



No More  
Secondhand God

*and Other Writings, by*

R. BUCKMINSTER FULLER



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## **No More Secondhand God**



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**R. Buckminster Fuller**

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# 1 NO MORE SECONDHAND GOD

Late tonight

(April 9, 1940)

I am just sitting here for one of the many reasons that people find themselves passionately isolated.

(The cause is rarely noble.)

In the midst of my overly self-emphatic thought

I say, suddenly,

(as most of us do):

imagine, realize, the preposterousness of your chagrin in the face of what is involved in the newspaper headline on the chair over there.

OSLO KEY BASES TAKEN BIG SEA AIR BATTLES ON World Telegram 7th Sports.

It's no longer a phoney war but I don't think about that nor do I think much about Oslo.

I think of such of the aviators and sailormen as

are in command of their faculties on both sides at this moment. Though you have been out in a froth-spitting squall on Long Island Sound or in an ocean liner on a burgeoning sea you have but a childlike hint of what a nineteen-year-old's reaction is to the pitch black shrieking dark out there in the very cold northern elements of unloosening spring off Norway's coast tonight

15,000 feet up, or fifty under or

worse, on the smashing face of it and here I see God.

I see God in the instruments and the mechanisms that work reliably, more reliably than the limited sensory departments of the human mechanism.

And he who is befuddled by self or by habit,

by what others say, by fear, by sheer chaos of unbelief in God and in God's fundamental orderliness ticking along on those dials will perish.

And he who unerringly interprets those dials will come through.

And—thought-wise exploring further the possibilities of unerring interpretation I think of the strangest of paradoxes vouchsafed to, and by, man.

For most simply through paradox do I usually discover truth.

A sufficient light within a seemingly opaque black object may suddenly convert that object into a brilliant vari-colored lantern.

As a philosophic corollary: multifaceted truth is discovered within the lantern of paradox whose contrasting colors are but angularly separated lines of the spectrum of the unit phenomenon, light, only at differing wave lengths and frequencies.

A new and translucently truth is thus lensed in all the colloids to human necessity, such as drama and music, religion, fun, anger, war, prejudice, praise, as individually assumed personal virtues and relative proximity to God.

*Ecce!*

all peoples divided against one another are in their digressions equally inverted and self-deceived in their respective tampered-with standards.

The degree of self-deception is proportional to the width of the angle of disagreement, and the greater that angle of stress, the greater the anger.

The greater the anger, the greater the susceptibility to further propaganda—a cancerous hate growth.

And all propaganda is false if merely by misemphasis. It is false because it approaches diametric unbalance, which scientifically speaking is chaotic.

Chaos is erosive, explosive, shattering, and therefore the antithesis of the only potential survival means of homo sapiens: through the harmonic integration of knowledge whose kinetic is universal.

Observe some paradoxes.

On the one hand the Germans and Russians preaching rule of the masses—National Socialism, atheism, paganism—are in fact the sole demonstrators of the importance of individualism.

For they employ individualism's most cogent premise that the ship must have but one captain.

And as individuals they believe precisely in the survival superiority of mechanized man. But the organized church uncomprehending the mechanical extension of man says that such belief is pagan and the totalitarians accept the designation as true and therefore proceed with wanton conviction to behave in the appropriate manner of a social outcast. Thus “licensed” they invent vast and oftentimes ludicrous prevarications as ballistic instruments. They lie with as eager enthusiasm as that applied to gunpowder and plane making. And on the other hand the English and French though preaching Democracy, Individualism, and Christianity are the greatest progenitors of collectivism and paganism for theirs is a corporate amorphous individualism a legal entity individualism of limited personal liabilities, a shadowy industrial monopoly, a secondhand dictatorship, soulless. And its sovereign perfidies, perpetrated usually through the negative tactics of omission or misemphasis, may reasonably be charged off to “impracticality”—to “unwieldiness,” to “vagaries of custom,” to “sportsmanship,” to public “convenience,” or to “mystical traditions” incumbent upon the corporate Messiahhood of sovereign nations. And the machine is to them and their church but an inanimate, garagey sort of money pump. Albeit, the preaching individual of either side believes naively in his own personal free will articulation and benevolence.

I say naively, because the war itself is the direct cumulative result of non-freedom of the will of the individual to articulate itself in the attainment of its obvious potentialities of better living on earth.

Children are not born slaves.

Slavehood is swiftly superimposed.

Now the inanimate slaves are here to take over but the animate slave complex is still virulent particularly

in the subconscious of managers.

And in the traditions they manage.

Wherefore total abolition apparently involves first burning down the old house, set on fire as an unbelievable clown-act which much to the amazement of the circus proprietors no one attempts to put out.

In the great quasi "democracies,"

so far as the general scheming of things is concerned the individual no longer exists.

Mass production anticipates

the individual's selective functioning.

Chain hotels mass-produce

mass-collected service suggestions

tendered on printed cards

by a mass-publicized unseen "cordial host," who oftentimes a thousand miles away, sometimes long dead,

sometimes quite nonexistent

is "personally interested in you and your comfort," at 200 of your cents on "his" dollar.

Here also as citizen

man is expressed only as a party machine

in the "body" politic,

and his government expresses a mean low average statistic "man."

Any social action, if at all,

is weeks, months, and years laggard

to the thinking frontier of the individual.

His hour, minute, and split second thinking

and vital selection

are most nearly interpreted

but nevertheless inadequately,  
by the corporate cranium—"Journalism," industrialization's limited-liability vocalizer.

And as capitalist or as inventor, or as worker in the democracies he is no longer individual for he is no longer effective as such. And he may only be flavoringly effective as one of the many merged riskers, researchers, believers, or laborers. No corporate expression expresses what he exactly means, and therein precisely lies the fate of Democracy.

Many people believe Democracy obsolete. They are wrong.

Obsolete is the one thing Democracy can never be, obstinate, obstreperous, observant, obscure, but—

I will explain. That is, I will if it's Democracy you really wish to save, and not some trick you have been getting away with behind its kindly broad young back.

(If you don't really believe in the world that is, but only in one to come, or one gone by, your best chance of finding such another is by walking out a very high window.)

If you do believe in the world that is, and wish to continue its development and are willing truly

to pay your way take a chance on Democracy.

You will find its highway plunk beneath your feet. Today's sign posts along it are modern.

They say for instance:

If you wish to prove Democracy a preferential method of living don't resort to Dictatorship to prove it. Thus have all the rest of the major nations allowed themselves to be bum's-rushed into doing by panicked international finances.

Out of the method chosen in the time of emergency emerges the new survival way of peace time government.

Democracy has potential within it the satisfaction of every individual's need.

But Democracy must be structurally modernized must be mechanically implemented to give it a one-individual-to-another speed and spontaneity of reaction commensurate with the speed and scope of broadcast news now world-wide in seconds.

Through mechanical developments of the industrial age

the cumulative production of human events

within the span of a four-year administration is now the quantitative equivalent of the events of a four-hundred-year pre-industrial dynasty.

But it is the producer salesman who has been super instrumented and merged into a tinker colossus, a Pan-Continental blacksmith, baker, and light maker.

Democracy must, as consumer and worker, as soldier and mother, as scientist, or simple enjoyer, be made adequate cathode to the mighty merged anode.

Devise a mechanical means for nation-wide voting daily and secretly by each adult citizen of Uncle Sam's family: Then—I assure you will Democracy “be saved,” indeed exist, for the first time in history.

This is a simple mechanical problem involving but fractional effort of that involved in distributing the daily mails to the nation.

Telephone talks in the U.S. each day are three times the number of votes which were cast for President

in the record election year.

Electrified voting as bride to our most prodigal wildcat broadcasting and beloved son—journalism, promises a household efficiency superior to any government of record because it incorporates not only the speed of decision which is the greatest strength of the dictator, (a boon if he's godly, a death-ray if he is not)

but additional advantages which can never be his.

Additional advantages of electrified voting first coming to mind:

1. Provides an instantaneous contour map of the workable frontier of the people's wisdom,

for purposes of legislation.

administration, future exploration, and debate, so that neither over nor under estimate may occur, of their will and ability.

2. Certifies spontaneous popular co-operation

in the carrying out of each decision.

3. Allows for continuous correction of the course, or even complete reaction,

should (and as) experience indicate desirability, □without political scapegoating.

4. No foreign power in the world can stand up against

the unified might thus invoked through the thrilling mystical awareness of multi-millions of individuals that they personally have taken responsibility for the course, and that their own inward secret moral decision coincides with the majority in the application of their mutual strength, (vast now in U.S.A. by the will of God beyond any in history) in the righteous salvation of the peoples of the earth.

5. The credit and imagination

of all outside peoples of the world  
will be so stimulated that nothing will stop them short of attaining a line to that voice.

But so to do  
they must join up with Democracy.

6. The possibility mathematically

of effective abuse through cheating  
is nil.  
I venture to say that the self-policing  
by the honor system  
spontaneously invoked  
would make the fate of horse thieves  
or snatchers of absent-news vendors' pennies  
frivolous by comparison.

No block or pressure group  
that is not a constitutional enemy  
could consider running the risk of "stuffing."  
The direct votes of any subversive enemy to  
Democracy within  
the U.S. would be inconsequential in number—would eventually disappear in such  
a system.

7. It cuts right across

all red-tape of legal precedent  
and any question of constitutionality, and  
may be started extra-mural to the constitution  
while getting out the bugs,

for instance by Charlie McCarthy, and Clifton Fadiman, script by ``Time  
Questions," sponsored by Coca-Cola. Someday to be constitutionally  
adopted when tuned up.

8. The economic credit base is self-contained.
9. As direct evolution it cancels

the possibility of revolution.

Accomplishment of this VOICE

must be a deed of organized responsibility of the U.S. press in its broadest sense.

If having tried it, a modernized, electrified, direct Democracy proves inferior as a  
survival means against all-comers, then may the people turn with contentment to the  
superior means.

But if direct Democracy is not tried now, future generations will again champion it,  
and there will be world civil wars until it receives adequate trial.

I believe America has now won the right to be first to try Democracy that it is both  
sufficiently experienced and intellectually developed to provide a safety factor margin  
which can insure success after all deductions: for bitter hardship of mental and  
physical stress; for surprise, and panic;

and most importantly for gross error.

But whatever America's choice—I go with it with heart and soul for its sagacity and  
time sense I believe infallible.

Yes, I can see how that would be a superior means of government, but there is still  
something essential and bigger which we first must consider; without which one, or  
infinity, of life cell organisms is but frightful matter—and that is rebirth of

OUR FAITH—

In a direction;

In comprehensible meaning no matter how meager

that checks with our daily thought with our most random soliloquy;  
that implicitly tingles in our fingers and toes, and gladdens the vision;  
that even is singing in me as I catch at a new popular song.

Faith, far, far more precise in meaning than the academicians'

``nonanthropomorphic" designation of God, and with none of the popular  
vagueness of Einstein's epochal

``cosmic religious sense,"

yet embodying all that is important of those concepts, not down or up written,  
but translated to a living

workable spontaneity that requires no answer from  
others or books.

An all sense exciting, all reason inspiriting

Faith in omnipotent justice omniscient love always attending with infinite wis-  
dom.

There is of course the church—today a big-three monopoly of credos—a coa-  
lesced ``Roman, Protestant and Jewish," big business,

its back to the wall.

Irrespective of its past values to faith the church is now but a convenient com-  
promise to divert the pressure of fear's escape through the perpetuated wa-  
terwheel of the re-manufacture of all useless contrivances of which the indi-  
vidual would personally divest himself but for nostalgic ramifications.

The church,

once the largest and busiest of community structures, now exists only as a  
memorial

to the necessity of a special building for God,

so that a compromise ``He" need not interrupt business in the latter's over-  
towering houses on the six days of the week that are not ``His," yet be on  
hand

to broadcast "the right stuff" on the seventh, while the boys go off golfing.

The church is also security-capital's nontaxable hostage against mobile Democracy's eventful discard of "real" property—the perpetual debt base, that persistent static in the otherwise high fidelity reception of industrial democracy economics.

In the totalitarian states conversely all Messianic credit is, caro name! allocated to the supreme living individual symbolically centralized in one—"Our Father who art in Berlin, Moscow, Madrid, and Rome" simultaneously—the end all of anthropomorphic religion.

And the supreme individual is never a pretty god and he is funny when he goes by special train to meet himself coming the other way through a mountain pass and shakes hands with his absurd reflection.

But all of importance here to me tonight are two reactions—one negative, the other positive.

First, that both sides have allegiance to fallacy—and the individuals of each side are forced to esoterica and to personal exemptions from all law, scientific or moral though the laws are clearly mirrored to each individual as essential for all others but self (well, maybe not for the sweetie).

And positively:

That tonight vividly (as tacitly always) God is articulating through his universally reliable laws.

Laws pigeonholed by all of us under topics starkly "scientific"—behavior laws graphically maintained in the performance of impersonal instruments and mechanics pulsing in super sensorial frequencies which may serve yellow, black red, white, or pink with equal fidelity.

And I see conscious man alone as mechanically fallible and progressively less reliable in personal articulation of God's ever swifter word, which was indeed in the beginning. Only as mind-over-matterist,

as philosopher, scientist, and informed technician

impersonally and universally preoccupied  
is man infallible.

For the oral and written word  
was but the haphazard infant  
of the ever more precise  
modern instrumental articulation  
of communicable comprehension.  
We know this to be true

because mechanisms can only perform successfully, their ever more super-  
human and untiring precision of communication of truth  
in proportional degree to their engineered adherence to, and interpretation  
of,

universal laws,

which though sometimes couched in poetry are always essentially scientific.

As minor testament

witness the two-hundred-inch telescope as it proceeds to reveal a known uni-  
verse at least eight times as great as yesterday's and the electronic micro-  
scope

which now begins the revelation  
of fundamental minutiae

50,000 times finer than the best light (or eyesight) microscope,

and the actual achievement of atomic energy,

released and controllable.

These wondrous actualities were always there, inherent in the universe of a  
god of meaning, but only now through the impersonal "word" of these sci-  
entific instruments does God speak of them to our widening comprehension.

I knew in a sense that they were there.

So did you.

But neither of us knew that the other knew until we could ``say" to each other, ``There they are precisely identified." Only finite adherence to stark laws of science made this possible.

And God says observe the paradox of man's creative potentials and his destructive tactics.

He could have his new world through sufficient love for ``all's fair" in love as well as in war which means you can junk as much rubbish, skip as many stupid agreements by love,

spontaneous unselfishness radiant.

Think it over—I was amazed and despite all inertia impelled to write—and many may have written it earlier and better -without my knowledge.

In fact I'm sure they have, but I'm writing this and that is important, that is God at firsthand.

Never before has neutral

looked on with such unprejudiced willingness to evaluate, adjust, and comprehend.

Never before has neutral so powerful looked on. Never before has neutral by virtue of a myriad of instruments been so keenly aware

of every little hamlet upon the face of the globe, so intimately near to them—yet at the same time so duck's-backed to broadcast falsehood or half truth.

These are innocuous in the magnificent mechanical extension . . .

People of the United States, (I believe the vast majority of them) who are at present especially staked out to be fooled in a big way, which is vitally and mortally, by all the warring or plotting factions foreign and domestic,

are precisely those who alone remain unmoved.

It is these silent propagandees who unerringly appraise the pro- or anti-social values of each world event;

of each communique;

and even of each personal happening at other times trivial:

as these too may shade the outcome values of man's transition  
from dominant self-deceit  
to preponderant self-mastery;  
from stomach rule to dictate of reason; from politicians tricking  
to scientific guidance;  
from a fear to a happy comprehension motivation.

And because he is innately aware of these things, does man evade past snares—steel himself against artful pathos; welcome the speedy destruction of those former barriers to world happiness which have been humanly insuperable without fracture  
by any individual member of the old order, from annihilist to deacon, from clerk to Prime Minister, no matter how distinguished by courage and integrity.

But now common man has implicit faith in common man; can safely negotiate a roadway with any unknown other man—even passing each other at one hundred and forty miles an hour in opposite directions—has only been prevented from intercommunicating that faith directly, but now is willing to wager all on mutual effective comprehension at the crucial moment—will not be shamed out of his faith by attempts to falsely identify him—has weighed his distress over concentrate frightfulness of an exquisite moment against unending elusive and unmitigated greater suffering.

The revolution has come—set on fire from the top. Let it burn swiftly.

Neither the branches, trunk, nor roots will be endangered.

Only last year's leaves and the parasite-bearded moss and orchids will not be there

when the next spring brings fresh growth and free standing flowers.

Man now vastly instrumented and attendant upon universal laws in his “blind” flying through life will give ever less heed to the seat-of-the-pants opinions of personal equation aces for he knows it was those detonations which formerly misguided him into his betrayal by selfish scheming.

Here is true world democracy in the swift making; a democracy which socializes all plenty as that plenty is wrested from scarcity by world-widening co-operative industry;

a democracy which, scientifically seeking categorical validity for all the motivations,  
taxes only inertia

and awards copiously its individuals who radiantly expand the commonwealth;  
awarding them out of the newly integrated wealth captured from the unseen fresh  
fruits of the limitless environment—

and not by the slightest impoverishment of commonwealth, either by mortgage  
or individual indebtedness.

Here is God's purpose—for God, to me, it seems, is a verb not a noun, proper  
or improper; is the articulation not the art, objective or subjective; is loving,  
not the abstraction "love" commanded or entreated; is knowledge dynamic,  
not legislative code, not proclamation law, not academic dogma, nor ecclesi-  
astic canon. Yes, God is a verb, the most active, connoting the vast harmonic  
reordering of the universe from unleashed chaos of energy. And there is born  
unheralded a great natural peace, not out of exclusive pseudo-static security  
but out of including, refining, dynamic balancing. Naught is lost. Only the  
false and nonexistent are dispelled.

And I've thought through to tomorrow which is also today.

The telephone rings and you say to me Hello Buckling this is Christopher; or

Daddy it's Allegra; or

Mr. Fuller this is the Telephone Company Business Office;

and I say you are inaccurate.

Because I knew you were going to call

and furthermore I recognize

that it is God who is "speaking."

And you say

aren't you being fantastic?

And knowing you I say no.

At least a quarter of a billion people sit quietly each day for hours in darkened halls.

And they say they are "at the movies" not looking at anyone or anything real. They  
certainly don't see the screen.

I say they are looking at God.

Incalculable millions of people sit isolated and silent.

And say they are listening to  
Josephine Baker swinging or  
Raymond Gram Swing of course not really, but really;  
and I say they are listening to God.  
And the journalists tell me  
that Hitler is blitzkrieging over the earth.  
And I say that is the greatest  
understatement in history  
for it is God  
now doing the housecleaning  
and making the necessary renovations  
in a hell of a hurry because

we personally failed to make them in everyday ways in our own time and there  
is now only half a world left, and one-half of our time remaining in which to

“let our hair all the way down”

and say, `` We have plenty, we have the means, the ability, the knowledge.  
Let us start the mechanism

to creative account;  
not to vast and vaster destruction.”  
“Let us not subscribe to remedy by amputation—  
first of all of our heads.”

Let us say to the East and West and the North and the South  
to its now reality spokesmen, `` Here is our helping hand forget your fighting.

Let's put things to rights.

We'll take care of the inconsequential accounting when mankind has been  
salvaged if you insist on accounting;

for we won't!”  
That is the active, realistic loving of this one moment in all time.

No one in America will say that its leader is overstepping his authorized bounds if he takes sincere, forthright, and adequately big steps to accomplish world healing.

God will be handling the radio-telegraph for such a mandated dictatorship; and Democracy is not challenged by such a dictator whose very first move must and will be tidal-waved with Demos authority.

Stop “calling names” names that are meaningless;

you can't suppress God by killing off people which are, physically, only trans-ceiver mechanisms through which God is broadcasting.

But his requirement is dynamic and if man-mechanism proves too inefficient as an invention he will immediately devise a cataclysmic improvement.

### **POSTSCRIPT (1961)**

Because scientists today are specialists rather than generalists, they have tended to avoid consideration

of the total significance of their interrelated work.

The recent decade's evolution of science finds its specialists continually surprised to discover their respective specializations bringing them into unexpected proximity to other specializations theretofore considered almost infinitely remote.

We have come to the era of the hyphenated sciences—bio-chemistry, mathematical-physics, physio-chemistry. Suddenly the chemist and physicist discover that they are both dealing essentially with the atom. So they now agree to divide their common field and the physicist deals with the internal affairs and the chemist with the external affairs of the atom.

Biology which used to think of itself as concerned fundamentally with cells next found itself concerned with the chemists' molecules and now discovers that it must look to the atoms of which the molecules are formed.

The next decades will see

the thus inadvertently integrating scientists becoming surprisingly aware of the total inter-relationship

of the macro-micro, universe-exploring sciences.

