[1053.80-1053.85 Growth and Decay Scenario]

1053.801   In chemical interbonding of atomic systems single-bonded (univalent) tetrahedra are only single-vertex-to-single-vertex congruent. This means that only one of each of any two tetrahedra's directionally differentiable four corners—which are as yet only infra- or ultratunable, only noisy subsystem, vertexial somethingnesses—are subcongruent critically intimate; that is, the magnitude of their mutual interattractiveness is greater than any other of their cosmic attracters. Singly interbonded tetrahedra are always attracted in critically intimate degree by one—and only one—of their corner-identifying infratunable systems attractively bonded with a neighboring tetrahedron's corner vertex subdifferentiable-system "points." For ages the vertexial somethingnesses only superficially apprehended by humans were experientially identified visually as "specks," audibly as noises, tactilely as prickly points, topologically as vertexes, and geometrically as sharp (corner) angles.

1053.802   Topology enumerates the critical-proximity-bonded pairs of "points" as constituting only one point and not as an almost tangent two. Topological accounting is confined to only superficially visible characteristics of systems. (See Sec. 262.02.)

1053.803   We learn experientially that lines are trajectories (Sec. 521.20), that two events and their trajectories cannot pass through the same point at the same time (Secs. 517.01-06), and that when we have such conflict or transit interference, they result in *smashes* (always separating each of the intersmashing bodies into a plurality of smaller systems, not dirt or dust), *plunge-ins* such as meteors plunging into Earth (to form more complex systems), *refractions, reflections,* or critical-proximity interrattractiveness cotravelings (Earth and Moon). When we do not have interference conflicts but we have two independent event trajectories converging to pass "near" one another only at a precessionally critical-course-refracting, mass-interattractive distance, they may converge and diverge in a twist vertex exit (see Secs. 921.15 and 942.12). The term *vertex* embraces all of the foregoing system-furnished, local-focal, event cases.

1053.804   In chemical double-bonding the edge vectors of the tetrahedra—as well as the terminal vertexes—are also so critically proximate as superficially to seem to be congruent and are topologically accredited numerically only as "one" because of their superficial aspect of unity as a single hinge-pin.

1053.810   The vector equilibrium consists of eight tetrahedra each of which is edge- bonded; i.e., vertexially double-interbonded with three others, with each of their pre-time- size internal vertexes theoretically congruent as eight-in-one. Each of the pre-time-size vector equilibrium's eight tetrahedra has six vector edges ($6 \times 8 = 48$). (There are 24 internal and 24 external vector edges, 48 vector edges in all.) Each of the eight tetrahedra has four vertexes ($4 \times 8 = 32$), and in each of the tetrahedra three of these vertexes are external ($3 \times 8 = 24$): There are thus 12 externally paired sets ($24/2 = 12$) of visible vertexes. Three of each of the eight tetrahedra's vector edges ($3 \times 8 = 24$) are displayed on the outside of the vector equilibrium. (Compare Sec. 1033.020.)

1053.811   There are 24 external vector edges of the vector equilibrium ($8 \times 3 = 24$). The other three vector edges of each of the eight tetrahedra are arrayed inwardly as 24 internal edges ($8 \times 3 = 24$), but these inwardly arrayed vector edges of the eight tetrahedra, being double-bonded or hinged together, appear as only 12 radial spokes of the vector equilibrium, which has 24 separate vectors in its four closed chordal rims of the four great-circle planes of the tetrahedra's four dimensionality; these four great circles produce the zerovolume tetrahedron. (See Sec. 441.)

1053.812   Nature never stops or even pauses at dead center. Nature contracts convergently to the center of its nuclear sphere, where each of its frequency-tuned integrities self-interfere convergently and react reflectively—ergo, omnidivergently—from their own terminally convergent self-frequency interferings. Unity is plural and at minimum two. (See Secs. 905.11 and 1070.)

1053.813   In the vector-diametered VE the convergent 2 l/2 phase coalesces with the divergent 2 l/2 phase and produces a univalent 5-ness whose consequence is also quadrivalent—producing also the vector-radiused VE's $5 \times 4 = 20$-ness of the vector equilibrium's subfrequency embracement of its eight edge-bonded, bivalent tetra and their six half-octahedra interstices.

1053.82   **Life and Death**

1053.821   The decaying and growing are complementary. Death is a cofunction of birth: the father is dying; the child is being born. There never has been a real negative except as a positively complementary function of the oppositely directed positive.

1053.822   We do not have two Universes—"this world" and "the next world." Death is only the nonresonant, between-frequency silence of our oscillatory "no-stopover" passages through the Grand Central Station of the vector equilibrium's equilibrious center, as the lags in our cognition "realizations" time us into life's inherently aberrated imperfection aspects— somewhere off center.

1053.823   As we learn through experience to identify and comprehend ever more inclusively and precisely the generalized principles manifest in our experiences, and as we learn to communicate and share our recognitions of these manifests, we gradually reduce the lag rates in human cognition and come ever nearer to realization of the perfection.

