC THE NORMAL, THE AMBIENT, THE MODIFIER

Trinities appear to be of three distinct types. The first type is a manifestation of the stability attribute of three-foldedness, e.g. a tripod.

Examples of this from the above list are the Judaic, the Christian 1. and 2., and the Islamic. The second type is a manifestation of the dynamic that derives from the residual asymmetry of an odd number. Examples of this from the list are the Buddhist and the Christian 3. The third type involves an element on one level arbitrating balance and imbalance between two elements on a second level. Examples of this are the Jaina and the Cybernetic.

The type two trinity involves a departure and return temporal pattern. There must be alternation between dialog and identity. God must be alternately Transcendent and Immanent. If God is never immanent, one becomes a hardened dogmatist. For a transcendent God is too remote to manifest and sustain knowledge of His true nature. If God is never transcendent, one becomes as Lucifer, believing in their own personal godheadedness, and mistaking their own voice for that of God. In both cases contact with God is lost.

Prayer is the path to the transcendent God, it is the dialogue of speaking and listening. Meditation is the means to become one with the immanent God. Prayer and Meditation, Transcendence and Immanence, the Great Departure and Return.~

ITEM NEW CONCEPTS AND TOOLS OF THOUGHT EFFECTING WORLDVIEW CHANGE

NEW CONCEPTS

GAME THEORY
BOOTSTRAP COGNITIVE STRUCTURES
SELF REFERENCE
HIERARCHY
NODE/LINK/TRAFFIC/TOPOLOGY
ALGORITHMS
HOLOGRAMS
CRITICAL MASS
ENERGY, ENTROPY, INFORMATION
 SECOND LAW
QUANTUM REALITY
LIMITS, e.g. c
TIME
SPACE
ADDRESS/CONTENT
HARDWARE/SOFTWARE

TOOLS OF THOUGHT

NON-ZERO SUM GAME
NO PRIMARIES
ITERATION/REPETITION
MACROS
ENTITY/RELATIONSHIP
PROCESS/PRODUCT
EVERYTHING IS CONNECTED
100th MONKEY
MORPHOLOGY/GENERALIZATION
 MATRICES, TREES, NETWORKS
EXISTENCE/NON-EXISTENCE
GODEL'S THEOREM
PARADOX
SIGNIFICATION
SYSTEMS ALLOMETRY
INSTINCT/LEARNING~

ITEM

OLD THINK

CURRENT IDEAS LEADING TO ILLUSION, SELF-DECEPTION, HYPOCRACY, DISEASE

COLLECTIVE AND PERSONAL

NOT INVENTED HERE

LABELISM

ONE SET OF RULES FOR ME, ONE FOR YOU

MASTER RACE ELITISM

FINALISTIC LOGIC — ? *is it rather causalistic logic?*

NEED FOR AN ENEMY

IOD FEEDBACK

ACTION AT A DISTANCE

MIXING LEVELS

JUSTIFICATION FOR NON-ACCOUNTABILITY

ALL OR NOTHING THINKING - *Law of the excluded middle*

OVER GENERALIZATION

DENIAL, MENTAL FILTERS

MAGNIFICATION/MINIMIZATION

Packaging

The moods of verbs may be used as a template for exploring relationships among certain traditional Western ontological concepts. At some point in the development of a language the various types of reality recognized by the users of the language must by some device be made accessible to discourse. Whereas the temporal relations obtaining within the physical world were organized through the **tenses** of verbs, the ontological relations between worlds or realities seems to have been organized through the **moods** of verbs. Consequently the properties of the moods provide clues to historical (and pre-historical) notions of the metaphysical structure of the world. Curiously the moods appear to map a broader spectrum of realities than our current worldviews support, except for the recent contributions to ontology by quantum mechanics and importations from some traditional Eastern views. For reference, the usual moods assigned to verbs in most Western languages are given in the table.

MOOD NAME	ASPECT OF REFERENCE
INDICATIVE	The objective and the factual
SUBJUNCTIVE	The contingent and the possible
OPTATIVE	The desired and the hoped for
IMPERATIVE or	Commands, entreaties, exhortations
INJUNCTIVE	Algorithms
INFINITIVE	Reflexive, self referential
EXCLAMATORY	Interjective, interruptive

The indicative mood governs the material world, the world of physical existence. It is descriptive of what is, and to the extent that deterministic causality is the governing principle, it is descriptive of what was and what will be.

The subjunctive mood governs alternative worlds. Worlds that could be, should be, or even might be. It also speaks to the past and future of such worlds, what might have been, what might yet be. A sub-class of the subjunctive is the optative which focuses on hopes and preferences, what we desire and wish for. It is most interesting that in modern times the subjunctive is disappearing from usage. This is not so much from people no longer having hopes or desires, but from increasing inability to discriminate the is from the ought. Translated into cybernetic terminology, the error signal is lost and navigation becomes impossible.

If the indicative mood governs the domain of is, and the subjunctive mood governs the domain of ought, then we may say that the imperative or injunctive mood governs the domain of do and make and the negative commands don't and unmake. These are the domains of process and algorithm, the domains of becoming and creation. "Let there be light". These are the domains of conversion of ought into is, of the possible into the actual, and the transformation of 'subjunctive worlds' into the 'indicative world'.

The infinitive mood is much more subtle. It appears to retain but a vestige of a metaphysical view that has all but disappeared from the Western way of thinking and perceiving. But its very name suggests that it was once concerned with much more than we now assign to it. Today, the only remaining use of the infinitive is the transformation of a verb into a noun, but in a deeper sense this reflects the transformation of the world of process into the world of things. The infinitive and the gerund thus allow us to give the same concreteness to processes that we customarily project onto rocks and tables. If we think of the material or physical level as horizontal, then the infinitive introduces us to the vertical. It affords us access to other levels by a special type of self-referencing. Becoming may be brought down and substituted for being, world-lines replacing objects and events replacing places.

Finally, no schema should be considered complete without a means of breaking out of it. Every system must have an escape hatch, some way to interrupt it and reset it. We must be able to laugh at it, to mock it, as well as to operate it and maintain it. It is known that transformation and innovation for any system must come from its context, from outside the system. The interjective or exclamatory mood allow us not only escape, but allow us to affirm that there is an outside, a context. No matter how great our system of worlds, there is always an "other" lying beyond on the outside--I'll be damned!

THE SUBJUNCTIVE CREATES POTENTIALITY
THE INJUNCTIVE CREATES REALITY
THE INDICATIVE DESCRIBES REALITY
THE INFINITIVE ENTIFIES PROCESS