With the integrating awareness and its synergetic appreciations

by the chemico physicists  
will come a new era of philosophy.  
In these coming decades  
the scientists will express their amazed discovery  
not only of the total orderliness  
discovered throughout universe  
but also of the total interrelatedness

and nonsimultaneous inter accommodation regularities of universal evolution.

Men used to say  
that man the scientist brought order out of chaos.  
The scientists are about to discover  
that all that was chaotic  
was in man's illiterate and bewildered  
imagination and fearful ignorance.  
Wherever and whenever men  
have explored with scientific integrity  
they have reported the discovery

of the exquisite orderliness of patterning of dynamically evolving nature.

Scientific man is then about to discover  
a comprehensive integrity

manifest of the highest order of intellectual differentiation

and anticipatory conceptioning.

This comprehensive intellectual integrity may be logically symbolized by the integral concept God, as the synergetic totality of universal chemistry's behavior unpredicted by the behavior of any of its parts or sub-assemblies of its parts.

Inasmuch as all men are trending to become scientific, this will mean that all men will also trend toward discovery of the comprehensive, orderly, nonsimultaneously interaccommodative, integrity of universe in which the energy of the physical portion of universe is total and integral

and though infinitely differentiable locally can neither be created nor lost and in which finitely combined physical and metaphysical universe a law of conservation of intellection will also obtain

whereby intellect as the metaphysical portion of universe will also be total and integral—

and though infinitely differentiable locally intellect can neither be created nor lost. Thus will emerge an entirely new philosophical era of man on earth.

All religions we have known have been sustained by the arbitrarily adopted or inculcated credit (credo—belief) of individuals who have not themselves made direct discovery, or unique intuitive apprehension, of the universe's intellectual integrity superstitiously accorded by the blindfolded believers

to the few individuals of high intellectual lucidity and extraordinary self-discipline who have dedicated themselves to their intuitive anticipation

of the now scientifically emerging realization of the comprehensive integrity of total information.

All organized religions of the past were inherently developed as beliefs and credits in “second hand” information.

Therefore it will be an entirely new era when man finds himself confronted with direct experience with an obviously a priori intellectually anticipatory competence that has interordered all that he is discovering.

With this discovering will vanish all concepts of a universe originating out of chaos, out of a “primordial ooze.”

There will dawn an awareness of the integral significance of man being born subconsciously co-ordinate as a billion-fold complex patterning later to consciously discover that there are no ponderable, smallest, hard-core, “thing” particles only abstract, frequency events and that negative matter is co-equal with positive matter and that equilibrium between positive and negative is zero.

Man will discover that he is dealing intellectually in a universe of intellectually differentiated co-operative yet nonsimultaneous equations governing the interrelationships of purely abstract principles, no more, no less.

## 2 MACHINE TOOLS

### *Orchestral Instruments of America's Mass-Production Symphony*

When the Almighty happened to bemuse his wisdom with playing shoot-the-works, he opened with one hand the hot valve of absolute energy and with the other the cold valve of absolute time.

Now with seemingly deft attention, and now with seeming abandon, he valved them together in variety of proportion—out through the mixing spigot of universe to occur in the reservoir of absolute space—and the synthesis

no matter in what proportions always combined as degrees of motion.

However that motion is only measurable in dimensional units of energy, time, and space which are mostly infra or ultra to the dimensions which the personal faculties of man are accustomed to detecting by direct sensing and by conscious awareness of relative comparisons made by himself to previously established measures of any conscious experience with motion.

Thus self-limited he fails to comprehend the astronomical speeds of the infinite host of heavenly bodies which seemingly hang motionless in his carelessly accepted scenic environment.

“What do you mean, macrocosm?” he says to his tiresomely thinking self.

He fails equally to comprehend  
the exquisite speeds  
at which infinite numbers  
of atomic components  
course  
and which seemingly bulk  
to his bored ego as  
gross solids, liquids, or gases.  
The microcosm, phooey!

He fully perceives a few score  
of mediocre speeds,  
for instance: his twenty-five-mile in four hours marathon,  
his four-hundred-mile in one hour flying  
whose speed ramifications  
are now scaring his limited imagination  
almost to death,  
and whose relatively slow propeller speed he cannot even see.

He can see a *few* objects illuminated by light, e.g., dust mote or elephant, as these super whizzing atomic universes move slowly en masse relative to man, but he cannot see light which moves at five hundred thousand times the speed of the fastest moving propeller tip.

In like manner he hears the slow motion of air molecules mechanically agitated in expanding waves, propagated by a diaphragm magnetically vibrated by electron-stream motions in turn valved by radio wave impulses, which themselves in turn moving at the speed of light he also hears not.

But all anywhere about man, within and without, is eternally, ceaselessly motion, whether he senses it or not, and which God alone seems to care that he know.

For God may reasonably be slowly up-winding that game of shoot-the-works through the instrumentality of man; or failed by man, possibly through some other animate specie or process like aurora borealis cosmic electrolysis.

For, though sensing motion only relatively and that to limited degree man has nevertheless measured and fixatingly accumulated, first by subconscious storage later by records in books his constantly re-experienced engagements with motion, such as with the days, tides and heart beats, and finally music.

Finally man has accumulated  
sufficient knowledge of certain proportions of time and energy and of their respective special relationship behavior to selectively segregate and reassemble  
those constituents for himself.

In such a manner  
has man  
learned to control  
motion  
external to his own body-motions to a meager degree, directly by tangible devices.

But as uncounted increment

have his faculties gained distinct new abilities through momentum of faith in effort of learning from events as they happen further to capture and segregate for immediate or later use, in portional recomposition non-directly sensed units of motion by intellectually selected operations of those firsthand devices.

So amplified in degree are these quantities of motion paptured by faithful extension if both ends of the sensibly charted scales beyond the sensorial limits as progressively to place a working measure of the original omnipotent power within man's conscious control.

This control is in turn pyramided, in direct proportion to man's witting appreciation of his reorderingly creative potential; at least to the extent of dynamically balanced composure of those areas of environment seemingly valved off by original ad lib.

of the almighty.

But there are those who cogently argue that man still falteringly progresses by the two forward and one back locked-step of an active inferiority complex.

But any way

we may choose to argue, the fact is unaltered that man has already captured harnessed and put to work what is relatively a whole lot of motion.

He has already devised

certain mechanical extensions of his integral mechanics, one thousand square miles of whose bearing surfaces

are now all in motion

relative to

one thousand square miles of their complimentary supporting and controlling mechanical surfaces.

And between these two one thousand square miles

of intimate surfaces

occurs

the boundary layer

within whose special dimensions

time and energy

war for supremacy—

with wisdom

as match maker referee and judge.

And their battle  
is vastly more vital  
at this particular stage of the game  
of shoot-the-works  
than that simultaneously occurring within the dimensional space of several million  
square miles of most fertile farm land  
of the earth's own boundary layer.

For somewhere between  
nature's random dispersion  
of the ninety-two chemical elements  
as simply constituting  
the panorama first viewed by Adam—as seemingly motionless except for himself,  
and through which now flies an airplane—somewhere between that original dispersion  
and the magnificent composure in orderly arrangement of those dynamic elements  
not only in structure  
and mechanics of the airplane  
but also throughout  
the innumerable processes and instruments involved in wresting the plane from  
the raw countryside, and thereafter maintaining its useful passages between chosen  
loci;

there must be, by mathematical law, a weakest link.

In converting one hundred tons of raw broad countryside into five tons  
of scintillating airplane-in-flight, the machine-tool is specifically that link  
in the industrial chain of events.

In the machine-tool operations the *final* pounds, ounces, and litres of twenty to one  
tonnage reduction of materials  
exquisitely occurs.

Here are prepared  
the mechanical surfaces  
between which time and energy are masculated.

And here man and his wisdom must be the master.

Yet there are few of his members qualified for such mastery. And there creaks  
incisively today's weakest link.

Where there is creaking there is dominant friction; and where friction is dominant there time is winning out over energy—cold death is strangling warm life.

And that weakest link creaks at its one end with the rusting substance of *experienced artistry* and at the other with the frustrated tendon of fatiguing *knowledge* required respectively to both *operate* and *design for* the machine tools with sufficient speed, flexibility and precision, efficiency and reliability, to keep pace with all the other functions of industrial survival.

As the routine industrial functions become ever more simple and of less labor as consolidated result of all the time harnessed machine-tool technology the pinch becomes more excruciating at the machine-tool operator's station itself—a station and its baggage master too easily forgotten by man as he dozes by in his streamlined express of ever more carelessly limited stops.



### **3 THE HISTORICAL ATTEMPT BY MAN TO CONVERT HIS EVOLUTION FROM A SUBJECTIVE TO AN OBJECTIVE PROCESS**

The systematic growth

of man's intellectually-augmented evolution is structured within a progressively improved scaffolding of assumptions.

The integrity of the principle of intellectual assumptions as bravely taken within the confines of residual facts of disillusioned experience is progressively persuasive.

For the new prospect of magnificent reality looms into ken as the retrospective lure of abandoned illusion first dwarfs then dissolves.

Thereafter the temporary scaffolding advantaged by informed approximation of simplifying and interacting principles is formally replaced by earned controls consisting of ever more exact degrees of measurement, of the finitely interactive system, of unique principles, of energetic relationship, of universe, its inherent proclivities and articulations, that is, its natural behavior.

The newly swollen growth of total interaction of discovered, equated, and valved-in principles floods silently to contain the subconscious rational of the total individual—society.

Consciously, society is at first fascinated by the novelties in technical manifestation of the omnidirectional advance as compared only to the residual plurality of fading traditional background illusions.

Wherefore: ultimate social awareness of total engulfment by new orientation to comprehensive principles of reality appears first as enormous apprehension of potential loss ...

of what?

of things, of vanities, of self-proclaimed prestige?  
of the illusory values and transitory standards and prerogatives appropriate only to  
adjustments completed in yesterdays diminutive gains, by exceptional self?  
When man shall become preoccupied  
with drawing off the progressive magnitudes  
of new potential  
to establish constant worldwide  
advancement of living standards,  
specifically: through the systematic incorporation of scientific knowledge and tech-  
nical advantage in an earth-embracing service industry of autonomous dwelling and  
intelligence facility and felicity  
insuring not only his progressive immunity to annihilative factors of nature  
but cohering his progressive appetite for truth then will subside  
the subjective requirements—  
the negative motivations,  
the antipathetic surges,  
the concessions to survival-mandated compromise promulgating the theory of  
advancement by political initiative  
whose expedient ways  
are progressively powered by the  
accumulating science and technology potential to be tapped only for dubious war  
objectives.  
It will take many waves  
of threatened self-destruction  
by society  
to convince and instruct and  
mobilize  
an effectively articulate majority of humanity  
in the synchronization of society towards an objective evolutionary volition  
inspired by deeply acknowledged faith in an omniscient wisdom and benevolence  
instructing through intellect ...  
(intellect wrote  $e = mc^2$ —

energy did not inscribe intellect  $e=mc'$ ) intellect may write every equation of physical behavior, but no physical or abstract equation will ever compass intellect or its self-starter secret.

3. When the objective evolution emerges, the intellectually architected house-of-tomorrow

will be central to the emergence.



## 4 UNIVERSAL REQUIREMENTS OF A DWELLING ADVANTAGE

### i. Teleologic Schedule

Check list of the universal design requirements of a scientific dwelling facility— as a component function of a new world encompassing, service industry— predesigned, rather than haphazardly evolved, which thus avoids a succession of short-circuited and overloaded burnouts of premature, and incompetent attempts to exploit the ultimate and most important phase of industrialization, to wit, the direct application of highest potential of scientific advantage toward advancement of world living standards—to be accomplished by inauguration of a comprehensive anticipatory technology scientifically informed of the probable variables and possible randoms—this new volition to succeed the era of “survival”— that is *survival-despite*— despite preponderant submission to ignorance—ignorance of future probabilities and general behavior of nature—

which heretofore “survival” tolerated lethal opportunism,  
wherein the progressive deteriorations bred emergencies which called upon scientific ability

to perform last minute miracles but  
only as a curative dispensation of morbid inertia.

*The universal design requirements of a scientific dwelling facility are that it accomplish comprehensive advantage for man over all primitive factors of energetic nature. The factors may be broadly classified in four parts as follows.*

note: That I and II below are *subjective* and *defensive* and *exclusive* and that III and IV are *objective* and *offensive* and *inclusive*.

NOTE: That I define the outer ramparts and II the inner defenses while III represents the inner initiative-taking and IV the full grown outer offensive—conquest—contact.

note: That this arrangement is geometrically teleologic, i.e. omnidirectionally convergent-divergent—irreversibly propagative.

**I. Essentially random and SUBJECTIVE phenomena**

A. *Exterior* variables—factors of destructive or useful potential; of nakedly intolerable magnitudes, inescapably impinging

B. *Interior* variables—factors of destructive or useful potential; of nakedly intolerable magnitudes, inescapably impinging

C. Exterior *constants* of relative inertia forgotten through persistent obnoxiousness and *randomly* re-encountered

**II. Essentially routine and subjective phenomena—internal TO DWELLING—PREDICTABLY PERIODIC, RHYTHMIC**

A. Inescapable functions of the organic processes, internal to dwelling and external to man

B. Inescapable functions of the organic processes, internal to dwelling and internal to man

C. Interior constants of relative inertia forgotten through persistent obnoxiousness, and regularly rediscovered, e.g. furniture to be lifted with each housecleaning.

III. *Essentially* random and OBJECTIVE *phenomena*—INTERNAL TO DWELLING—INITIATIVE, SPONTANEOUSLY INTERMITTENT—TELEOLOGIC

- A. Investment of earned increments of lifetime for free will regeneration of the advantage of life over a priori environment. *Realization* of man's potentials as an *individual*
- B. Implemented and insulated spontaneity of feedback *acceleration-continuity* of the self amplifying individual

IV. *Essentially* INCISIVE and routine OBJECTIVE *phenomena*— EXTERNAL TO DWELLING—INITIATING A SUSTAINABLE COMPLEX CONTINUITY = *design realization of all men's joint potential*—TELEOLOGIC

- A. Investment of earned increments of technical advantage of the science-industry complex in *design realization* of the *complex dwelling facility service*
- B. Implementation and insulation of synergetic feedback of higher order accruing to spontaneous group realizations of newly evolving potential

*Expanded expression of those four broad classifications of universal design requirements for a dwelling facility. Original topic of broad classification not repeated and referred to only by number.*

- I. A. Structural, mechanical or chemical interception and control of *externally impinging factors, either by rejection, reflection, deflection*, through shunting, channelling, impounding, modulating and/or retiming of volumetric flows of variable external factors of nakedly-intolerable magnitudes
- i. Immunization against aperiodic, energetic interferences—externally impinging at intolerable magnitudes and heretofore classified as "*cataclysmic*," because exceeding the practical stress abilities of as yet available technology. *However* (new era essence) since accomplishment of higher physio-chemical stress abilities in, for instance, supersonic flight and snorkle submarine, the stress abilities of technology in general now far exceed the predictable stresses of the hitherto cataclysmic structural interferences—the 180 m.p.h. velocity of antarctic hurricane or Pacific typhoon is now a relatively minor aeronautical velocity-of-interaction of designed structures. External impingements are classified in the order of

frequency of probable occurrence and relative magnitudes.

A. *"Cataclysmic"*

Improbably annual, possibly "never," and *least frequent*, but of *highest stress when occurring*

- 
- |                      |                                    |
|----------------------|------------------------------------|
| 1. earthquake        | 8. bombardment                     |
| 2. tornado           | g. forest fire                     |
| 3. hurricane         | 10. tidal wave                     |
| 4. typhoon           | 11. plague                         |
| 5. avalanche         | 12. radio activity                 |
| 6. landslide         | 13. lethal gases                   |
| 7. volcanic eruption | 14. B.W. (bacteriological warfare) |
- 

B. *"Dangerous"*

Probably annual, or borderline "disaster" magnitudes

1. gale
2. local fire
3. flood
4. pestilence
5. lightning
6. selfishness (self-preoccupation pursued until self loses its way and self-generates fear and spontaneous random surging, i.e. panic, the plural of which is mob outburst in unpremeditated wave synchronizations of the individually random components)

---

a. vandals  
b. marauders  
c. meddlers  
d. politics

e. fanaticism  
f. commercialism  
g. materialism

---

c. *"Inclement"*

of high seasonal frequency and of low orders of stress or of naked intolerability

1. fumes
9. heat
10. cold
11. epidemic
12. vermin
13. insects
14. fungi
15. minor random  
missiles
2. hail
3. rain
4. snow
5. dust
6. electrolysis
7. oxidation
8. vibration (noise)

2. *Rejection, or deflection* for delayed or immediate use as

a. energy, admitted into direct work as, for instance, radiation or electronic reaction, or indirectly into work as, for instance, impounded wind (aeronautical) or water (hydraulic) power

1. piped—for direct use

2. wired—for direct use

3. valved—for direct or delayed use

4. stored—in cistern, tank or battery for delayed use

5. stored—in thermal bank or compost bins, etc.

I. B. *Dynamic Control of Internally Impinging Factors*

1. Interception of and dispellment of the momentum trends of ignorance, through incorporation of experience informing natural design replacements, realized in physical principles.

2. Interception and neutralization of bacteria by isolation of, or by direct elimination

3. Elimination of physical fatigue

A. human robotism and drudgery by provision of adequate mechanics of technical advantage

4. Elimination of psychological fatigue (repression) by

A. removal of accident hazard through mechanical adequacy (don't proofing)

B. removal of arbitrary cellular limitations to permit free interaction of living functions

C. provision for selective privacy by push-button sound, sight and smell barriers surrounding any interior space

5. The elimination of emotional fatigue

A. factors stimulating nerve reactions to be automatically controlled in  
` `neutral" until voluntarily brought into play by the occupant through:

6. Provision of mechanics for wide range in selection of means and degrees of  
sensible realization of the prosaic or harmonic phenomenon

A. visual

B. aural

C. tactile

D. olfactoral, i.e. taste and smell

I. **C.** *Control by anticipatory design over exterior constants of inertia forgotten through  
persistent obviousness and only randomly re-encountered*

1. Constants of environment, i.e. the mud forgotten between rains, odorous winds  
from remote sources, snowdrifting

2. Control devices installed for seasonal duration only requiring inordinate time  
investments

3. Chemical accumulations (oxides, sludges, fumes)

4. Biological accumulations

A. vegetation, composts, weed

B. insect, animal residues, nestings, general growth changes

5. Surprise emergencies of environmental complex unique to locality, i.e. possible  
water, oil, gas springs and seepage

**II.** A. *Provision for (unselfconscious) (spontaneous) mechanical performance of in-  
evitable organic routines of the dwelling and its occupants with minimum of invested  
attention or effort*

1. Fueling of

A. house

b. occupant (eating) (metabolism)

2. Realignment of house or occupants in sleep by allowed muscular, nerve and cellular realignment accomplished by designed elimination of known restrictive factors

5. Refusing of house or occupants

A. internal, i.e. intestinal, etc.

B. external, i.e. bathing or pore cleansing

c. mental, i.e. elimination by empirical dynamics

D. circulatory: external—atmospheric control; internal—as respiratory functions.

**II. B.** Control by anticipatory design over interior constants of relative inertia forgotten by fatigue closure of feedback sensibilities and routinely re-encountered (such as heavy furniture to be moved about daily for cleanliness operations, storages to be overhauled to obtain the tentatively retained devices of possible or infrequent use)

1. By *provision* of adequate occupational-specialty storage means

2. By home employment of travel equipment

5. By dimensional reduction (e.g. of collections of large data to microfilm)

IH. A. Provision of ready mechanical means, complementing or implementing, all development requirements of the individual's potential growth phenomena—allowing the facile, scientifically efficient, no-energy-or-time-loss—spontaneous development of self-disciplined education, by means of

i. *Conning*, i.e. selectively stimulated awareness of the momentary interactions of universal progressions accomplished by means of facile reference to vital data on

- A. history
- B. news
- C. forecasts

calls for a conning facility combining book and periodical library, radio, television facilities, systematically arranged incoming reports on

- 1. current supply and demand conditions
- 2. current dynamic conditions - weather - earthquakes—latest scientific research findings

5. social dynamics-surfacing of commonweal problems of comprehensive readjustment to new potential and concomitant obsolescence factors

- 4. latest technical reference in
  - a. texts
  - b. movie documentation
  - c. television university (soon evolving to increasing importance and reliability as the Autonomous Dwelling Facility becomes widely available)

2. *Adequate mechanics of personal articulation* (prosaic or harmonic) for the spontaneous investment of the imagination-gestating intellectual-increments of experience—(teleology) which trend ever to satisfy the evolving need—prosaic or harmonic—routine or plus. This category of *original articulations* also includes the necessity or crystallization of universal progress

- A. instruments and tools of communication
  - 1. direct
  - 2. indirect
  - 3. aural

4. visual
5. tactile
  - a. music, writing, drawing, measuring instruments
  - b. wood, metal and chemical working tools
  - c. typewriter
  - d. wire-tape-and-disc-all-purpose-recorder- synced radio-phonograph-filmstrip projector
  - e. easel
  - f. photographic equipment—taking, developing, printing, projection
3. *Recreation*—appropriate equipment to full physical development
4. *Procreation*

**HI. B.** Insulation, or Isolation, of the Instrumented Initiatives **HI. C.** Means of displaying, exposing, experimenting and measuring for progressive improvement of “target” or “trend to target” or “trend following” assumptions-of-realiza- tion-initiative-and-articulation—i.e. “vital navigation” or “teleology”; i.e. *personal* and *social* and *cosmic* feedback

control. The comprehensive ``frames," relative to which display, exposure, experiments, measurement and progressive dynamic trend assumptions may be referenced is FOURFOLD.

Objective Aspect

1. *Subvisible*

Microcosmic

2. *Geo-visible*

Geographical

{Visible, near}

Earth

**Subjective Aspect** nuclear particles atoms molecules cells, genes crystallographic  
biologic sub-surface surface envelope

Consolidated Intellectual

Advantage, or aids

atomic charts, periodic, etc. spectrographic charts molecular models biological  
slides

globes, maps, geological stratification maps

world and local physiological data

spectrum charts

3. *Astro-visible* Macrocosmic {Visible,

*remote*)

4. *Supravisible* Comprehensive

Omni- permeative

comets asteroids planets stars nebula

abstracted principles

radiation

star globes star charts

energetic geometry devices (vectorial, formative, transformative, number)

number sets group behavior phenomena

probability transformations

independent of dimensions

finitude and definitude

PHASE I, INDIVIDUAL

**IV. Realization**

The whole program of realization is to be considered in the following order which breaks into two primary categories or phases: (i) the initial work to be undertaken by the individual prior to his engagement of the aid of associates and (2) original and initial work to be undertaken by the first group of associates. These two phases may be subdivided as follows.

**IV. A.** Research and development by initiating individual (prior to inauguration of design action and development action involving full-time employment of others). Inauguration of a general work pattern as a natural pattern coinciding with best scientific procedure to wit: Preliminary

Initiation of diary and notebook

Initiation of photographic documentation Initiation of tactical conferences

1. Comprehensive library study of accrued developments within the pertinent arts

\*

\* Pertinent arts to be studied by the initiating individual include:

1. Anthropological data
2. Energetic Geometry, the philosophy of mensuration and transformation, relative size
5. Theory of structural exploration
4. Theory of mechanical exploration
5. Theory of chemical exploration
6. Energy as structure
7. Dwelling process as an “energy exchange”
8. Dwelling process as an “energy balance sheet”
9. Theory of structural complex
10. Theory of service complex

11. Theory of process complex
12. Theory of structural and mechanical logistics
13. Theory of complex resolution
  - a. past
  - B. contemporary
2. Listing therefrom of authorities available for further information
  - a. local, personal contact
  - B. remote, correspondence
5. Pursuant to information thus gained, calling at suggested local laboratories
  - A. university
  - B. industry
  - C. setting up of informative tests for first hand knowledge in own laboratory
4. First phase of design assumption
  - A. consideration of novel complex interaction unique to project
  - B. preferred apparatus from competitive field
  - C. design of appropriate flowsheets
5. Flowsheets submitted to
  - A. those competitive specialists who have proved helpful in steps b and c
  - B. industrial producers of similar equipment and assemblies
  - C. make informative tests for closure of gaps supporting assumed theory

6. Submit specifications and drawings of general assembly and unique component parts for informative bids by manufacturers
  - A. second redesign of flowsheet based on available and suggested apparatus, price information, etc.
7. Prepare report consisting of diary of above, supported by photographic documentation and collected literature—with trial balance conclusions of indicated economic advantage (which, if positive, will inaugurate Phase II)

#### PHASE II, COLLECTIVE

**IV. B.** Design and development undertaking—involving plural authorship phase and specialization of full-time associates. Consideration of relationship of prototype to industrial complex by constant review of principles of solution initially selected as appropriate to assumptions. Adoption of assumptions for realization in design of pertinent principles and latest technology afforded

- i. Comprehensive survey of whole sequence of operations from original undertaking to consumer synchronization

Realization strategy No. 1 by individual (Phase I) Realization strategy No. 2 by associates (Phase II)

- A. Physical tests in principle of the design assumption's unique inclusions not evidenced in available data
- B. General assembly drawings (schematic) providing primary assembly drawing schedule reference
- C. General assembly assumption, small scale models and mockup full size
- D. Primary assembly, sub-assembly and parts calculations (stress)
- E. Trial balance of probable parts weights and direct manufacturing costs (approximately three times material costs} includes labor, supervision and inspection) and forecast of overall cost magnitudes, and curve plotting—at various rates of production, ratioed to direct costs per part and “all other costs”—
  - i. e. “overhead” tool and plant “amortization” “contingencies,” “profit”

- F. “Freezing” of general assembly and its reference drawing
- G. Drawing for first full size production prototype commences in general assembly, primary assembly, subassembly and parts
- H. Budget of calculating and drawing time is set with tactical deadlines for each
  - I. Parts drawing and full size lofting and offset patterns
  - J. Prototype parts production on “soft tools” commences
- K. Sub-assembly and primary assemblies replace “mockup” parts
- L. Physical tests of parts and sub-assemblies with “obvious” corrections and “necessary” replacements (not “improvements” or “desirables” which must be deferred until second prototype is undertaken after all comprehensive physical tests have been applied)
- M. Photography of all parts and assemblies
- N. Full assembly completed and inspected—cost appraised with estimates of possible “improvement” savings to be effected
- O. Static load tests
- P. Operational tests
- Q. Assembly and disassembly tests
- R. Photography of all phases
- S. Packaging and shipping tests
- T. Estimates of savings to be effected by special powered field tools
- U. Opinion testing
- V. *Final* production “*clean-up*” *prototype* placed in formal calculation and drawing with engineering budgeted with deadlines
- w. Parts cost scheduled by class “A” tools and time

X. Production tool layout fixed

Y. Production tools ordered

z. Production dates set

A'. Lofting and offsets produced of full-size-test “masters” and templates

B'. Fabrication of special jigs and fixtures

C'. Production materials ordered

D'. Production tool-jig-fixture tune-up

E'. Parts and assembly testing

F'. Field operation scheduling

G'. Field tools ordered

H'. Distribution strategy in terms of initial logistic limitations

I'. Field tests with special tools

J'. Field tools ordered or placed in special design and fabrication

K'. Test target area selected for first production

L'. Production commences

M'. First field assemblies with power tools

N'. Maintenance service instituted and complaints

1. alleviated

2. analyzed

3. change orders of parts instituted

o'. Plans for “new” yearly model improvement run through all or previous steps—for original production

2. Production and distribution velocity assumptions

3. Plotting the assumed progressive mass-production

curves to determine basic velocities of new industry

4. Tensioning by crystalline, pneumatic, hydraulic, magnetic means

5. Compressioning by crystalline, pneumatic, hydraulic, magnetic means

6. Consideration of manufacturer's basic production forms—relative to proposed design components for determination of minimum steps, minimum tools, and minimum waste in realization
7. Establishment of priority hierarchies of effort
8. Time-and-energy-and-cost budgeting
- g. Assumption of industry responsibility for field practices, not only in mechanical and structural, but in economic design.
10. Designing for specific longevity of design appropriate to anticipated cycles of progressive obsolescence and replacement ability as ascertained from comprehensive economic trend curves
11. Designing with “view to efficient screening of component chemicals for recirculated employment in later designs”
12. Maxima and minima *stated and realized* performance requirements per unit of invested energy and experience and capital advantage of tools and structures employed and devised
13. Logistics assumptions, compacted shipping considerations as original design requirement in
  - A. nesting
  - B. packaging
  - C. compounded package weight
  - D. relationship to carriers of all types
  - E. field delivery
  - F. field assembly
  - G. field service and replacement
14. Consideration of tool techniques

15. Consideration of materials' availability
  - A. at time of design
  - B. in terms of world economic trends
  - c. in terms of world potential
16. Consideration of materials ratio per total design
17. Elimination of special operator technique forming
18. Elimination of novel special soft tool designing
19. Numbers of
  - A. types
  - B. repeat parts
  - c. sub-assemblies
  - D. primary assemblies
20. Numbers of forming operations
21. Number of manufacturing tools by types
22. Schedule of forming operations included on parts drawings
25. Decimal fraction man hours per operation
24. Designed-in over-all one-man-ability at every stage of operation
25. Schedule of design routines and disciplines
26. Establish a "parts" inventory of "active" and "obsolete" drawings—from beginning
27. Establish a "parts" budget of "required" designs of "parts" for assemblies and major assembly and general assembly and molds

28. Drawing dimension standards

29. Establish a numbering system of controlled parts

jo. Establish purchasing techniques, jig and fixture, lofting techniques

**IV. C. Public Relations**

To run concurrently with all phases of **IV. B.**

i. Education of public

Rule I: Never show half-finished work

A. General magnitude of product, production, distribution. But no particulars that will compromise latitude of scientific design and production philosophy of **IV. B.**

B. Publicize the “facts,” i.e. the number of steps before “consumer realization”

c. Understate all advantage

D. Never seek publicity

E. Have prepared releases for publisher requests when “facts” ripe

2. Realization by Design

*A Priori Design Realization Assumptions*

Asking not why, whither, nor whence man-life?

But assuming

the accumulated experience evidences

that biological phenomena

in general

and man-life

in particular

function in universe

as the anti-entropic,

the anti-random—the simple and complex *organic*— the systematically convergent

phases

of the comprehensive

omni energy transformations

and therefore *industrialization*  
constitutes the comprehensive—transformative expansion  
of the man-life function in universe—  
and therefore the realization that man-life’s extension  
into cosmic measurement  
already billion-folds  
the sensory limits of integral faculties  
presages a further successful amplification  
of the man-life function in universe  
and therefore  
that the regenerative ability of intellect  
in extension, acceleration, and expansion  
of the extra corporeal cosmic-functioning-stature  
of the man-life in universe  
is realizable  
in comprehensive design initiative  
relayed through industrialization  
and therefore the function of comprehensive design  
is most naturally and effectively  
preoccupied with omni-abetment  
of the realization in full  
of the potentials of the “individual” complex, an organic atomic nebula  
identified superficially as man—  
man potential includes  
*regeneratively improving potentials*  
of sequential derivative orders  
of increasing advantage of the organic  
over the (random-entropic) chaos growths  
“individual” man’s highest potential  
may be realized in terms of full interaction  
of all men’s potentials—  
ergo man’s universal function trends  
to amplify first the pull potential of the individual—  
but inherently multiplicative man-life

therefore  
on first priority  
in design consideration  
is the full realization  
of individual potential  
in order to reach the second derivative—  
full realization for all individuals  
keys to design realization  
are the anthropological measurements,  
of the limiting factors  
of corporeal man,  
beyond which extra-corporeal articulation  
of the integral faculties  
may be accomplished by extension in principle through atomic-complex trains,  
and energetic transformations  
to cosmic stature advantage  
universal conditions of design realization commence with the static and dynamic  
dimensions of man  
and his basic behavior involvements  
of which there exists a wealth of data

Typical

How high can he grow?

How high can he jump? How high can he reach? How far can he see?

How far can he hear?

How far can he smell?

How long can he live?

Etc., etc., etc.

Limited to Slow Change Integrally

8. ft.

6 ft.

9. ft.

100,000,000 m.

100 m.

etc.

etc.

Subject to Accelerating

Change Latest

Extra- Corporeal

1,200 ft.

to the moon

to the sun

186,000 x 60 x 60 x 24 x 365 x 1 billion m.

1,000,000,000 m.

etc.

etc.

All above figures schematic only; for accurate figures see world almanacs.

## 5 THE FULLER RESEARCH FOUNDATION, 1946–51

The generation coming of age during World War I acquired an unprecedented range of direct information regarding the physical environment, much of which was unpredicted or even contradicted by that generation's pre-1917 *formal* education. The information was also contradictory to its *informally* inhibited concepts of *reality factors in general* concerning mores, politics, history, economics, and philosophy! The flood of unprecedented information growing out of directly-measured experience increased during the ensuing decade, 1919 to 1928. Outstandingly new was cognition of the *accelerating* magnitude of technical advantage over dynamic environment and conventionalized circumstance opening before man as an unforeseen, yet now integrating harvest, not only of two centuries of scientific discovery accretions but also involving the net and network of *all* knowledge of all history and its derivative technology.

Most important in respect to the present subject-activity—The Fuller Research Foundation, founded a quarter of a century later, in 1946—were those direct experiences acquired in the “twenties” while first initiating development, production and distribution of complex-products and services, embodying the new degrees of post-World War I technical advantage, both in direct design and as indirect changes within arts, economics, geographical and psychological patterns long thought to be beyond fundamental change.

Consequently new strategies governing (a) pre-enterprise investigation and (b) technique-of-scientific-objectivity-in complex-prototyping were inaugurated in 1927. The *strategy* and *technique* were referenced only to, and limited only by, the full array of basic data dynamically integrating by world-wide communication of *direct experiment and measurement under itemized conditions*.

“Trial balances” taken by this new strategy and technique, within sub-complexes of the integrating major resource-and- advantage complex were identified informally for the next nineteen years by the designation “Dymaxion”—a “word portrait” of the enterprise and its philosophy, invented by a “name-smith” retained by Marshall Field & Company of Chicago on the occasion in 1928 of their being host to the public introduction of the enterprise, the designation being thereafter copyrighted and donated to the enterprise by Field’s.

As a result of those first nineteen years’ experience (1927–46) in frequently repeated “trial balance” initiations of prototype engineering; industrial logistics measurement and codification; trend-tendencies differentiation and over-all measurement; progressive strategy reorientation; and self-education and re-education—the comprehensive undertaking was formally incorporated in 1946 (in Delaware, U.S.A.) as the Fuller Research Foundation and was clarifyingly dedicated to:

1. Implementing commonweal pertinent, individually conceived, intuitively urged, and spontaneously joined search, research, and enterprise—in the borderline realm of ‘ ‘ j ust-not-impossibles’ ’ where transcendently, as alto-cumulus thought-cloud, orderly trending concepts tentatively accrue, differentiate and integrate—or freely crystallize, regarding the furtive, future-furthering, overall significance of continuing experiences—as possibly comprising a NATURAL FAMILY OF FACTORS integrating as a *constellation of potentials* in new degree magnitude, of MAN IN DYNAMIC UNIVERSE ADVANTAGE.

2. Teleologically polymerizing to discernible significance proportional to cumulative in-put, in magnitude, range and frequency of direct physical experiences, as catalyzed by progressively derived awareness-growth, regarding “probable” existence of natural laws which, though as yet unformulated by man, inexorably govern complex behavior, as EMPTY SETS OF PRINCIPLES

GOVERNING ALL POTENTIAL INTERACTIONS

AND EVOLUTING TRANSFORMATIONS (vectorially consequent to any set of specific cyclic-unravellings of time-energy 4-way minimum-involvements) the significance of which laws might, through competent COMPREHENSIVE DESIGNING

BE REALIZED

IN IRREVERSIBLE PHYSICAL EVOLUTION

TECHNOLOGICALLY EXTRAPOLATED AS

EXTRA-CORPOREAL SIMPLEX OR COMPLEX

OF TOOLED MAN-PROCESS EXTENSION AND AUGMENTATION, thus

5. Cancelling out, as technically “obsolete,” and therefore, economically and politically as “irrelevant,”

the whole prospect of contemporary impasse and threatened total reversion to abhorrent destructioning; as consequence of lost temper of mentality-and-character alloy;

of lost comprehension and understanding in the broadening horizons and;

of lost man-competence in good will and mutual good faith, advantaged by intellect.

4. But, the Fuller Research Foundation only reconnoiters in such searching, re-searching, and enterprise within areas of exploration as yet

beyond the working budgetary scope, credulity, enthusiastic curiosity, or conscious serious interest, of the two major conventional agencies for accrediting access to organized inquiry, experimental resource and facility in Man’s formal undertakings, i.e.

5. *Business*— Independent variable  $x$

and *Government*—dependent variable, function  $y$ — only in respect to which latter’s maxima-minima limits

the independent variations of  $x$  have significance, as each operates relatively and inseparably in the first derivative phase of *dynamic objectivity*; i.e. realization of the integral and differential *Logistics of Industrialization*

Though often provoking comments of “stimulating” or “fascinating” by men of *business* and of *government* alike, and though frequently patronized for purposes of developing new publishable “angles,” or simply for conversational refreshment, Fuller Research Foundation undertakings are twenty- four-hour, year-round, all-out efforts, ever and again, unexpectedly receiving serious encouragement of the “hard heads” of both “theoretical” and “practical” going affairs of men. The undertakings have been supported to date, entirely by voluntary workers’ efforts and the “plowed-back” direct income of “windfall” earnings of its principals; for Fuller Research Foundation undertakings are:

*Businesswise* outside the scope of justifiable pertinence to strict budgetary expediency in commercial survival strategy, governing regenerative profit secretions, extractions or reinvestments as managed by wisdom, prerogative, and latitude of minority integrity and as articulated by private corporations' initiative, self-disciplining, good-will-pleasure, urge of responsibility, competence and timeliness, and as manifested by inauguration of pilot-plant research in undertakings so new that, despite scientific classification as "*probable*" are as yet commercially "*untried*" and therefore classified by business as "only possible," and though "clearly needed" do not come up for consideration in these commercial-industrial-research categories, at least not until years after preliminary processing by F. R. F.

Fuller Research Foundation undertakings are also unbudgetable businesswise even as measures of "protective cover" for business' *routine* processing of, as yet "scarce," proprietary "probables," even though the latter business ventures are constantly hazarded by unpredicted

velocities of accelerating-acceleration in the morphology "sports"

generated by specialization's expediency pole vaulting with the unexpected moment to moment increments of integrating technical advantages

of competitive evolution; for the following negative reasons.

As the "routine probables" of business and the "approximate certainties" of government both fail to materialize on schedule

or are hazarded by unheralded complications arising out of *synergetic interactions*, compounding by comprehensive nature,

beyond either the considered or the predictable reaches of specialization's self limiting

"practical intelligence frames," the unexpected complications are frequently blamed by Y upon X, and vice versa,

as "ill attended and obvious" responsibilities within long accepted and now obsolete categories of cause and effect "affairs."

However the dynamically responsible factors "not- impossibly" may be the "cumulus of unheeded, transcendental integrating" of utterly new patterns with which F. R. F. is professionally concerned, and regarding which it *may* furnish

concepts and experimental data, and implications conducive to renewed understanding and basic industrial strategy advance.

And that meager one in one million chance that

F. R. F. may be able to furnish this service to society appears to justify its existence.

\*

(And Fuller Research Foundation undertakings are) *government-wise* as yet *invisible* to public policy making because as yet lacking the approximately “certain” quality and “acceptable significance” of *common focus*, characterizing problems of public convenience, as for instance inherent in dealing with the “obvious” common concern with “weather”

\*Five years after Fuller Research Foundation was founded the Ford Motor Company as *business* came as anticipated to F. R. F. in an emergency for the Geodesic Doming-over of Ford’s Dearborn, Michigan, Rotunda building. Eight years after F. R. F.’s establishment *government* came to F. R. F. in a series of hot, tepid, and cold war defense emergencies for all the Defense Early Warning systems DEW line Geodesic radomes, the U.S. Marine Corps’s air-deliverable advance base Geodesic dome shelters, and the U.S. Department of Commerce’s world-around Trade Fair Geodesic domes.

or with temporary abundances here and shortages there, or in the public irritating momentums of regulations for emergency extended beyond emergency.

And because F. R. F. projects must of necessity re-examine word tools employed in description of new and more comprehensive data, and must frequently impose precise limits on some words and phrases

and at other times generalize previously limited designations,

its undertakings also tend to lack the *communicable meaning* essential to everyday and everywhere vocabulary classification,

and to idea packaging for popular discussion, debate, majority conviction, enactment and subsequent administration.

Communicable meaning becomes obvious only after years of “non-obvious,” yet persistent, intrusion of trends as “annoying problems” whose increasingly familiar phrasemaking is repetitiously resounded either in denouncements or in rejustification by legislators or civil servants for continuing public support: either of comprehensive subsidy, or of subsidy for complementary functions of industrial gestations, obviously of commonweal benefit, yet inherently inaccessible to, or beyond the economic ability limits of *private* means and maintenance, as for instance dredged and buoyed harbors for ships, or built and maintained highways for vehicles, or airways and airports for planes or developed and policed clear channels for radio broadcasting systems; or in other government relegated subsidy functions such as financially underwriting

the industrial senilities, where public necessity but profitless risk relooks in the deteriorations and economic inadequacies, extensive as actuarially unexpected age increments, which being “unexpected” and seemingly uninterestingly profitless have been sorted improperly into nonpriority categories, rather than being attended to as possibly embodying new and majorly important trends and fabulous surprise profits which with increasing frequency, because improperly diagnosed, burst out of their routine service reframing, within the pro-and-con cliches pulled out and dusted off from out yesterday’s “precedented” or “enacted” frame storage.

## 6 A COMPREHENSIVE ANTICIPATORY DESIGN SCIENCE

*To Dr. Jonas Edward Salk*

World around thoughts embrace Dr. Jonas Edward Salk in spontaneous gratitude for his full-scale realization on our behalf of one of the most magnificent potentials of the man-process patterning in universe, to wit: demonstrably important competence of man as a *consciously* contributing participant in the constantly transforming evolutions of universe, even in the evolutionary transformations of men by man, and of man by men;

and as men demonstrate competence and responsibility as initiators of comprehensive, anticipatory design science—as has Doctor Jonas Salk—they gear men’s conscious efforts into nature’s ceaseless evolutionary processes thereby, progressively converting those inevitable and heretofore misapprehended

and oftentimes vainly fought processes from painfully dissynchronous to happily synchronous events,

and thus do nature

and competently self-disciplined initiators

such as Doctor Salk

now transform man’s omniaspect,

internal and external, direct and remote, biological and ecological, regenerative processing and all the latter’s new—or fading familiar—pattern identifications

as well as the word formulations

uniquely describing the newly discovered

and the responsible initiators are thus bringing about the complete re-orientation of man

in respect to all of his integrating processes

of apprehension, comprehension, and communication of fundamental tactical criteria  
governing survival, growth, and the enjoyment of universe  
and the initiators also render progressively achievable though as yet only in meager degrees  
the conscious enjoyment by man of earned relaxations into a post-Eden majority innocence,  
of a paradise at least partially re-occupied without mandatory sacrifice or relinquishment  
of his dearly won *conscious access*  
to his *innate intellectual faculties*  
and to his post-natal, environment stimulated epistemological functioning  
for the fleeting revisits of paradise are intellectual-integrity flown missions instrumentally permitted within  
the almost static-free omnirange navigation directionally oriented and accelerated  
by spontaneous or reasoned  
humility, love, dedication, tolerance and faith  
and the instrumented revisits to paradise  
show it to be  
a comprehensively co-ordinate,  
dynamically equilibrating earnable vantage  
ever tuneably tenable  
amidst the reciprocable complexities  
of evolutionary, wave-frequency patterning growths;  
and man is as yet  
but fractionally informed regarding those complexities, and the fractional information is furnished only  
by those wave frequencies which are directly apprehendable  
exclusively within man's very limited  
sensorial spectrum frequency bands—tactile, olfactoral, aural and optical— and  
these sensorial frequencies in turn occur only as miniscule trace zones  
and only at the middle ranges  
of the now partially explored, obviously vast and inferentially extensible  
electromagnetic-frequency spectrum

and the break-out of man's  
pattern-apprehending processes  
from within his directly tuneable  
sensorial spectrum limits  
and his break-through to apprehension of patterns occurring within frequencies  
infra and ultra

to his naked, sensorially tuneable, perceptivity limits first happened when man  
acquired micro- and macroscopic lenses  
and saw organized patterns clearly existing  
too small or too large for previous apprehension by his unaided optical faculty  
and after this optical extension, man became progressively excited  
by his aurally dominant  
sensorial experimentations and discoveries  
in octave step-ups and step-downs  
of tonal-frequency-patterning *transformations*  
lying within a variety of schematically tuneable harmonic scale frequency patterns  
each with minor and major mode frequency patternings whose *key* and *mode*  
frequency-patterning relationships were *vaXxa.-transposable*

by man's consciously disciplined modular co-ordination both of which *transforma-*  
*tions* and *transpositions* he found to be transcendental to and secondly derivative of his  
already long-developed co-ordinate abilities  
in frequency modulation of cadences  
all of which disciplined co-ordinate articulateness  
in respect to complex harmonic relationships  
was implicit in frequency phenomena and  
was discovered but not invented by man  
while he explored  
entirely within the sensorial frequency spectrum limits of his innate tuneability  
ranges

and the beckoning zones  
of tonal-twilight and pattern-fade-outs  
occurring at the indefinable limits  
of the various sensorial-to-nonsensorial  
terminal frequency range experiences

unique to individual men  
were combined and compared  
and eventually furthered man's curiosity  
and thereby, his developed success  
in the intuitively formulated experimentations  
through which he progressively discovered  
for instance, with tuning forks  
that the step-up and step-down frequency *transformations*  
and schematic *transpositions*  
were equally permissible between  
the sensorial and nonsensorial frequency ranges,  
or even directly between  
the nonsensorial spectrum's octaves and keys,  
as within the exclusively sensorial tuneability limits, and man's experience-excited  
explorations, ever opening with intuitive formulations  
in respect to the gathering glimpses  
of new pattern-integrities,  
led to Hertz' discovery of the omnidirectional, omnipermeative, electromagnetic  
wave phenomena and confirmation of Maxwell's experimentally- informed mathe-  
matical generalization  
of the operational laws governing  
these infra and ultra as well as sensorial  
integrities of nature's wave-frequency patterning  
and thus did man discover  
that physical principles are  
utterly abstract behavior relationships  
existing only as reciprocal-event patternings which persist independently of any  
instruments which man may or may not employ to detect, chart, measure, and harness  
their unique characteristics  
furthermore, man discovered that the integrity of the utterly abstract "physical"  
principles existed independently  
of either the sensorial range or of the nonsensorial range frequency events

whose familiar patternings are interrupted by the super-imposed unique patterning of the thus discovered reciprocally permitted and purely abstract yet communicably identifiable “principles” of energetically regenerative reformulations and transformations and the identity of the purely abstract and superimposed unique patterning of principles interweaving or overlaying other principles may be consciously communicated to self or others by means other than mathematical formulae for instance, by the visual cognition and “operational” description of the patterning of circularly regenerative waves ever propagated by the dropping of a stone into water which circularly propagated *waves* though circumferentially expanding outwardly around earth’s water surface and away from the stone-into-water contact point do not involve circumferential expansion nor radial motion of the individual water molecules for the molecules are only locally displaced moving only *inwardly* and *outwardly* in respect to earth’s center thus, to progressively accommodate the “apparent” circumferential growth “motion” of waves which being only apparent are purely abstract synergetic motion-patternings for they are not the *individual* motion patterns of the separate water molecules taken by themselves but are motions of the *co-operative pattern of sequence effects* of the aggregate of separate, local, nonsimultaneous, in-and-out, molecule displacement events and the complex information regarding the integrated sequence of co-operative local events

is relayingly communicated to the observer  
by an entirely separate, aggregate set of event- patternings  
other than those upon which he is prone  
to concentrate his attention  
and upon which he bases his spontaneous explanation of the apprehended experi-  
ence  
for the synergetic pattern information  
regarding the circularly-propagated principle  
of entirely abstract waves  
thereby, apparently generated in water  
is only relayed to the observer  
by the patterned interruptions  
of the observer's optically tuneable spectrum  
of discernible frequencies  
for instance interruptions of  
the optically tuneable, integratively scanned, blues of the skies  
and browns of the ship's mast or wharf pilings  
whose reflected frequency patterning "serenity"  
is interruptingly distorted  
to report other frequency scanning patterns  
for instance, of the brown groups of frequencies  
of the visible, sun-propagated, radiation spectrum ranges either inhibited or  
bounced off the mast or pilings and ricocheted again off the water's surface  
into man's eye lens  
and snakingly scanned amongst  
the water-reflecting blue frequencies  
refractively sieved by the atmosphere  
and known as the "sky"  
all of which complex of interrupted  
frequency-patterning sequences  
synergetically chart and report  
the progressive phases  
of the precession ally regenerative  
abstract geometry of wave-circles

expanding circumferentially,  
in apparently visible principle only  
amongst the only in-and-out-bobbing water molecules  
and the total complex of wave-relayed information  
is never “seen” directly by man and  
would remain optically unapprehended  
and utterly uncomprehended  
by the potential observer  
were it not for his light-wave-frequency receptivity  
which fact is proven by “night”  
whose sound-frequency patternings as a “word” means that the optically tuneable  
spectrum ranges of electro-magnetic wave phenomena  
have been totally interrupted  
until further notice  
during which hiatus  
no water waves can be “seen”  
though their splashings can be heard at “night” equally as well as in day  
and the complex of information-relaying  
by means of a series of patterned interruptions  
which step-up and step-down  
the relative velocity of cyclic wave travel  
of the interference propagated  
and angularly modulated  
new wave series patterning  
is known in the aggregate as a “carrier wave” relay  
and this complex of pattern transforming  
is superficially and erroneously apprehended by man as consisting of “normally”  
and “naturally” continuous behavior of various “solid things”  
some solidly Equid things, some solidly gaseous things, some solidly wooden, metal-  
lic or crystal things all of which “solid” facts he finds to be affected  
and interrelated by a great deal  
of what he concedes to be  
inherently-nonsensorial “stuff”  
ergo, to his “solid thinking” requirement

inherently “incomprehensible scientific phenomena” which are in some ways both traceable and manageable through “incomprehensible mathematics”  
and so vividly does man imagine  
that “solid,” “substantial” finiteness  
to be implicit in his tangible experiences  
that he very readily participates  
in the “reality” of a non-moving “moving picture” though this apparent motion is itself  
only the ever-recurrent principle  
of a non-man-apprehended “carrier frequency”  
in this case of static frames  
of light sieving patterns  
separately viewed but at a periodic continuity frequency swifter than the cyclic frequency  
of visual module tuneability  
which sieve-carrier frequency-sequence  
in turn intercepts  
another non-man-apprehended carrier pattern  
beamed as a radiation complex  
in the man-visible  
(but non-message-carrying) spectrum ranges  
which two separate carriers  
of joinably meaningful frequency patterns  
men combine periodically to produce  
new synergetic interference patterns  
thus to report to man, upon a truly blank wall yet in familiar moving “picture” recalls information regarding man’s illusion vulnerability without, however, stimulating man’s frequently processed realization  
of the significance of that report  
and the compounding complex of relayed illusion and consequent misapprehending is chiefly caused by the relative incompatibility  
between the ultra-high frequencies

of the optically tuneable light-wave apprehensions and the approximately static modular encounters of the tactilely manipulated apprehensions for the optical frequencies are vastly accelerated in respect to the frequency of encounter of individual-memory-differentiating experiences as apprehended only by man's primitive and dominant tactile faculties and the relative incompatibility of the tactile and optical frequency modulars caused man to choose one or the other as his basically dependable tool of apprehension and as a result of his age-long choice of the tactile faculty as being the most reliable for his practical needs he employs the high-frequency and high-speed optical faculty only as a tool of verification of his tactilely received and referenced brain-cataloging of primary information only in respect to which his subconscious reflexing orients its "spontaneous" judgments and actions wherefore, man "sees" only the arrangement of external conditions as they have been discovered and verified by his touch faculties thus, for instance, man "sees" and pictures the hand touchable limits of other men as defined only by their tactile profiles rather than by their respective aural or olfactoral profiles, or by the profiles-of-influence of their intellectual communications which latter are their only real profiles men are known as being six feet tall because that is their tactile limit; they are not known by how far we can hear them, e.g., as a one-half mile man and only to dogs are men known by their gigantic olfactoral dimensions and though Democritus' intellectual profile reaches through 2,000 years of time to permeate the intellect of any who uses the word "atom" few of the atomic age people are as yet spontaneously dominated only by the intellectually apprehended

dimensional ramifications of experience  
and in respect to the tactile domination of man's senses and the few-feet-per-minute  
velocities of *tactile*  
apprehension  
the 186,000 miles-per-second velocity  
of the *optical* spectrum-color-phenomena-apprehending  
is an *incredible* velocity  
and therefore, it is spontaneously and erroneously interpreted  
by the tactilely enslaved individual  
only as an "instantaneous" phenomena  
wherefore, the erroneous concept of "instantaneity" causes man to discount the  
billionths of seconds of time required for light frequencies to bounce from external  
objects  
thence to travel to his optical-reception-relay-system  
and through patterns of interrupted carrier frequencies of the nervous system  
to be scanningly reassembled  
and erroneously recorded to himself  
as apprehended not within his internal brain "TV" which is the approximately  
"accurate"  
operational statement  
but only as if apprehended *at* the *external* points of the reflected visible spectrum  
radiation  
all of which is as erroneous as would be the hypothetically conceivable progression  
of cognition of possible future generations of humans who have become so accustomed  
to "lazing" before their TV sets  
as to begin to "see" the TV-reported events as spontaneously occurring only at the  
studios or other points of TV camera pick-up with all the subsequently intervening  
relay of events and apparatus  
submerged in the limbo of subconscious co-ordinations along with the general  
organic processes  
of those solid-future Teevians  
however, despite the incomprehension of precessionally-operative frequency relays  
by present or future Teevians, the *effective abstract reality*  
of exquisite principles—

characterizing all these accommodatingly interactive wave-frequency principles—  
is such, for instance, that despite the local and uniquely directional limits  
of the stone-plunged bobbing of the water molecules— in motions which are exclu-  
sively in directions  
inward and outward from the center of the earth— there results the progressively  
precessed  
synergetic wave patterns  
appearing as wave “hills” of water  
that move excentrally and in principle only around the earth and at right angles to  
the exclusively in-and-out bobbing directions of the individual water molecules  
and the *reality* of those synergetic  
and truly abstract water “hills”  
provides circumferentially moving water slopes  
in respect to earth  
and down these water “hills” outwardly moving slopes “surf-boarders” may coast,  
yielding to gravity slant-wise of the waves’ abstractly “rolling” fronts at such an angle  
that the rate of coasting  
inwardly towards earth’s center by the “surf-boarders” is synchronizingly designed  
and co-ordinatingly  
governed  
by the “surf-boarders” angular leaning  
to match the rates of only “outward” local motions of each of the individual water  
molecules  
in respect to earth.  
and that neat matching of the rates  
of inward and outward motions  
by angularly co-ordinated discipline of the surf-boarder translates those co-  
operative radial motions  
in respect to earth’s geometry  
into circumferential arc in respect to earth’s geometry and this action which results  
in pattern transformation at 90° to the lines of co-ordinated in-put action  
is known as precession  
and the processional principle causes the surf-boarders continual re-elevation  
outwardly from earth even as he spends his gravitational advantage

coasting constantly in directions circumferential to earth, despite, that the water molecules do not move circumferentially in respect to earth's geometry  
except when low atmospheric pressure centers vacuum draw—not blow—the wave tops  
into cresting curls which move  
side-wise along the wave-tops  
at  $g^0$  to the drafting atmosphere's  
line of tensional force  
thus, in synergetic precessional sequence of progressive angular displacement events to carry the cresting-formed foam bubbles in minuscule surf-boarding tracteries to carpet the oceans with “spindrift”  
and porpoises are the royal protagonists  
of the synergetic precessional surf-boarding realms  
for porpoises employ and enjoy  
these purely abstract and integratable principles as they languidly, almost effortlessly coast  
in love making couples  
around the cresting wave slopes encompassing earth  
and thus do the synergetic forces— regenerated in pure principle— continually inter-transform  
all the co-operative synergetic patternings of universe in an increasing plurality of directions, velocities, and newly organizing self-interference patternings  
some of which are persistently disassociative and some of which are persistently associative and all of which are partially both,  
though always predominantly one or the other  
and the predominantly associative resultants  
of self-interference patternings  
which precessionally regenerate as almost exclusively inwardly shunted chordal patternings  
of systems of periodic self-interference  
are known to man's “common sensing”  
in superficial, solid-thing apprehending terms as the “basic building blocks of universe”— the “chemical elements”—

which, latter, however, the recent decades of experiment have taught him, are not the “basic blocks” for the chemical elements in turn also consist of a variety of what common sense now speaks of as fundamental nuclear <sup>11</sup> *particles*” of the chemical elements rather than speaking of accurately as consisting in purely regenerative abstract principles, which in fact they are, and the specialist professor of mathematics, who is otherwise as confounded of mind by the tactilely referenced common (non)sense as is any other individual who does not profess special ability in mathematics, finds these primary “elemental” and nuclear particle behaviors to be most reliably treatable through the integrated operations of purely mathematical process without, however, “sensing” why and therefore asserts that the mathematics had no relationship whatsoever to the solid realities which they ignorantly acknowledge as characterizing their mathematically uncomprehended everyday “common-sense” experiences and the inwardly-shunting vectorial-chordings of unique frequencies and angles of the periodically self-interfered patternings, of the thus inherently associable events patterning identified as the “chemical elements,” are similar (but only very *complexedly* similar) in their synergetically resultant pattern behaviors, which operate at infra and ultra sensorially detectable frequencies, to the *sensorially detectable* patterning synergies known by man as “knots” “knots” as made by men in ropes

through self-disciplined reproduction of principles  
of regeneratively associable events  
known by man's sound-frequency patternings  
as "tying-in" of the "knots"  
and the simple principle of a slippable knot  
may be tied into an end  
of a manila fibre rope  
into whose other end has been spliced a cotton rope into whose other end in turn  
has been spliced a nylon rope  
and the slippable knot may be slip-forwarded from the manila rope to the cotton  
rope and thence to the nylon rope  
without in any way altering the knot's synergetic integrity of total pattern behavior  
thus informing man that the knot is neither manila, cotton, nor nylon  
but only an utterly abstract "physical" principle  
in this case  
a precessionally regenerative physical principle of *self-interferences* resulting as  
inwardly shunting forces  
interacting as self-tied-up holding patterns ergo, as *inherently associative* patterning  
forces  
and all the first ninety-two chemical "elements" are the finitely comprehensive set  
of purely abstract "physical" principles governing all the fundamental cases  
of dynamically symmetric vectorial geometries and their systematically self-  
knotting  
precessionally regenerative in-shunting events  
and thus man is taught in turn by experience that "physical" means pure abstract  
principle and that the information  
describing his experience  
was relayed to his awareness only in principle  
for the knot was made "visible"  
and superficially discernible  
only through the optically tuneable variety  
of "yellow" frequency patternings followed by "whites" which, though only tuneably  
received,  
are superficially misidentified by man

as the “thing” complex: “rope,” comprised of  
the sub-“things”: “manila” or “cotton”  
and all the chemical elements  
are such patterns of regenerative principles  
and all chemical compounds  
are associable sets of regenerative principles  
transcendental—in relative magnitude of event frequencies  
and synergetic constellations—  
to the magnitudes of nuclear events  
and all the man-identifiable life experiences  
are—in their unique local patternings  
as individual assemblages—  
reviewably sortable and identifiable  
as a progressively transcendental hierarchy  
of synergetic patternings  
at various multi-complex degrees of  
incorporated sub-associabilities  
and man is a super galaxy of galaxies of slipknots sliding sum-totally along in a  
complex of reciprocal slip-knot principles  
upon a complex of associable, limitably tuneable and sensorially apprehendable  
in-knottings of slipable principles  
and man’s “individual” complex-pattern integrities are in principle immortal  
for man is naught but a complex of associable patterns and as indestructible as the  
most abstract  
of mathematical principles  
in respect to which mathematical principles man has been tuneably implemented  
to cogitate and apprehend in  
synergetically structuring principles of  
infra-sensorial, sensorial, and ultra-sensorial frequency spectrum magnitudes  
ergo—man is not a solid thing  
nor is he the hundred or so “pounds” of measurable energy, tied-up in knots, at any  
one moment  
nor is he the cumulative total of  
approximately one hundred tons

of foods, liquids, and gases  
whose complexes of patterns-within-patterns he “individually” associates metabolically in the progressively overlapping synergetic process  
of corporeal and extra-corporeal events  
which he identifies as the “life time”  
patterning of men  
nor is man the hair or the skin  
which he progressively propagates as directional  
or omnidirectional precessional waves  
and progressively cuts off or rubs off  
and into which unique wave patterns of hair and skin the complex wave knot complexes  
called vegetables, liquids, and gases are  
disassociably and associably transformed  
and by virtue of those tuneably apprehendable frequencies of wave propagation we “sensorially” apprehend as “pink” and “blonde”  
the otherwise utterly abstract  
pattern-integrity *man*,  
even as we apprehended  
the relatively simple pattern integrity “slipknot”  
by the yellow frequency nuances  
scanned into our brain-set as “manila rope”  
of which the knot was but a transformative principle  
nor is man any one of a few  
of his complex pattern “parts”  
all of which he is progressively discovering  
may be substituted for by organic or inorganic complexedly patterned “interchangeable parts”  
any of which he may also exchange with other men man is a “life long” visible patterning integrity which both corporeally and extra-corporeally redistributes and synergetically transforms, in precessional patterns permitted in principle which he processes most often with *subconsciously* co-ordinated reflex routines, but which he now  
at this unique threshold moment in history *consciously* participates in

to meagerly successful degree

whose directional resultants often are precessionally “impulsive” in principle as are the locally dancing water molecules impulsively resultant in the abstract reality for instance of the swift porpoise gliding and some of which resultants in principle are known as the “realities” of energy which are identified as a variety of unique “energy” effects

some of which abstract principle “energy” behavior man precessionally converts into “work” which he applies to the progressive

conscious and subconscious participations of men in accelerating the local even patternings of apparently ever totally self-transforming patterns of evolution

thus, man is not the vegetables he eats nor the water he drinks,

nor the gases he breathes man is pure abstract pattern integrity- made visible to other men

by man-tuneable frequency relays of complexedly interlocking but reciprocally accommodating patterns— representing every patterning principle of universe cohering as the comprehensive integrity of pattern associabilities at mid-spectrum ranges whose comprehensively and synergetically surprising results are known to men

as uniquely “individual” man

and man is the most complex of individually differentiable regenerative patternings— as a synergetic set of principles

of periodic and accumulative behaviors— as yet tuneably apprehended by man in all of his universe,

with Universe taken to mean—

*the aggregate of all men's, all-history apprehended, and communicated experience*

and individual man is

an alternate-integral-function of the total regenerative

yet totally evolving

reciprocal integrities of universe

ergo, individual man

may at his own will and discretion

be at any one moment either a “standby” or an “active”

function of universe

and man as a complex inventory of associable principles has but one matching counterpart (other than man) in all the comprehensive synergetic complex of universe which matching counterpart *is universe* itself

for the cumulative totals

of the progressive chemico-physical

inventorying of universe

show that the relative percentage abundance of each of all the co-operative patterns including those known microcosmically

as the chemical elements, molecules, crystals, cells, *et al* as well as those known macrocosmically

as planets, solar systems, galaxies, and super-galaxies more nearly matches the *relative abundance inventory* of all known principles of patterns comprising man than does any other individual system's relative abundance complex in universe

and man as pure complex

of the regenerative patterns' integrities

appears to be not only immortal in principle but also to be a *miniature magnitude universe* as possibly the compactness-limit-phase

of the most comprehensibly associable

accommodating compactness of universe ergo, each and every individual man

appears possibly to be

one of the *individual sequence integrities* of

complex patterning consequences of all the alternatively permitted

individual freedoms of equally elective patternings of total universe

and inferentially, man is as indestructible

and as irrevocable

from the total patterning of the universe

as are the complex

of abstractly co-operative "physical" principles

of the patterning of total universe itself

and no man has ever seen outside himself

and all the universe of total man experience becomes progressively comprehended and exploratorially integrated only in his questioning mind as he becomes progressively excited

by experiences of integrating principles  
and only within his mind-self  
does man meet and deal  
with all the challenges of integrity itself

and in the swiftly organized experimental amplification of his scientific breakthrough

from the sensorial frequency limits of communicable understanding man has empirically identified and scientifically charted frequency universe patternings

the preponderance of which

now swiftly increases

in the ranges infra and ultra to

man's direct sensorial tuning

back into which sensorial ranges, however he relayingly steps-up and steps-down, transposes and scanningly reorganizes as sensorially readable

those increasingly vast

infra and ultra sensorial frequency patternings

whose magnificently visible significance as patterns frequently inform man

regarding the operative significance

of the fragmentally apprehended patterning events

as they relate to the "principles" discovered in events experienced only

within his minusculely limited sensorial spectrum perceptivity

and the nonsensorial frequency-patternings

thus discovered

are, moreover, frequently complicated

by interference occasioned  
and precessionally operative  
angle and frequency acceleration modifications  
of the periodically regenerative complex phenomena;  
ergo: man's self-knowledge  
may only be acquired and expanded  
through progressive and comprehensive experience-won data  
which have been operationally martialled, examined, reviewed,  
and thereafter distilled into generalized laws, governing regenerative pattern relationships  
which we speak of as "principles"  
even though the principles  
accrue only to a plurality  
of fragmentarily overlapping  
experience episodes  
in which the individual experiences are inherently local and spontaneously biased  
because identified only with  
the circumscribed fact-content  
*in-side*—ergo: *one-side*—the visible horizon  
however, the local experiences are also always within the greater universe's frequency patternings  
ever progressively discoverable  
as rounding out systems of patterns  
*out-side* the horizon, outside-inning universe, infra and ultra to our sensorially conscious  
tune-inability ranges  
of those nonsensorial wave propagations  
and the instrumentally-relayed comprehensive data  
is found to be characterized by an apparently constant regenerative reciprocity and synergetic integrity,  
an omnioperative patterning

permissible in every respect of our reviewable experiences, only as constituting the product of anticipatorially designing intellectual wisdom, comprehensively, permeatingly, exquisitely finite, relative to man-mind limits and the comprehensive and permeative synergetic intellectual integrity is from time to time tune-inable by man in newly greater compass or finer degree only in unexpected moments

when man is utterly preoccupied  
in self-dedication to his experience inspired faith  
in the omnixistent, ever-presence

of the greater and greater integrity ever implicit in the multiplying clues both of happenstance

and of disciplined experimental fill-ins  
all of which gradually integrate objectively  
to regenerate man's faith  
in the further extensibility  
of the continuum of infra and ultra discoverable  
realms of synergetic orderliness

always anticipatingly synchronizable with and fulfilling the requirements of the already discovered and complexedly evolving a priori spectrum frequency ``realities"

of the limited sensorially-tuneable patternings and though ever and only "approximate"

in apprehended and comprehended behavior data the faithfully attained new patterning ``reaches" are effectively convertible through the generalized laws, to provide further regenerative

preoccupations, experimental excitations,

and relative gains of consciously effective participation in the greater and more exquisite realms of the comprehensively patterning integrity

and as each and every unpredictable  
and unprecedented subjective experience  
of the progressive entry into  
the newly-dawning frequency tuneabilities  
of man's ever greater infra and ultra ranges

of conscious, objective participation in the total patterning of reciprocal and  
complimentary integrities occurs, the experiencing individual gains

tacit re-validation of his faith

that the comprehensively comprehending, anticipatorially providing,

omniintegrity patterning

is obviously anticipating in so competent degree as in no way to require the  
proselytizing service of limitedly conceptioning individuals

in speciously preoccupying persuasion of others  
in respect to the comprehensively anticipating integrity  
i

which proselytizing when practiced paradoxically results in abandonment  
of the proselytizing individual's direct pursuit of integrity and substitution  
therefor

of progressively ritualized declarations  
of thought numbing formulae

originally adopted to package-up the proselytizing and thus to convert it  
into a predictably manageable

sales campaign routine  
of minimum effort  
and corresponding minimum challenges

to the participating individual's intellectual faculty and requisite integrity of its employment

and any surmise that this present recording of thoughts

in itself represents

a proselytizable ``package''

is refuted by the discoveries

of principles inherent in

the thus far totally experienced evolutionary patterning of universe which include the eventually utter transformation by evolution

of any and all the familiar

or nonfamiliar aspects

of the total evolutionary processes together with man's apprehension and tentative comprehension

of any or all of the significance

of its phases of process ergo this and any other tentative inventory and approximate appraisal are inherently obsolete in due course

which due course constantly accelerates making the process of inventorying progressively difficult

and also progressively innocuous

as a tool of exploitation

of man's innate assurance and faith

in the comprehensively operative anticipatory integrity of experience and the finite wisdom of its total

conceptual scheme

wherefore individuals receiving direct validation of faith tend humbly to grateful silence;

and the enormous growth of faith

is historically documented

primarily by the compounding accomplishments of silent individual dedications

either to the effectively anticipated elimination  
of man's recurrent sufferings,

or to design solutions by physical instruments competently anticipating  
man's survival, process and enfreshment needs

and all the concomitant

freely investible life quanta gains thereby induced  
are realizable by all men

as consisting of newly augmented degrees

of amplified freedoms of thought realizations

and as conscious enjoyments of the enlarging potentials and permitted ramifications

of man's thoughtfully initiatable, furthering commitments within the omnideveloping  
regenerative integrity— universe.

## 7 INTRODUCTION TO OMNIDIRECTIONAL HALO

The useful but infrequently used word epistemology means science of the thought processes. A total epistemological reorientation and, to the best of my knowledge, a unique philosophical reconceptioning, regarding the regenerative constellar logic of the structuring of the universe (both as a new cosmology and as a new cosmogony), seem to have followed gradually upon my hypothetically-initiated querying regarding the possibility of formulating more comprehensive and symmetrical statements regarding dawningly apparent natural laws. I intuited in irrepressible degree that such a potential formulation might be accruing and harvestable in all of our acceleratingly-reconsidered and progressively-integrated world-around, all-history experience as now only diffusely inventoried at the middle decades of the twentieth century.

Out of multi-overlaid experience patternings there sometimes emerges an awareness of what we may call a coincidence pattern---a localized thickening of points. These emergent patterns of frequency congruences and concentrations display a unique configuration-integrity which has up to now been so dilute in any one experience as to be only invisibly common to many differentiated or special experiences, e.g., a pack of one hundred 4-inch by 5-inch file cards each riddled with hundreds of different sized small holes. Each card appears to be chaotically patterned with holes. However, when the cards are stacked with edges aligned three holes in each card are vertically aligned 5 all others are obscured by blank spaces on one card or another. A triangular pattern relationship of the light coming through three tubes in the stack of cards is now lucidly conceptual. To such persistently emergent, uniquely mu-

tual, coincidence-patterning relationships as the same triangle array of holes in each and every card we may apply the term "pattern generalization" as used in a mathematical sense, in contradistinction to the word "generalization" as used in the literary sense. The latter often means a too-ambitious subject range which consequently permits only superficial considerations of any specific case data.

When the uniquely emergent generalized patternings become describable by us in mentally regenerative conceptual terms, as completely divorced from any one of the specific sensorial conditions of any of the special experiences out of which they emerged, yet apparently, as seen in retrospect to have been persistent in every special case, then we may tentatively assume such unique mutual pattern content to be a generalized conceptual principle, as for instance the conception of tension as opposed to compression independent of textures, smells, colors, sound, or size of any one tension-dominated experience.

It is in just such an epistemological process that we discover that size is not a generalized conceptual principle. Whether referring to the size of an object in respect to other objects or the sizes of any one object's subdivision, size emerges exclusively as a frequency concept uniquely differentiating-out each "specialized case." Generalized shape conceptioning is independent of size. A triangle is a triangle independent of size.

When a *second order* of pattern distillation as a *generalized conceptual principle* emerges, but this time exclusively from the emergently-induced *co-ordinate consideration* of a *plurality of generalized conceptual principles* themselves, each independent of any special case sensoriality, and in such a regeneratively-recognizable manner of patterning as to provide a means of mathematical accounting and therefrom a tentative forecasting capability, not only of generalized developments but also of special forward experiences in the terms of specific sensorial conditions, and those calculated forecast conditions materialize, and the forecasting capability is subsequently verified by recurrent experimental demonstrations under controlled generalized conditions,

then we may tentatively assume that we have discovered at least a clause of “natural law.” For example, we tentatively assume that *radiation* is *generalized compression* and that gravity is *generalized tension* and that tension and compression are inseparable, precessionally-complimentary functions of universal structure.

Newly recognized *generalizable principles* seem emergent in unprecedentedly accelerating accumulation as reported from the instrumentally extended range, velocity, and exactitude of special case experiences in the most recent moments of history’s scientific venturing. The manywhere local probings have been meticulously organized and reported regarding measurable relationships and rates of changing relationships throughout the vast macrocosmic and exquisite microcosmic angle and frequency universe events both infra and ultra to man’s direct tuneability yet instrumentally tuneable and transformably readable within *regeneratively informative tolerance* despite inherently limited observational exactitude.

Out of cumulative patterning overlays there emerges what seem to be generalized principles apparently governing all associative and disassociative transformings and their resultant re-generatively persistent hierarchy of constellar configurations. These hierarchies of constellar configurations disclose in turn a hierarchy of dynamically symmetrical constellation phases and their respective maxima-minima, asymmetric and complimentary, accommodative transformabilities which are apparently permitted within an omnirational, omnidirectional, omniequieconomic, energy-accounting, co-ordinate system of universe. This omnirational, arithmetical-geometrical accountability is of such sublime simplicity in contrast to the awkward “mathematics” of all known yesterdays as to have occasioned an almost universal incredibility and nonconsideration of its potential significance though it has been in disclosure for one quarter of a century.

This co-ordinate system may be described as an *isotropic vector* system; that is, a generalized Avagadro system in which the energy conditions and relative quanta ratios are everywhere the same yet multi-differentiable in local patterning aspects, which aspects are interchangeably emergent without altering the comprehensive energy equilibrium or its unitary totality as implicit in the *Law of Conservation of Energy* by which it is assumed that energy may be neither created nor lost.

The discovered co-ordinate system is apparently governed by generalized laws, some of whose mathematical equatability I have been allowed not only to discern (as far as I know for the first time by anyone) but also to codify and translate into unique structural realizations. This codification governs the total co-ordinate abundance ratios of the unique pattern aspect relationships of uniquely irreducible co-operative function aspects of locally nonsimultaneous events and their equilibrious pattern totality.

Discovery of the primary and corollary laws of constantly co-ordinate relative abundance of pattern function-aspects of totality as an omnirational regularity governing all local paterning of universe as a minimum-maximum family of complexedly complementary yet uniquely identifiable conceptual function-patterning relationships followed upon intuitive formulations of the seemingly most comprehensive self-querying question I was capable of propounding to myself regarding possible detectable pattern significances accruing to progressive life experience integrations and overlays.

That most comprehensive question was, “What do you mean by the word ‘universe’?” “If you cannot answer, you had best abandon use of the word ‘universe’ for it will have no meaning.” My intuitively-adopted rules for self-questioning and answering were that the answer must be made exclusively from man’s experience patterns. I learned many years later that the Nobel physicist Percival Bridgeman had identified this same rule adopted by Einstein as “operational procedure,” subsequently a much-abused phrase. My answer (or discard of the word “universe” as a communication tool) was operationally inherent: “Universe is the aggregate of all consciously apprehended and communicated (to self or relayed to others) experience of man.” If my finite answer holds against all specific experience challenges as being comprehensively anticipatory and adequate, the *universe is finite*, and all its components *definable*. Each life as we know it is definitive, i.e., consists of a plurality of terminable, ergo definite, experiences, beginning with each awakening and terminating with each surrender to sleep (no man can prove upon awakening that he is the man who he thinks went earlier to sleep, or that aught else which he thinks he recollects is other than a convincing dream). The intermit

tent beginnings and endings of conscious experience constitute an aggregate of definitive experiences—and the aggregate is therefore finite.

In the recent moments of historical experience, men as scientists adopted the law of conservation of energy: as predicated upon the sum total experience of physicists which recalled no contradiction to this hypothesis. They thus accomplished a finite packaging of all physical behaviors of physical universe as predicated also upon the hypothesis that all physical phenomena are entirely energetic.

By embracing all the energetic phenomena of total experience, the scientists secured a synergetic advantage for all energy accounting and prospecting. "Synergy" means "behavior of whole systems unpredicted by the behavior of any of its components or by any sub-array of its components." Corollary to synergy is *the law of the whole system*. Systems are definite as they return upon themselves in a plurality of directions, ergo have concave inwardness and convex outwardness, ergo inherently subdivide universe into mutually exclusive definitive macro and micro entities. *The law of whole system* states that, given the sum of whole system pattern conception its component behaviors may be differentially discovered and predictably described as required by the already evidenced behavior functions implicit in the a priori-definitive experience and conception of any given experience-verified system. Thus by the law of whole system as corollary of synergy, the component behaviors of systems may be predictably differentiated as primary and secondary componential sub-divisions of whole system and then progressively isolated and locally reconsidered for further dichotomy.

Adopting synergetic advantage, science hypothesized that

the physical portion of universe is energetic and finite. Under this hypothesis Einstein wrote his equation of physical universe as  $E=MC^2$ . This said that the total of local system energy is the product of all concentric local systems of energy's self-interfered, shunt-holding patterns (M for mass) as multiplied by the entirely noninterfered local omnidirectional velocity of surface growth of an omnidirectional, outward-bound spherical wave of radiant energy (in terms of second power of radial wave module frequency growth rate).

In Einstein's formula mass constitutes all the patterns of precessionally self-interfered and concentrically shunted, ergo locally articulated and locally and periodically regenerative holding patterns of energy. This is also to say that  $M$  equals all the locally complex, concentric, self-associative, unique holding patterns of all energy, and  $C^2$  equals all the eccentrically disassociative individual patternings of all energy ( $C$  being the radial or linear speed of radiant energy, which is approximately 186,000 mps).

But physical science lacked the experience which might have persuaded it to hypothesize what all universe is. Physical science therefore restricted its comprehensive accounting strategy to the special case of definitive isolations within the *physical* portion of universe. This left the remainder of all experiences, no matter how earnestly and meticulously reconsidered, outside the *definitive* portion of comprehended experiences of universe, i.e., the physicists said all that is not physically encompassed as  $E=MC^2$  is metaphysical.

However, by my definition of universe, all that was relegated to metaphysical nebulosity is now embraced by finite universe along with the physically energetic wherefore all the hitherto "inexact sciences" may become rigorously defined, enjoying equatable treatability at optimum degree of determinability.

I have found a general law of total synergetical structuring, which we may call "The Law of Structure." This law discloses that "universe" of total man experience may not be simultaneously recollected and reconsidered, but may be subdivided into a plurality of locally tuneable event foci or "points" of which a minimum of four positive and four negative points are required as a "considerable set"; that is, as a first finite subdivision of finite universe. (This fourness coincides with basic quanta strategy.) All experience is reduced to nonsimultaneously "considerable sets" and holds irrelevant to consideration all those experiences which are either too large and therefore too infrequent, or too miniscule and therefore too frequent, to be tuneably considerable as pertaining to the residual constellation of approximately congruent recollections of experiences. A "considerable set" inherently subdivides all the rest of irrelevant experiences of universe into macro-cosmic and micro-cosmic sets immediately outside or immediately within the considered set of experience foci.

There are two inherent twilight zones of "*tantalizingly- almost-relevant recollections*" spontaneously fed back in contiguous frequency bands—the macro-twilight and the microtwilight.

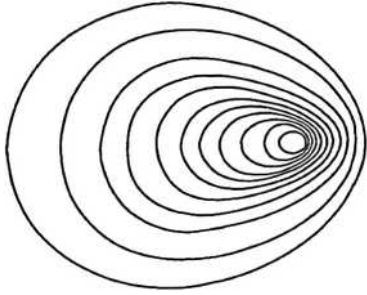
It is a corollary of this first subdivision of universe that a *considerable set* is a locally definitive system of universe returning upon its considerability in all circumferential directions and therefore has an inherent *withinness* and *withoutness*, which two latter differ essentially and inherently subdivide all universe into the two unique extremes of macro and micro frequencies.

The “Law of Structure” says that “local structure is a set of frequency associable (spontaneously tuneable) recollectable experience relationships, having a regenerative constellar patterning as the precessional resultants of concentrically shunted periodic self-interferences, or coincidences of its systematic plurality of definitive vectorial frequency, *wave length and angle* inter-relationships.”

The precessionally regenerative concentricity of structure is entropic, and evolves toward optimally economic local compressibility and symmetry. (See *Dymaxion World of Buckminster Fuller*, by Robert Marks, for Fuller’s Law of omnioptimally economic, omnitriangulated-point-system, symmetry relationships and relative abundance of frequency modulated multiplicative subdivision of unitary local systems; i.e., M (mass) means: All the universe’s self-interfering complexes having concentrically self-precessing, local-focal-holding patterns resulting in locally regenerative constellar associabilities as positive-outside-in structures.  $C^2$  (radiation) means: All the universe’s nonself-interfering complexes having eccentrically inter-precessing, omnidirectionally diffusing patterns resulting in comprehensively degenerative negative Emits of dissociabilities as negative (inside-out) de-structures.

In the chapters on Energetic-Synergetic Geometry I identify *second powering* with the point population of any one radiant (eccentric) or gravitational (concentric) wave systems circumferential arrays of any given radius stated in terms of frequency of modular subdivisions of the circumferential arrays radially-read systems’ concentricity layering; *third powering* with the total point population of all the successive wave layers of the system; *fourth powering* with the interpointal domain volumes  $\propto$  *fifth* and *sixth powering* as products of multiplication by frequency doublings and treblings, etc. The *Doppler effect* or wave reception frequency-modulation caused

by motions of *the observer* and *the observed* are concentric wave system fourth and fifth powering accelerations.



The Dopier effect is usually conceived of as an approximately “linear” experience. “You,” the observer, stand beside a railway track (which is a “linear” model); a swift train approaches with whistle valve held open (at constant frequency pitch as heard “on board” by the engineer “blowing” the whistle). The whistle sound comes to you at approximately 700 mph, but the train is speeding toward you at 100 mph. The train’s motion reduces the interval between the successive

*Fig. 1. Ornnidopler Effect*

wave emissions, which in effect decreases the wave length which gives it “higher” pitch as heard at your remote and “approached” hearing position. After the train goes by, the train runs away from each successive wave emission, thus increasing the interval between wave “crests” and therefore lengthening the waves, which apparently “lowers” the pitch as you hear it but not as others elsewhere may hear it. This is pure *observational* “relativity.” But the real picture of the Dopier effect is not linear; it is omnidirectional.

The Dopier effect may also be *explained* in *omnidirectional*, experience-patterning conceptionality which is more informative than the familiar linear conceptioning of the rail-

road train and “you, at the crossing.” “You” were flying in an air transport which exploded, and because of the sudden change in pressure differential between your in’ards and your out’ards at high altitude you personally have just been “exploded” into many separate parts receding from one another at high velocity. A series of secondary explosions follows from somewhere in the center of the galaxy of exploding debris, as one item after another of the late airplane’s explosive cargo is reached by progressive local conflagration-heat concentrations. The sound waves of the successive explosions speed after your receding parts amongst which are your two ear diaphragms as yet “stringily” interconnected with your exploding brain cells, which “hear” the explosion’s sound waves first at low pitch. But as your parts explode from one another at a decelerating rate because of air friction, etc., the waves of remote

explosion sounds “shorten” and pitches go “up.” Now consider many separate, non-simultaneous, secondary explosions of your various exploding parts all of varying intensities of energetic content and in varying degrees of remoteness and realize that the decelerations and accelerations of Dopier effects will render some of the explosive reverberations infra and some ultra to your tuning range limits of hearing, so that the sum total of *heard* events provides very different total conceptioning as heard from various points in the whole galaxy of exploding events whose separate components would tend to new grouping concentrations.

The Halo discovered in the next chapter is that of an omnidirectional, complex, high-frequency, Dopler-effected *hypothetical-zone experience* in an omnidirectional universal maelstrom of nonsimultaneous near and far explosions and their interaccelerating and refractive wave frequency patternings. Several of these fundamental concepts are also repeated several 128

times in Halo, being reintroduced in various complex associations each of which provides unique discoveries.

In order to generate a spontaneous comprehension of the significance of the thoughts expressed in “Halo,” which now follows, the latter essay will open with a swiftly martialled digest of the epistemological concepts of this introduction.



## 8 OMNIDIRECTIONAL HALO

Synergy means behavior of integral aggregate systems unpredicted by behaviors of any of their components or subassemblies of their components. Chrome-nickelsteel has a higher tensile, or integrally self-cohering, strength than the sum of the separate tensile strengths of its alloyed elements. Synergetic behaviors are commonplace throughout chemistry and biochemistry but so unfamiliar to man's visible spectrum range events that the word *syn-ergy*, though the equal in age of its companion word *en-ergy*, is popularly unfamiliar.

The lack of popular and academic familiarity with the word *synergy*, which in the English language alone connotes the behavior of whole systems unpredicted by behavior of their components, means that man in his everyday social world has not been in need of this word, which in turn tells us that he lacks this fundamental conception in his conscious thinking processes. He ascribes all behaviors unpredicted by his statistical probabilities to "luck" or miracle. This particular gap in man's everyday fundamental thinking and common sense accounts for many fallacies in his spontaneous reflexing and contemporary behavior. Ignorant of the regenerative signifi

cance of synergy, man is vulnerable to de-generative feed-back consequences in his comprehensive determinations.

*Universe is the comprehensive integral-aggregate system embracing all the separate integral-aggregate systems of all men's consciously apprehended and communicated experiences. The total of experiences is integrally synergetic. Universe is the comprehensive a priori synergetic integral. Universe continually operates in comprehensive, co-ordinate patternings which are transcendental to the sensorially miniscule apprehension and mental comprehension and prediction capabilities of mankind, consciously and inherently preoccupied as he is only with special local and nonsimultaneous pattern considerations.*

Encyclopedias and dictionaries inventory man's progressively invented words for communicable identification of all his evolving experience cognitions. *Dictionary* is a collective concept. *Universe* is the ultimate collective concept—i.e., the collection of all intelligible, inherently separate evolutionary- event aspects which latter apparently occur exclusively and only through differentiating considerations which progressively isolate the components of whole and inclusive sets, super-sets, and sub-sets of generalized conceptioning in retrospectively abstracted principles of relationships. "Dae generalized comprehensive principles of interrelationships progressively discovered as governing our subsidiary generalized principles are embraced by our finition of universe.

The word con-sider-ation comes from *sidus*, the Latin for star, the focal point of an as yet nondifferentiated concentration of events—ergo, *con-sider-able*, or *con-stellar* patterning, means an exploratory grouping of "stars" or complex idea entities that seem to man's limited tuneability to stand out together.

Neither the set of all-experiences nor the set of all-the- words which describe them nor the set of all the generalized conceptual principles harvested from the total of experiences are either instantly or simultaneously reviewable. "What was that man's name?" Our answering service may take five seconds, five minutes, five hours, five days, or five generations to reply. Our conscious orderly reconsideration of our variable lag experiences discloses *subconsciously* co-ordinated regularities of feed-back rates governing the recall phenomena.

*All experiences* are finitely furnished w'ith differentiated cognitions, recognitions and comprehensions. The finite furniture consists of widely-ranging degrees of comprehensive con- stellar complexities. A wide range of time investment magnitudes must be assigned to the respective considerations of the multitude of different constellar, experience-pattern comprehensions. We cannot read simultaneously all the words in the dictionary; yet the dictionary is a finite collection of finite word entities each in turn consisting of collections of finite letter symbol entities.

*Universe is finite because it is the sum total of finitely furnished experiences.* The comprehensive set of all-experiences synergetically constituting universe discloses an astronomically numbered variety of sub-set event-frequency rates and then- respective rates of conceptual tuneability comprehension. It takes entirely different lengths of time to remember or "look up" different names or past event facts. *Universe*, like the

dictionary, *though integral* is *ipso facto nonsimultaneously recollectable* and, therefore, as with the set of *all* the words of the dictionary, *is nonsimultaneously considerable* and therefore is also nonsimultaneously reviewable, ergo is synergetically incomprehensible, yet progressively revealing.

The age-long fallacious propensity which has frustrated adult man's adequate conception of universe is that of spontaneously assuming that universe must consist of a simultaneously unit conceptuality—ergo, of simultaneous geometry or shape, i.e., a *simultaneous structure*. What is the shape of the universe? What are its boundaries? These are unitary, simultaneous static questions. They have no logical answer for universe *though finite is a nonsimultaneous structure*. Children know this better than their parents through innate conception as yet unspoiled by erroneous logic. They remember the juggler putting a simultaneous array in the sky with nonsimultaneous tosses. The childhood representational pictures depict their dynamically arrayed concept of the "whole world" inventory, of mentally juggled arrays of nonsimultaneously occurring experiences agglomerated without any intended geometrical interrelationships. In all lands the children's spontaneous pictures contain "the" house, trees, birds, dogs, flowers, grass, clouds, stars, the sun and *the moon*. The parents say, "Darling, a nice picture, but we don't have both the moon and the sun at the same time." The parents are wrong—both the sun and moon coexist at all times whether temporarily co-visible or not. The parents' rationale has been damaged so that it can only consider and associate those items which are simultaneously grouped in unitarily static array. Yet in equal illogic the parents keep on attempting to see the universe of nonsimultaneity in unitary, static and simultaneous geometrical array as a "thing"—a very big "thing"—the biggest "thing."

It is in evidence that universe, as the co-ordinate integral of all-experience is finite yet nonsimultaneously recollectable—ergo, unitarily unpatternable—ergo, conceptually unthinkable—ergo, undefinable. This is to say *undefinable* does not mean *infinite* or *un-finite*. It means that—definability—*definite* is a sub-set of *finite*—ergo, pattern definition is a subdivision of *finite-yet-imitarily-indefinable universe*. *The definable conception is therefore the first thinkable sub-set functioning of universe.*

There are metaphysical yet cogent early words emergent from the limbo of prehistory's quasi-logical accounting continuities which show that intellect has long been aware of the o

Z/Efunction. For instance, DI-Vine, DI-, DE- (of Di-chotomy –cell division– regenerate through bi-multiplication). The concept of a DE-VINING DE-ITY, i.e. the defining deity, the great intellectual capability of differentiating discernment, probably originated in the same conceptual logic as did DIVIDE out of *DI-TLSION*–to see the whole as functionally differentiable yet *only locally* and *progressively conceptual*. In the differential calculus this becomes the delta—A 5 D — of fundamental differentiation.

Differentiable function  $x$  in respect toy. Functions do not occur exclusively of one another. Functions occur only as inherently co-operative and accommodatively varying sub-aspects of synergetically transforming wholes. MULTIPLICATION accomplished only by DIVISION. Universe expanding through progressively differentiating considerations.

Definable thought patterning deals only progressively (by re-scanning) with the local event foci of experienced pattern- ings of universe. Definable thought though constituting systematic consideration and orderly reconsideration, which returns omnidirectionally upon itself in local conceptual relationships in only a subdivision of *finite*, which is universe, which is *inherently inconceivable unitarily*.

*Inconceivability* does not mean *infinite* anymore than does

*invisible*. Finite is unique to universe because it means complete, but not terminal. The locally definable entity is not complete, for it does not exist by itself. All experiments show that local entities are inherently both entropic and antientropic,

- i. e., all local systems are always intimately linked with the rest of universe by measurable *import* and *export* pattern transactions. Definable entities are uniquely functioning components of universe. Universe is the minimum as well as the maximum closed system of omni-interacting, precessionally transforming, complementary transactions of synergetic regeneration. Local perpetual motion systems are impossible, since universe is the minimum regenerative set of perpetually intercomplimentary transformative functioning.

Systematic conceptioning and recollected conceptioning, both universal and local, which progressively traces, relates, and compares nonsimultaneously observable locally functioning entities is self-disciplined. The self-discovered capability to communicate to others by the recollectable and pictured wordtool developed a co-ordinate memory of all men.

Generalized systematic conceptuality's omni-directional relationships are only angularly configured and are independent of size or dimension. No man has ever "seen" outside himself. His brain is a multi-frequency (four sensory ranges) scanning (TV) integrator, continually operating in co-ordination with a multitude of memory (kinescope taped) TV scanners. The whole array of *new* and *memory* TVs is frequency monitored by an angular and frequency modulated *pattern commonality scoring and score-predicting* conceptual co-ordination capability. The TV co-ordinating conceptual capability includes a score-guessing and score-guess testing faculty, as well as a strategic-tests-contriving-pattern considerator, all of

which conceptual patterning proclivities are self-started and regenerated by synergetical *intellection*.

The conceptual process is never static. *Thinking* does not consist of the insertion of invented images into an otherwise empty vacuum-tube chamber called brain. *Thinking* is the self-disciplined process of preoccupied consideration of specialcase sets of feed-back answers selected out of the multitude of high frequency alternating trans-ceiver brain traffic. This traffic consists of omniexperience processed answers to present or past questions, formulated either by the conscious or subconscious co-ordinating initiative of the individual or possibly by the individual overlapping generation of group memory.

Because of the varying depths of storage of past experiences, some answers come back swiftly, some slowly. The recollectability rates are unpredictable. The returning-answers traffic is heterogeneous. Many answers come to questions we have forgotten that we have asked. Conceptually systematic tuning of questions and feed-back answers, comparatively considered in the brain, results in temporary, tuneably valved exclusion of all other incoming signals traffic. Discreet tuning admits consideration only of those recollections which are *clearly relevant* to the omnidirectional rounding out of systematic comprehension of the special case set of events intuitively selected for momentary focal consideration. Thinking consists then of a self-disciplined, deferment of conscious consideration of any incoming information traffic other than that which is lucidly relevant to the experience intuited quest for comprehension of the significance of the emergent pattern under immediate priority of consideration.

The thinking process results in varying degrees of lucidity of the arrayed residue of focal event patterns *uniquely conse-* 136

*quent* to the *disciplined deferment* of irrelevancies. Thinking is a putting-aside, rather than a putting-in discipline, e.g., putting aside the tall grasses in order to isolate the trail into informative viewability. Thinking is FM—*frequency modulation*—for it results in tuning-out of *irrelevancies* as a result of definitive resolution of the exclusively tuned-in or *accepted* feed-back messages' pattern differentiability. As the exploring navigator picks his channel between the look-out detected rocks, the intellect picks its way between irrelevancies of feedback messages. And as the navigator realizes secondarily that the channel winds between two sets of rocks, the rocks to starboard and the rocks to port, intellect also discovers secondarily that all the irrelevancies of feed-back information have inadvertently fallen into *two main* classes, as follows.

1. The class of all the finitely-furnished experience events which are *too large and too infrequent* to have *considerable frequency significance in-tuneability* in respect to the modular magnitude ranges under consideration.
2. The class of all the finitely-furnished experience events *too miniscule of wave module and of too high frequency* to in any way be significantly tuneable into the considered spectrum range.

Each class has its twilight zone of *almost* (or tantalizingly almost) *relevancy* which, if we were to accelerate our consideration rate, *might* attain *consider ability* within the tactical limits of assignable capital-life-time intuitively budgetable to such consideration. Between the twilight zones of almost-too-large and almost-too-small to be relevantly considerable lies a *zone of lucidly tuneable relevancy* of the experienced event recollections.

Because of the incessant *wheeling about* of humans first in the womb, then in the baby carriage, then on foot, in the auto and ship and plane roundabout a spinning earth in a spinning solar system within an involuting-evoluting, spirally spinning galaxy, totally inventoried experiences are inherently omnidirectional when considered as the sum of observational orientations. Universe (as all-experience) is inherently omnidirectional in its observational orientations—ergo, the temporary putting-aside of the two classes of irrelevancies requires an omnidirectional putting aside which differentiates as an *outwardly* dismissed macrocosmic disposition of the too-large and too-infrequent conceptual informations and an *inwardly* dismissed residue set of all the too-miniscule and too-frequent events—ergo,

the lucidly *tuned in, residually considerable* set of event-foci lies within a *spherical zone* between the thus separated twilight zones of almost-considerable miniscules and bigs, respectively. As a consequence, the residual set of tuned- in experience event-foci are caught in a spherical zone trap of feed-back recollected considerability appropriate to systematic reviewing and possible definition.

Out of nonsimultaneously conceptual, yet finite, universe has emerged a *definitively conceptual geometry*, not a geometry invented by the conceiver but an a priori geometry discovered by the re-considerer as a residual relevancy constellation.

We thus discover that systematic recollection and thought- out *definition* lies within a *geometrically conformed zone* which inherently subdivides the universe into distinctly separate microcosm and macrocosm, which two are, however, only meagerly isolated from one another by a local constellation of considerable relationships. No matter how meager the network of zonal relationships of the residually considered star set of holding-pattern relevancy, the latter shuntingly impedes in 138

some degree the velocity of omnidirectional universal information traffic, forced by geometrical surroundment to pass through the zonal constellation. If a squadron of boats enters a river's mouth and passes upstream and anchors, their presence

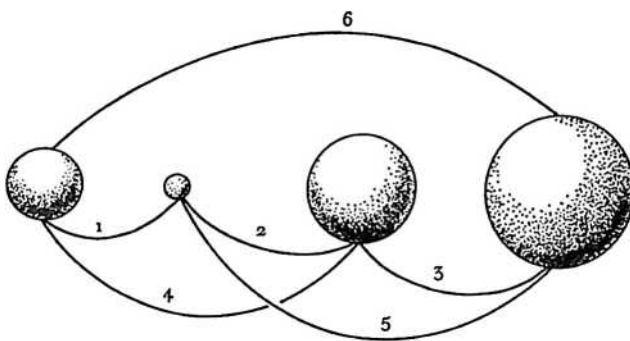
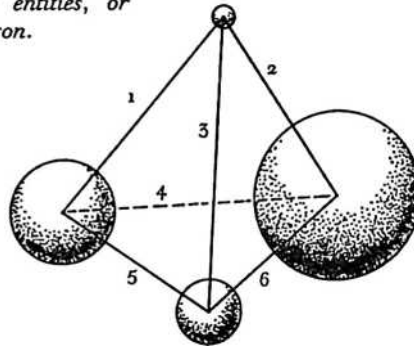


Fig. 2. Linear Tetrahedron. (A) A linear

*tetrahedron has six relationships. (B) Four unique frequencies (sizes) of entities, or particles, comprise the tetrahedron.*



and the friction of their hulls will mildly retard or choke the river's flow. Thus do the constellation of considered events mildly choke the otherwise unimpeded universal and geo- desically-inter-routed communication traffic which they have separated into the two (micro-macro) realms. As Heisenberg shows in his principle of ultimate indeterminism the physical act of measurement always alters the behavior of the measured phenomenon. In the same way we show here that the thinking process inherently alters the fundamental patterning of universal thought-about interrelationships.

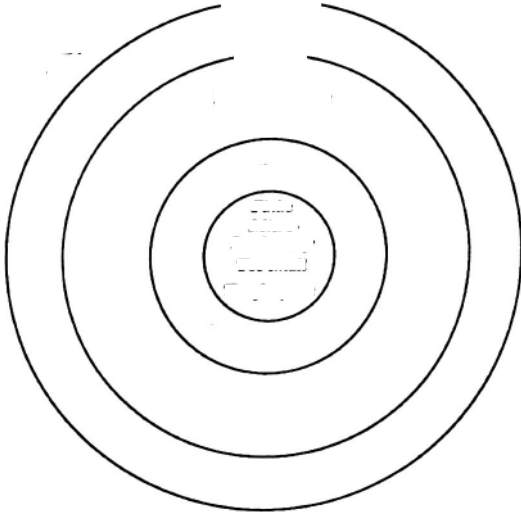
We thus discover that thought and its tuneably differentiating local definitions constitute the *first subdivisions of finite universe*. Ergo finite universe is something greater than any definable local system's zone of constellar, geometrical lucidity which zone is itself *secondarily definable by its disparity of concavity of withinness and convexity of withoutness*.

In a con-sideration four is the minimum number of stars having an inherent arrangement of within-ness and withoutness. Therefore we discover next that the minimum *con- ceptually-considerable* generalized-experiences-set, affording macro-micro separation of universe, is a set of four local eventfoci. These four stars have an inherent sixness of interrelationships. This *four-foci, six-relationship* set is definable as the tetrahedron. This minimum *fourness* of relevant-frequency, ergo *thinkable* "stars" coincides with quantum mathematics requirement of four unique quanta numbers per each uniquely considerable "particle," quanta are inherently tetrahedral.

In the prime dichotomy of universe into a thinkable tetrahedral zone between unconsiderable irrelevancies, which in turn requires a secondary zonal separation into macro-micro momentarily unthinkable cosmoses, it becomes evident that the tetrahedral zone itself introduces a *tertiary dichotomy*—into the *two* inherent twilight zones of *almost considerable bigness* and *almost considerable littleness*, respectively.

We find & *fourth-stage dichotomy* of universe when we consider that the big and little twilights each respectively are again also comprised of two tetrahedra as minimal requirement, one as the *concave inward* tetrahedron and the other as the *convex outward* tetrahedron.

*Fig. y Pattern of Thought. Thinking is frequency modulation—tuning out finite irrelevancies into two main classes: micro-macro, which leaves residual defined system as lucidly relevant.*



We next, fifthly, discover that the positive-negative (convex-concave) tetrahedra constitute only the *minimum* functional dichotomy of finite universe, resulting in a *minimum* portion of the universe disposed in the microcosm and a maximum portion of universe assigned to the macrocosm. Among geometrical systems a tetrahedron encloses the minimum volume with the most surface and a sphere the most volume with the least surface. An approximately spherical polyhedral zonal dichotomy of finite universe by a spherical array of considered relevancies provides *the minimum portion of sum totally finite universe assigned to the macrocosm and the maximum relative portion of finite universe assignable to the microcosm.*

**Almost  
Finite**

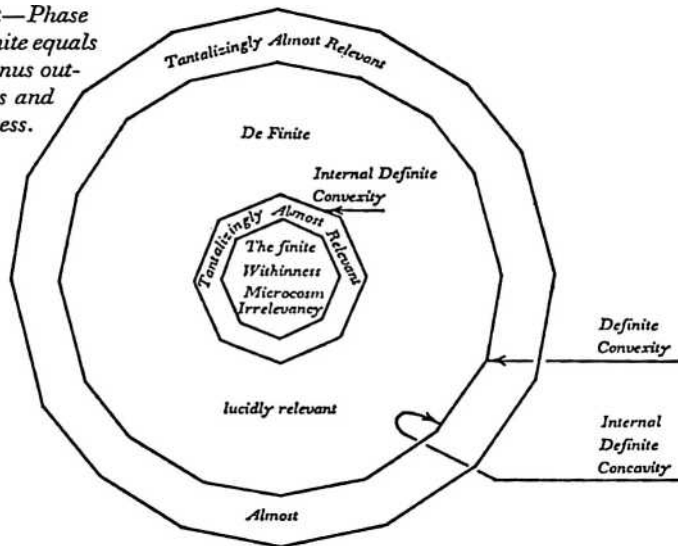
**Micro-  
Irrelevanter  
Too small  
Too frequent**

Finite Macro-Irrelevancy, Too large, Too infrequent

Lucidly relevant

Almost

*Fig. 4. Pattern, of  
Thought—Phase  
2. De-finite equals  
finite minus out-  
wardness and  
inwardness.*

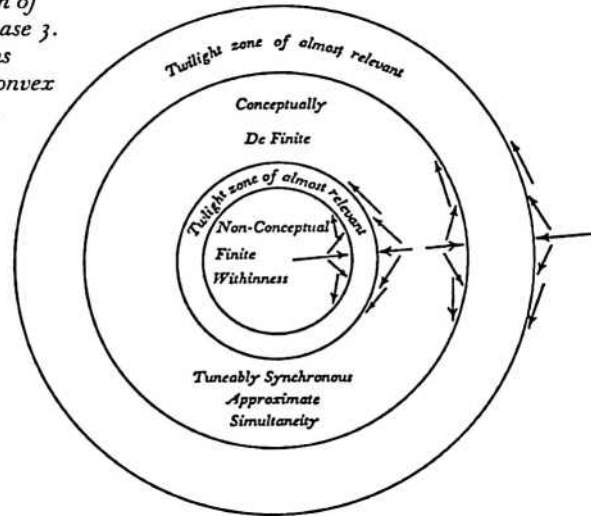


The finite Withoutness, Macrocosm Irrelevancy

We may say that the minimum zonally defined within- ness conformation is tetra-  
hedronal and the minimum zonally defined withoutness is spherical. Therefore, the  
most extensive *lucidly conceptual and definable recollected-experience zone range* lies be-  
tween a *tetrahedronal “withinness” twilight* and a *spherical “withoutness” twilight*, beyond  
which are the non- tuneable (1) *outwardness* and (2) *inwardness*—the subtracted Eu-  
ler’s *twoness* from *nonconceptual finiteness* which permits conceptual de-finiteness or  
definition of cognition.

Because the permitted *conceptuality* involves a unit expenditure from universe of a de-finite *twoness*, unit conceptuality must have a finite *twoness* penditure value, ergo prime conceptual unity acquires an inherent value of two. Unity is inherently plural. Unity is always divisible as twoness, or fourness, or sixness, of inherent minimum relationships. The alternate relative proportions of finite universe's micro-macro

*Fig. 5. Pattern of Thought—Phase 3. Concave means concentrate; convex means diffuse.*



Non-Conceptual Finite Withoutness Nonsimultaneity, Nonsynchronously Tuneable

magnitude limits of definitive dichotomy as tetrahedral minimum or spherical maximum introduce an inherently alternative propensity of universal finite accountability whose alternative eccentric-concentric reciprocity of omnidifferential-lag-rate compensations inherently propogate and regenerate preferably considered universal evolution accomplished

by omnidirectionally expansive-contractive wave propagating oscillations.

Frequency of modular subdivision of vectorial lines are ratioed to cyclic increments of time realizing the accomplished velocity. Unity is the full circle sweep around an axis. Angles are fractions of cyclic unity. Frequency means a discreet plurality of cycles within a given greater cyclic increment. Angle means a fraction of one cycle. Angle is therefore sub- cyclic-unity, while frequency is plural unity. Angle is less than finite cyclic unity. Frequency is greater than finite cyclic unity. All physical *realizations*

have relative-size, i.e., dimensionality. The phenomenon size consists of frequency modulated linear (i.e. vectorial) dimension. Angular phenomena being sub-finite cyclic unity, or zero frequency, may be independent of size. Generalized angular or tri-angular or tetrahed- ronal conceptioning may be independent of size.

The three angles of one face of a triangle always add up to  $180^\circ$  as a phenomenon independent of the relative dimensional size of the triangles.  $180^\circ$  is one-half definitive cyclic unity. Every triangle has two faces—its obverse and reverse. Unity is two. So we note that the angles of both faces of a triangle add up to  $360^\circ$ . The sum of the external angles of two triangles' obverse and reverse faces is  $720^\circ$ . The sum of the external angles of a tetrahedron is  $720^\circ$ . The sum of two triangles' external angles is equivalent to one tetrahedron.

The relative size of a triangle is a secondary, observer induced consideration and depends upon the frequency modulated edge increments of the triangle as ratioed to some other physical experience entity.

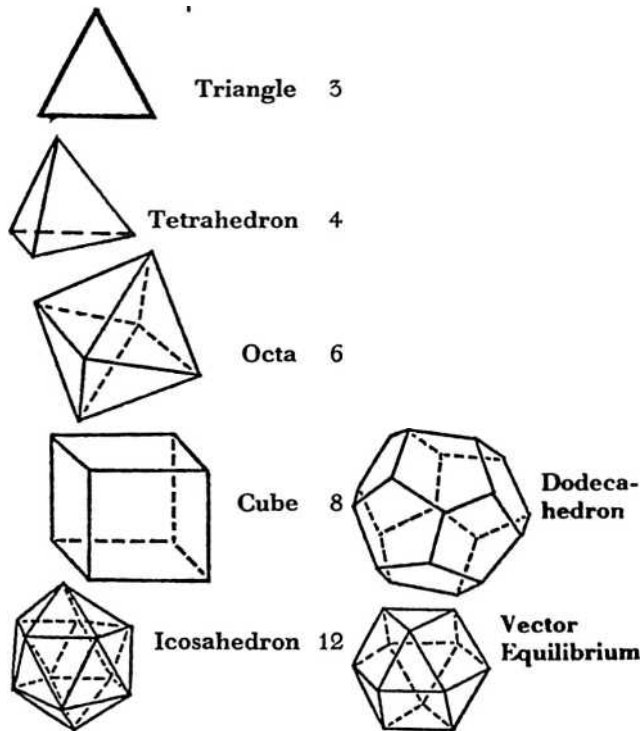
Angles of tetrahedra always add up to  $720^\circ$  independent of size. The angles of a cube always add upto  $2160^\circ$  independent

		<b>Sum of No. of angles Vertices multiplied by multiplied</b>	<b>No. of by Vertices. Finite minus De-Finite Finite De-Finite</b>
Line 2			
$0^\circ \times 1 = 0^\circ$	$0^\circ$	$360^\circ$	$720^\circ$
	x2	x2	-0
			□ ---
	$0^\circ$	$720^\circ$	$720^\circ$
$60^\circ \times 2 = 120^\circ$	$120^\circ$	$360^\circ$	$1080^\circ$
	3	3	360
	$560^\circ$	$1080^\circ$	$720^\circ$
$60^\circ \times 5 = 180^\circ$	$180^\circ$	$360^\circ$	$1440^\circ$

	4	4	720
	720°	1440°	720°
60° x 4=240°	240°	360°	2160°
	6	6	1440
	1440°	2160°	720
90° x 3=270°	270°	360°	2880°
	8	8	2160
	2160°	2880°	720°
60° x 5 = 300'	300°	360°	4320°
	12	12	3600
			□□□
	3600°	4320°	720*

108° x 3=324°	324'	360'	7200'
	20	20	6480
	6480°	7200'	720°
90° x 2= 180°			
60° x 2= 120°			
300°	300°	360°	4320'
	12	12	3600
	3600°	4320'	720'

*Table I. Angular Topology Independent of Size.*



of the cube's size. A tetrahedron is definite yet independent of size. All angularly modulated definite geometrical systems or figures are independent of size.

Relationships which have definite integrity and independence of size are conceptual principles of abstract thought independent of physical realization.

The difference between the sum of all the angles around all the vertices of *any* system and the total number of the vertices times  $560^\circ$  (as angular unity) is  $720^\circ$  which equals two unities. The sum of the angles of a tetrahedron always equal  $720^\circ$ . The tetrahedron may be identified as the  $720^\circ$  differential between any *definite local* geometrical system (Greek *solid*} and *finite universe*.

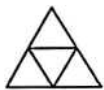
A line has two vertices with angles around each of its vertexial ends equal to  $0^\circ$ . The sum of these angles is  $0^\circ$ . The sum of the vertices (2) times unity ( $560^\circ$ ) is  $720^\circ$ . The remainder of  $0^\circ$  from  $720^\circ$  is  $720^\circ$  or two unities, or one tetrahedron, Q.E.D.

A triangle has three vertices. The sum of the externally viewed angles around each is  $120^\circ$  of which  $60^\circ$  is on the obverse side of each vertex of the triangle 5 for a triangle, like a line, if it exists, is an isolatable system always having its positive and negative aspects. The angles of ob- and re-verse triangles add up to  $360^\circ$ . The triangle is three vertices times  $360^\circ = 1080^\circ$  which minus  $360^\circ$  (sum of triangles' angles) =  $720^\circ$  Q.E.D.

Two triangles' external angles make one convex tetrahedron or  $720^\circ$ . The coincident concave tetrahedron's angles add up to  $720^\circ$ . The positive and negative tetrahedra always coexist  $+720^\circ - 720^\circ = 0^\circ$ .

Four vertices equal one positive tetrahedron; therefore, one

Tetrahedron	$720'$	$720'$ = 1 tetrahedron
Octahedron	$240' \times 6 = 1440^\circ$	$720'$ $1440'$ = 2 tetrahedra
Prism	$240' \times 6 = 1440^\circ$	$720'$ $1440'$ = 2 tetrahedra
Cube	$270' \times 8 = 2160'$	$720'$ $2160'$ = 5 tetrahedra
Icosahedron	$500' \times 12 = 5600'$	$720'$ $5600'$ ----- = 5 tetrahedra $720'$
Rhombic Dodecahedron	$109'28' \times 24 = 2628' 70'52' \times 24 = 1692' 2628' \times 1692' = 4520'$	$4520'$ = 6 tetrahedra $720'$



**Table 2. Tetrahedronal Mensuration applied to Well-Known Polyhedra.**

**We discover that the sum of the angles around all vertices of all solids is evenly divisible by the sum of the angles of a tetrahedron. The volumes of all solids may be expressed in tetrahedra.**

Dodecahedron

Triacontahedron

$524' \times 20 = 6480^\circ$

$180^\circ \times 60 = 10,800^\circ$

6480'  
 =9 te trail cd ra  
 720'  
 10,800'  
 =15 te trailetra  
 720'  
 Two Frequency Regular Geodesic  
 180° x 80 =14,400'  
 14,400' , , ,  
 =20 tetrahedra=ox2-  
 720'  
 Three Frequency 20° x 9 = 180'  
 Alternate Geodesic 180'x 180 = 52,400'  
 52,400'  
 =45 tetrahedra=5x5<sup>2</sup>  
 720'  
 Four Frequency Triacon Geodesic  
 180'x 240=45,200'  
 45,200'  
 =60 tetrailetra= 15 x2<sup>2</sup>  
 720'

positive conceptual convex tetrahedron is + 72 o° and the difference between it and finite universe is one-negative nonconceptual concave tetrahedron. Neither the positive nor the negative tetrahedron may occur without the other.

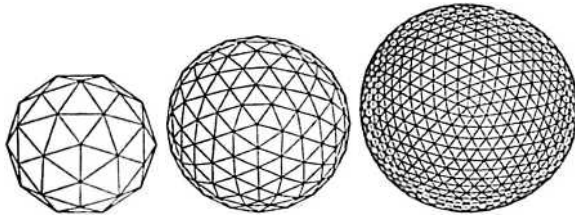
A zero tetrahedron is vector equilibrium, is *universe*.

Experience is inherently discontinuous and islanded and each special experience represents a complex of generalized principles operative in special or limited size (i.e., dimension, i.e., frequency) modulated realization.

Brower's mathematical theorem states that if any number of points on a plane are stirred around an  $x$  amount on cessation of the stirring, one of the points may be shown to have been the center point of the stirring—and never to have moved in relation to the others. In order to be “stirred,” these points must have multi-dimensionality and the cluster of stirred points must have obverse and reverse sides. Therefore, the obverse-reverse sides must each have visible points that were the centers of the stirring and,

short though the distance between the obverse-reverse surface neutral center points, the short line between the obverse-reverse visible central points' obverse-reverse poles constitutes a *neutral axis* of the system of points and isolates two points for axial functioning in every layer of both polar zones of every point system swarm. Pauli's exclusion principle verifies that each of the stirred points in Brower's theorem and the point which did not move have their inherently separate counter part points which discloses both the neutral axis formed by the two points that do not move and the obverse and reverse sets of moving points. Thus, we discover that even a "points" angular topological difference between its definiteness and finiteness is  $720^\circ$

There is no phenomenon "solid matter"} therefore there



$$292,520^\circ - 291,600' = 720' =$$

**Number of Vertices**  
**Multiplied by ICQ<sup>9</sup>**  
**Number of Triangles**  
**Multiplied by 180°**  
**Equals Sum of Angles**  
**around All Vertices**

**Difference**

$$42 \times 360^\circ = 15,120^\circ$$

$$80 \times 180' = 14,400'$$

$$15,120' - 14,400' = 720' =$$

1 tetrahedron

Regular Geodesic Two- Frequency Icosahedron

Regular Geodesic Four- Frequency Icosahedron

$$162 \times 360' = 58,320^\circ$$

$$320 \times 180' = 57,600'$$

$$58,320^\circ - 57,600' = 720^\circ =$$

1 tetrahedron

Regular Geodesic Nine- Frequency Icosahedron

$$812 \times 360' = 292,520^\circ \quad 1620 \times 180' = 291,600'$$

1 tetrahedron

**Table y Tetrahedral Mensuration applied to Spheres.** may not be a “solid” sphere, nor a “solid” surface sphere. All spheres consist of a high frequency constellation of eventpoints, all of which are approximately equidistant from one central event “point.” All the points in the surface of a sphere may be interconnected. If most economically interconnected, they will subdivide the surface of the sphere into an omnitriangulated spherical web matrix. As the frequency of triangular subdivision of a spherical constellation of omnitriangulated points approaches subvisibility the *difference* between the sums of the angles around all the vertex points and the numbers of vertices when multiplied by  $560^\circ$  remains constantly  $720^\circ$  which is the sum of the angles of two times unity (of  $560^\circ$ ). The sum of the angles of a tetrahedron, regular or irregular, is always  $720^\circ$ , just as the sum of the angles of a planar triangle is always  $180^\circ$ . We may state two laws which say: (1) the sum of the surface angles of any polyhedron equals  $V^{*1}$  multiplied by  $360^\circ$  minus one tetrahedron; (2) the sum of the angles of any polyhedron (including a sphere) is always evenly divisible by one tetrahedron. We may also say that: Where unity (1) equals  $360^\circ$ ,  $180^\circ$  equals one-half unity ( $>/_2$ ) and that  $720^\circ$  equals two times unity (2); therefore, we may identify a triangle as one-half unity and a tetrahedron as two unities ( $y_2$ ), (2).

The calculus assumes that a plane is infinitesimally congruent with the surface of a sphere at the point of the plane’s tangency of the sphere. The calculus and the spherical trigonometry therefore also assumes that the sums of the angles around any point of any sphere are always  $360^\circ$ . The demonstration thus far made discloses that the sums of the angles around all the vertices of a sphere will always be  $720^\circ$  or one tetrahedron less than the sum of the vertices times  $360^\circ$ , ergo, one basic assumption of the calculus is invalid.

In review, this chapter shows that the phenomenon “infinity” of the calculus is inherently finite. Universe equals the aggregate of men’s consciously apprehended and communicated experiences. By my definition, universe is nonsimultaneous but finite because all experiences *begin* and *end*. and being terminal are finite; ergo, universe as the sum of Unites is finite. The first subdivision of nonsimultaneous universe is effected by a local system which divides the universe into three finite parts: the portion of universe outside, the portion of the universe inside, and the system. We find local spherical systems of universe are definite rather than infinite as presupposed by the calculus’ erroneous assumption of  $360^\circ$  greenness of surface

plane azimuth around every point on a sphere. Nonsimultaneous universe is finite but conceptually undefinable; local systems are definable. We discover that universe is finite and a local system is *definite* and the definite local system plus one tetrahedron (or two unities) equal finite universe. The difference between universe and any local system is always one tetrahedron. Every local system may be subdivided into whole tetrahedra.

If we combine, first, the fact of Van't Hoff's discovery that all the organic chemical compounds are structurally cohered in the terms of the tetrahedra's four vertexes and, secondly, the fact of Linus Pauling's X-ray defraction implemented discovery that all the metallic elements thus far experimentally analyzed combine in nonvertexially interlinked tetrahedral structures and, thirdly, the facts which I have disclosed in this and the preceeding pages we may well conclude that it is reasonable to adopt the working assumption that: *all of the definable structuring of universe is tetrahedrally co-ordinate in rational number increments of the tetrahedron.*

Finite minus de-finite means two tetrahedra minus one tetrahedron. Finite universe equals four cyclic unities. Each tetrahedron equals two; therefore, finite (4) minus conceptual definite (2) equals two, which constitutes one negative invisible tetrahedron.

Reviewing again, this halo conceptioning discloses the minute yet finitely discrete inaccuracy of the fundamental assumption upon which the calculus was built; to wit, that for an infinitesimal moment a line is congruent with the circle to which it is tangent and that a plane is congruent to the sphere to which it is tangent. Calculus had assumed  $560^\circ$  around *every* point on a sphere. The sum of a sphere's angles was said to be infinite. The Halo concept and its angularly generated topology proves that there are always  $720^\circ$  or two times unity of  $360^\circ$  *less* than the calculus assumption of  $360^\circ$  times every point in every "spherical" system. This  $720^\circ$  equals the sum of the angles of a tetrahedron. We can state that the number of vertices of any system (including a "sphere" which must, geodesically, in universal energy conservation, be a polyhedron of TV vertexes) minus two times  $360^\circ$  equals the sum of the angles around all the vertices of the system. Two times  $360^\circ$  which was the amount subtracted, equals  $720^\circ$ , which is the angular description of the tetrahedron. The spherical error of calculus is

one discreet tetrahedron. We have to take angular “tucks” in the nonconceptual finity (the calculus infinity) to make a local definite system (the calculus finity). The “tucks” add up to  $720^\circ$ , i.e., one tetrahedron. The difference between conceptual de-finity and non-conceptual finity is one nonconceptual finite tetrahedron.

In the general theory of variables it has been recognized that the set of all the variables may be divided into two classes

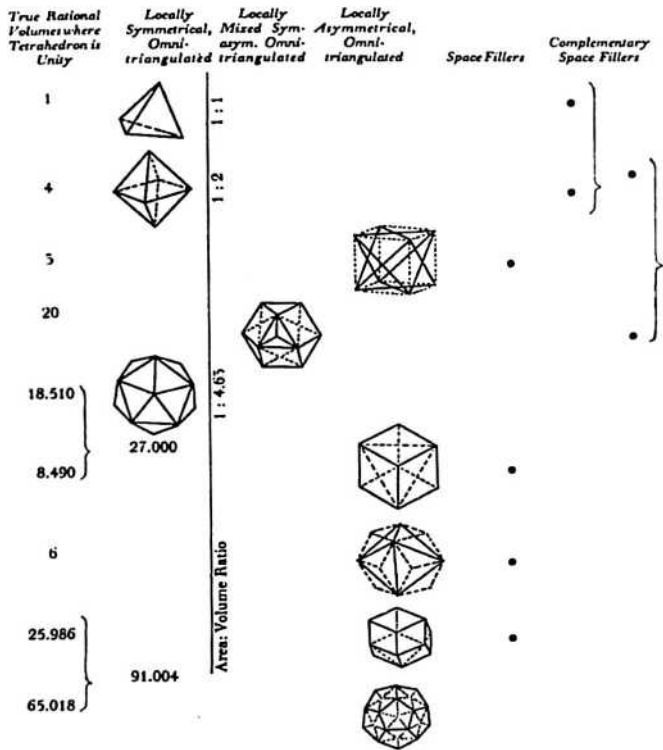
–(i) the class of all the inclusive variables within a given system and (2) the class of all those operative exclusive of the system. It has been further recognized that the variables outside the system may affect the system from outside. In varying degrees specific levels of sub-classes of these “background” or outside variables are identified as *parameters*. This background “inside and outside” concept is a two dimensional or flatprojection concept.

Our omnioriented Halo concept converts the *parameter* consideration to conceptual four dimensionality and discloses a set of parameters inside as well as *outside* the zone of lucidly considered system stars. And the parameters are at minimum fourfold: [1] the convex twilight zone of inward relevancy, [2] the concave twilight zone of outward relevancy, [5] the *stark* nonconceptual irrelevancy inward, and [4] the stark non- conceptual irrelevancy outward. Parameter [1] is a tetrahedron. Parameter [2] is a tetrahedron. Parameter [5] plus parameter [4] comprise an invisible tetrahedron.

The *considered* relevancy within the zone of lucidity consists of one more tetrahedron. For each “considered tetrahedron” there are three parameteric tetrahedra. We discover that our omni-halo epistemological accounting consists of rational tetrahedronal quantation.

When we missed the moon in our first attempt to shoot a rocket to it, the tetrahedronal tuck in universe may have represented that discreet error. It was directly relatable to our lack of awareness of the disparity of the calculus. This disparity is corollary to the same mathematical disparity that was physically discovered in atomic behavior, which brought its discoverer’s the 1957 Nobel prize and which discovery invalidated “physics’ ” long held “law of conservation of parity”

### **Synergetically Symmetric**



		Fuller Syncre.lic	Divided by Tiro
	Treatment Extracts		1 • '+2' — E
	Euler Tuv Vidor Vertices Formula	<sup>7</sup> or Neutral Axis	2 + 4-6 + 2
System	P+F-E+2	V+F-E	1 + 2-5
Wector Edge Tetra	4+4-6+2	2+4-6 +2 1+2-5	1+2-5 > x 1
Vector Edge Octa	6+8-12+2	4+8-12 +2 2+4-6 6+12-18	x 2

---

<b>Alternating+to-tetra Vector Diagonal</b>	<b>8+12-18+2</b>	<b>+2</b>	<b>3+6-9</b>	<b>x 5</b>
			<b>10+20-50</b>	
<b>Vector Equilibrium</b>	<b>12 + 20 - 30 +2</b>	<b>*2</b>		
			<b>5+10-</b>	<b>x5</b>
<b>Vector Edge Icosahedron</b>	<b>12 + 20 - 30 +2</b>	<b>+2</b>	<b>15</b>	
			<b>5+10-15+20-</b>	<b>x5</b>
	<b>14+24-36+2<sup>2V,6</sup></b>		<b>12+24-36</b>	
<b>Vector Edge Cube</b>		<b>+2</b>		
			<b>6+12-18</b>	<b>x5x2</b>
			<b>12+24-56</b>	
<b>Vector Diagonal Rhombic Dodecahedron</b>	<b>14 +24- 36 +2</b>	<b>+2</b>		
			<b>6+12-18</b>	<b>x5x2</b>
			<b>12+24-56</b>	
<b>Vector Edge Rhombic Dodecahedron</b>	<b>14+24-36+2</b>	<b>+2</b>		
			<b>6+12-18</b>	<b>x5x2</b>
			<b>30+60-90</b>	
<b>Vector Edge Dodecahedron</b>	<b>32 + 60 - 90 +2</b>	<b>+2</b>		
			<b>15+30-45</b>	<b>x5x5</b>
			<b>50 + 60 - 90</b>	
<b>Vector Edge Tetraxi decahedron</b>	<b>32+60-90+2</b>	<b>+2</b>		
			<b>15+30-45</b>	<b>x5x5</b>
			<b>30 + 60 - 90</b>	
<b>Vector Edge Triacantahedron</b>	<b>32+60-90+2</b>	<b>+2</b>		
			<b>15+30-45</b>	<b>x3x5</b>
			<b>90+180-270</b>	
<b>Vector Edge Enenicontahedron</b>	<b>92+180-270+2</b>	<b>+2</b>		
			<b>[ 45 +</b>	<b>x5*x5</b>
			<b>90-155</b>	

---

Remainder

**Fuller Synerfcnc**

**Treatment Divides  
by Fundamental  
withinness and withoutness.**

**Convex—Cuncm e  
Disparate  
Tuxtneis**

**+2**

Fuller's  
Topological  
Formula for all  
Dynamically symmetrical  
Omni-triangulated  
Polyhedra  
(where P-A Prime .Vo.)  
(where u- Frequency)  
U a Frequency of Modular  
Subdivision of Exterior  
Edges of System,  
Tetra, Octa, Icosa.

Multiplication of  
one of  
first four  
prime numbers  
1, 2, 5, 5 or their  
powers or multiples

Topological  
Abundance  
Constant  
1+2-5

1 Non Polar  
Vertex  
+  
2 Faces  
5 Edges

Table 4. Topological Hierarchies. Copyright (c) by R. Buckminster Fuller. Reprinted by Permission of Mr. Fidler.

$$v^3 P \left( \frac{VSP + F = E}{1 + 2 = 3} \right) + 2^{2P}$$

which held the obverse and reverse to be identical, ergo, redundant. A further corollary to the tetrahedral disparity of systems invalidates the functioning significance of the transcendental irrational constant Pi. The comprehension of this mild error and implementation of the mathematical strategy of nature's co-ordinate system which I have disclosed and named Energetic/Synergetic Geometry may greatly improve the extra-terrestrial undertakings whose effectiveness has not been frustrated so much by inadequate energy supply as by inadequacy of fundamental mathematical conceptioning and its resultant technical incapability. Our computer instrumentation is phenomenally good, but our problem stating and question asking have been inadequate.

In the inherently subjective language of physical transformation of an omni-interaltering and accelerating universe there are only two fundamental kinds of observable transformational changes, i.e., angular, or sub-unity alterations, and linear, or plural unity (frequency modulated) accelerations. These subjectively viewed transformations of universe are also objectively and locally controllable by man through designed angle and frequency modulations.

In the Energetic/Synergetic Geometry's isotropic, vectorially triangulated, omnidirectional matrix initiations the *angular* and *linear* accelerations are rational and uniformly modulated, whereas in the *xyz* co-ordinate analysis of the calculus only the linear is analyzable and the angular resultants, are usually irrationally expressed.

Substituting the word tetrahedron for the number 2 completes my long attempt to convert all the residual heretofore unidentifiable integers of topology into geometrical conceptability.

By the omnidirectional star-studded Halo reasoning the development of a conceptual tetrahedron automatically charges a negative yet invisible tetrahedron into the nonsimultaneous, nonconceptual finite universe, comprehensive to the local de-finite conceptual system.

This discovery that all the differences between de-finite conceptual systems and finite, yet nonconceptual total universe seems to provide a fundamental means of identifying the physical phenomena entropy. Entropy no longer means inherent escape of energy from any local system or decrease of local order or increase to disorder. Entropy now means the invisible extraction from any local definitive system of the negative conceptual entity, i.e., one negative tetrahedron deposited into universe balance of energy conservation permitting the local extraction of any visible orderly conceptual system. Entropy is not random; it is always one negative tetrahedron. It may have a wide variety of relative size (frequency) dimensions. A tetrahedron is  $720^\circ$  and is an angular constancy independent of size. It is finite. It can account finitely for any discreet rate of energy loss.

In resume: By our systematic accounting of angularly definable concave-convex local systems we discover that the sum of the angles around each of every local system's geodesically interrelated vertices is always two vertexial unities less than universal nondefined finite totality. We call this discovery the law of finite universe conservation. Therefore, mathematically speaking, all defined conceptioning always equals finite universe minus two. The indefinable quality of finite universe-inscrutability is exactly accountable as two.

Ergo, finite-definite = 2 De (Di) = 2  
de-finite-finite = -2 (di) de = -2



arc 65°26' = 2 86.1989	icosphere 'A': dynamisphere 'A' = 1:1.1813	icosphere 'B' dynamisphere = 1:0.1452	
radius = 3 28.8316	icosphere 'C': dynamisphere 'C' = 1:1.0400		
arc 60°-2 89.18051; radius = 1.9938	dynamisphere 'A': dynamisphere 'B': = 1:1.4573		
<b>TETRAIDECAHEDRON</b> (Tetrahedron: 1) Lord Kelvin's all-sphere solid. 6 square, 8 hexagonal faces. DYNAMON = 1/2/5 Guts = total 1 1/3 DYNAMON.		< Rational	
<b>ICOSOSPHERE (A)</b> Where arc 65°26' = arc edge of spherical triangle of 20 Spherical triangles of Sphere = arc = 2.039831.			Spheres
<b>ICOSOSPHERE (R)</b> Where radius = $r = 2.039831$ .			
<b>DYNAMOSPHERE (A)</b> Where arc 60° = $r = 2.039831$ .			
<b>DYNAMOSPHERE (R)</b> Where arc 60° = $r = 2.039831$ .			
<b>DODECAHEDRON</b> 12 hexagonal faces.			
<b>TETRAIDECAHEDRON</b> (Tetrahedron: 2)			
	radius = 2 35.51029 arc = 2.0944		
		7.6631	61.3048
		16.0942	128.1936
		< Rational	< Rational
		< Rational	< Rational

Note that 10 out of the 13 planar bound solids are rational and a complementary rational.

Note: It may readily be seen from above why the preoccupation of mathematicians and physicists with the 4-dimensional coordinate system and its cube has obscured the evidence of the rational dynamon hierarchy and why it would most naturally be discovered only by the pursuit of the concept of vesical—small directional equilibrium.

Table 1. *Dynamon Energetic Geometry. Copyright 1970 by R. Buckminster Fuller. Reprinted by permission of Mr. Fuller.*

Of above none is rational. To convert above solids to rational multiply by 1.06060 =  $\sqrt{6}/6$ .

dynamon  
 $\sqrt{6}/6$ -vector  
 constant  
 $1/6P = 1.0606055$   
 $1/6P^2 = 1.0606054$   
 $1/6P^3 = 1.060605$   
 $1/6P^4 = 1.1250000$

= 1 1/8  
= 9/8

This ratio has significant implications as in natural number behavior as indicated by basic sphere and dynamon and octahedra. It is seen that number integers take octave-nine modular congruence.

1 2 3 4 5 6 7 8  
0 0 0 0 0 0 0 0  
1 2 3 4 5 6 7 8 9  
Unique maxima of dynamon nucleus employs above 9 balls,  
6 spines.

This is a subtractive 2—not a divisive 2, which latter occurs as the second derivative stage of systematic zonal differentiation into the fundamentally positive and negative yet disparate and inseparable aspect characteristics of concavity and convexity.

The finiteness of universe is thus finitely proven by comprehensive geometrical system topological accounting. We have, therefore, a comprehensive universal synergetic accounting advantage in respect to all systematic experience considerations both physical and metaphysical.

The first synergetic accounting advantage of known man-history derived from the two-millennium-old discovery of the invariant sum ( $180^\circ$ ) of the angles of the obverse face of any plane linear bound triangle. The second major synergetical advantage accrued to Newton's inverse ratio law of gravity as a comprehensive astronomical accounting system. The third major synergetical accounting advantage was derived one hundred years ago from Euler's topological discovery that the numbers of vertices of polyhedra plus the number of their faces always equalled the sum of the number of the polyhedra's edges plus the number two.

The fourth major synergetical accounting advantage accrued a half century ago to the physicists' hypotheses of the law of conservation of energy which held that energy had shown experimentally that it could be neither created nor destroyed. From this assumption, which threw all scientific and nonscientific considerations, other than the energetically physical, into the then seemingly indeterminate realm of metaphysical, came the successive wave-quanta accounting theory and subsequent fission and successful nuclear components discovery and inventorying. Fifthly, Willard Gibbs' phase

rule in a formula similar to Euler's in which the degrees of freedom are in effect the vectorial edges brought *synergetic* advantages to chemical strategy. Sixthly, the same synergetic accounting advantage is now extended by our law of *nonsimultaneous finite universe pattern conservation* to embrace definitive consideration of any and all experiences, physical or metaphysical. The latter strategically equatable accounting advantage derives from a corollary of synergy which shows that systematic accounting of the behavior of whole aggregates may disclose discreetly predictable angle and frequency magnitudes required of some unknown components in respect to certain known component behaviors of the total and known synergetic aggregate. Therefore, the definitive identification permitted by the *law of finite universe conservation* may implement conscious synergetic definition strategies with incisive prediction effectiveness, possibly of epoch initiating magnitude.

We inaugurate exploration with our *theorem of omniuniverse tetrahedral structuring*. Whereas Van't Hoff showed that all inorganic chemical structuring is tetrahedrally configured in vertexial linkage and Pauling's X-ray diffraction analyses show omnitetrahedral configuration interlinkages of gravitational centers of compounded atoms in all metals analyzed our omnitetrahedral structuring as a triple bonded linear tetrahedral array may coincide with the *DNd* helix, and the tetra's four unique quanta corners may explain *DNA's* dichotomy transferred T,A; G,C patterning control of all biological species reproductions.

A trial balance reconsideration and interconsideration of the significance accruing to the inherent order of consciously permitted cognitions thus far inventoried as derived from our epistemological premise that universe is the aggregate of con-

sciously observed and communicated experiences discloses an orderly succession of derivative dichotomies and synergetic surprises accruing to the grand operational review of derivative patterns.

First, we recognize that *intellect took the measure of definitive energy universe* because Einstein as intellect wrote  $E = MC^d$ . And we recognize the inherent irreversibility of that definitive capability because the concept of energy defining intellect is unthinkable. The de-fining of finite universe is a function of intellect synergetically manifest in universe. Subsequent to Einstein's intellect's definition of energy universe in two conceptual functions  $M$  and  $C^2$  his definitive physical realm hypothesis of universe was proven valid by fission. With fission came *empirical validation* of Einstein's theretofore hypothetical equation as now energetically definitive. Because the difference between definite and finite universe is definitively two, it follows that the difference between the physical portion of universe and total universe is definitive two. Whereas all metaphysical phenomena were shuntingly disposed by the Einsteinian physicists into a then supposedly infinite universe's ephemeralization; it now comes as a surprise result of our finite-universe hypotheses that the *metaphysical* is as strictly definitive as the *physical*. Ergo the definite physical portion of universe plus the metaphysical or nondefinitive portion of universe together equal total finite universe and the metaphysical must therefore equal a nondefinitive but finite twoness.

The metaphysical which is now also contained within the comprehensive finiteness of universe is greater by two in its comprehensive magnitude than the physical portion of universe which lies inherently within the micro—macro meta-

physical. And as the metaphysical embraces intellection, we may say that the nonsimultaneous *all-knowledge* (omniscience, or wisdom) gained by all men out of *all-experience* (universe) is comprehensive by a discreet margin of two to *all-energy* (omnipotence) whose measure omniscience took. Omniscience is greater than omnipotence and the difference is two. Omnipotence plus two equals omniscience. *META* = 2.

Intellections are *cumulative pattern apprehensions* and are synergetically integrative as wisdom and wisdom initiates new mathematical hypotheses. Mathematics implements man's calculation within minutes regarding energy actions requiring eons of time. Man's intellect masters energy's fastest behaviors. Energy light years are calculated in intellect seconds. Omniscience is evidently of comprehensively transcendental alacrity to the speed of light whose relatively slow articulations in universe are readily anticipated by intellectually initiated and disciplined computation of mind.

There is a question-asking-possibility that omniscience may be transcendental in velocity to the definitive physical speed of energy omnipotence. The synergetic *anticipatory* capabilities of intellect (in respect to conceptual formulations of evolutionary transforming potentials of universe and the *anticipatory* strategems evolved by intellect to test such hypotheses) imply the possibility of a velocity transcendence of omniscient functioning over omnipotence functioning which could mean an intellectually regenerated evolutionary extension of universe in generalized synergetical integrity. Intellect's comprehensive anticipatory objectivities indicates a speed of functioning transcendental to physical events. Intellect may be "creating" finitely extending and re-finishing universe as it asks each next good question.

# Appendix

## 1 Resources

The Buckminster Fuller Institute

[www.bfi.org](http://www.bfi.org)

Founded in 1983. The Buckminster Fuller Institute serves a global network of design science innovators working at the leading edge of the design revolution Fuller inspired—including the Buckminster Fuller Challenge, an annual \$ 100,000 prize to support the development and implementation of solutions to humanity’s most pressing problems. 181 N.11th St. Suite 402/Brooklyn, NY 11211/718 290-9280

The R. Buckminster Fuller Archive

[www-sul.stanford.edu/depts/spc/fuller/index.html](http://www-sul.stanford.edu/depts/spc/fuller/index.html)

Called in 1976 by archivists from the Smithsonian Institute, “the most extensive personal archive in existence,” the collection contains over 1,300 linear feet of papers and manuscripts, 2,000 hours of video and audio recordings, and thousands of models and other artifacts.

Dept, of Special Collections/The Stanford University Libraries/Stanford, CA 94305

The Estate of R. Buckminster Fuller

<http://www.buckminsterfuller.net>

Fostering the preservation, publication, and dissemination of Buckminster Fuller’s legacy.

P.O. Box 3248/Santa Barbara. CA 93130/Fax: 805 456-2912

The Earth Policy Institute

[www.earthpolicy.org](http://www.earthpolicy.org)

The Earth Policy Institute, dedicated to building a sustainable future as well as providing a plan of how to get from here to there, publishes the remarkable book *Plan B 3.0: Mobilizing to Save Civilization* by founder and President Lester R. Brown (free online access).

1350 Connecticut Ave. NW. Suite 403/Washington, DC 20036/Fax: 202 496-9325

The ONE Campaign

[www.one.org](http://www.one.org)

The *campaign to make poverty history* is over 2.4 million people committed to raising public awareness about the issues of global poverty, hunger, disease, and efforts to fight such problems in the world's poorest countries.

Rocky Mountain Institute

[www.rmi.org](http://www.rmi.org)

An independent, entrepreneurial, nonprofit organization fostering the efficient and restorative use of resources to make the world secure, just, prosperous, and lifesustaining, co-founded by scientist Amory Lovins, and featuring publications such as their groundbreaking *Winning the Oil Endgame: Innovation for Profits, Jobs, and Security* (free online access).

2317 Snowmass Creek Road/Snowmass, CO 81654/970 927-3851

The We Campaign

[www.wecansolveit.org](http://www.wecansolveit.org)

A project of The Alliance for Climate Protection—a nonprofit, nonpartisan effort founded by Nobel laureate and former Vice President Al Gore that aims to halt global warming through educating people in the U.S. and around the world that the climate crisis is both urgent and solvable.

From the bottom of my heart, I wish to thank all the devoted and inspired individuals who assisted me in preparing these new editions of Buckminster Fuller's books:

I could not have undertaken this project without the unswerving support of my beloved wife, Cheryl. She was my partner, primary advisor, and tireless editor in reviewing the new materials I wrote. She always encouraged me to seize this moment to bring focus to the grave challenges—and opportunities—facing our planet.

It was a great pleasure to work again with Dr. Janet Brown. She joined me in the multimonth process of re-reading the books for the series, updating facts and figures, and finally in being an expert editor. And as in any project I undertake at this point in my life, John Ferry is at my side—as he has been for over 25 years. He backed me up with finding photos, selecting images, assembling materials, researching background facts, and resolving any other loose ends, not to mention the management of our numerous other projects.

I want to also thank Roberto Trujillo, head of Stanford University’s Department of Special Collections, for his support of my research at the R. Buckminster Fuller Archive. I especially want to thank Mattie Taormina, the Head of Public Services and Manuscripts Processing Librarian, who facilitated my research and expedited my needs for scans of images from the Archive. Living nearby, it was an unexpected treat to be able to spend some days in their beautiful reading room to joyfully commune with Bucky through his own working papers.

I particularly would like to express my appreciation for Lars Müller. Lars and I have been enjoying talking about this project for almost ten years, ever since he designed the two beautiful volumes of *Your Private Sky: The Art of Design Science*. Lars is a great artist of book design, and his encouragement all along the way inspired me to pursue the vision of presenting these books to a new generation in a fashion fitting to their remarkable prescience. I want to also acknowledge his fine team at Lars Müller Publishers in Switzerland: Michael Furrer, Katharina Kulke, and Lea Pfister, supplemented by Jonathan Fox in Spain. I cannot imagine a more competent team to undertake such a task.

And finally I want to express my gratitude to my dear “Fuller” family: my sister, Alexandra Fuller May, a passionate champion of design revolution, who urged us to go for a design that would reach a vital new audience. My mother, Allegra Fuller Snyder, who cheered me on in this project, and gave of her aesthetic wisdom and deep sensitivity for Bucky’s way of being. My father, the late Robert Snyder, who joined the fold and gave so much to this work as a pioneering documentarian of Bucky. My aunt Alexandra Fuller, who died five years before Allegra was born. And dear dear Bucky and Anne, who gave so much for us.

J.S.



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