1053.824   *Apprehension* is the physical brain's coordinate storing of all the special case, physically sensed information of otherness, integral (the child's thumb sucked by its mouth) or separate (the mother's udder sucked by the child's mouth.) *Comprehension* is the metaphysical mind's discovery of the meaningful interrelationship between the special- case information data that are neither implicit in, nor inferred by, any of the special-case information data when taken only separately—the meaning discovered by mind being the generalized principles manifest exclusively by the interrelationship variables and constants. *Awareness* means apprehending while also intuitively comprehending that the excitement over the novelty of the incoming information is significant because possibly pregnant with meaningful principles. (Compare Sec. 526.18.)

1053.825   Since "life" is experientially demonstrable to be weightless—ergo, metaphysical—its awareness and comprehension of meanings synchronize exclusively with the nonphysical intervals concentrically occurring between the only physically sensed frequencies of exclusively inanimate, radiantly propagated, electromagnetic-wave phenomena.

1053.826   Both death and life are complementary metaphysical functions interspersing and embracing our electromagnetic physical experience. Life's physical reality is constituted by the unique frequency identifications of the chemical elements and their atomic components as well as the humanly tune-in-able "color" frequencies of the electromagnetic spectrum's concentrically interpositioned occurrences (usually published by humans as a chart of positions along any one radius of the omnidirectional comprehensive concentric system). The metaphysical cognition of life-death reality is constituted exclusively by all the intervals between and beyond—inwardly and outwardly— all of the comprehensive electromagnetic phenomena sensed by human organisms.

1053.827   The music of John Cage is preoccupied with the silent intervals; his growing audience constitutes the dawning of the transition of all humanity into synchronization with the metaphysical rather than the physical. The decibel amplification of youth's "rock" music has switched its physical beat into the old silent intervals and is inducing metaphysical preoccupation in its listeners.

1053.83   **Positive Visible and Integral Invisible**

1053.831   To free ourselves from our preconditioned ill-chosen words of plus-minus and positive-negative, we may say operationally that there never has been a minus Universe to cofunction with Universe. There has always been cosmically integral, visible and invisible experience, which we have learned only in the past 100 years to be the consequence of whether or not we are integrally equipped organically with receiving sets having frequency tunability under the particular electromagnetic-waveband circumstances considered.

1053.832   Radiation outcasts. Radiation does not broadcast; broadcast is a planar statement; there are no planes. *Out* is inherently omnidivergent. Radiation omnicasts but does not and cannot *in*cast; it can only go-in-to-go-out. *In* is gravity.

1053.833   If radiation "goes through" a system and comes out on the other side, it does so because (I) there was no frequency interference—it just occurred between the system's occurrence frequencies—or (2) there was tangential interference and deflection thereby of the angle of travel, wherefore it did not go through; it went by.

1053.84   **Cay and Decay**

1053.841   In Webster's dictionary cay is an "emergent reef of coral or sand." We deduce that its earlier etymological meaning is a "growth," a coming together of parts (of sand or coral creatures)—ergo, we have *cay* and de-*cay*. Cay is convergently associative and syntropically cumulative. Decay is divergently disassociative and entropically dispersive.

1053.842   The nuclear vector equilibrium with a frequency of one has a double intensity (quadrivalent) tetravolume of 5 with a convergent *cay* volume of 2 1/2 and a divergent *decay* volume of 2 1/2; a congruent double 2 1/2 whose energy involvement potential is 5.

1053.843   In the generalized (subfrequency) case of the nuclear vector equilibrium (pulsatively impotent), *either* convergent *or* divergent (not both) quadrivalent tetravolume where frequency is half-zero, the tetravolume of the VE^0 = 2 1/2.

1053.844   In the generalized (subfrequency case) of the nuclear vector equilibrium (potentially pulsative), congruently one-half-convergent and one-half-divergent quadrivalent tetravolume where frequency is zero, the half-convergent tetravolume of 2 2 compounded with the half-divergent tetravolume of 2 1/2 produces a double intensity two-and-a-halfness which has—an only potential—quadrivalent tetravolume of 5; ergo, $VE^0 = 5$, one-half of which is alternatively invisible; ergo, VE^0 appears deceptively to have a tetravolume of 2 1/2.

1053.845   In the generalized (subfrequency) nucleus-embracing, convergent-divergent, bivalent tetravolume vector equilibrium of frequency one, its tetravolume is 20. $VE^1 = 20$.

1053.846   In the generalized (subfrequency) nucleus-embracing, convergent-divergent vector equilibrium of frequency two, the tetravolume is 160. $VE^2 = 160$. (See Sec. 966.05 and Fig. 966.05B.)

1053.847   What must be remembered in considering all the foregoing is that unity is plural and at minimum two, as elucidated in Secs. 905.11 and 1070; wherefore the zero- frequency vector equilibrium, the VE^0 of "apparent" tetravolume 2 1/2, has an inherent but invisible double value that will have an operational resource effectiveness of 5, 2 1/2 of which is convergently effective and 2 1/2 divergently effective. This produces the state of equilibrium whose untenability induces cosmic resonance.

1053.848   In the symmetrical doubling of linear (radial) dimension the surface area increases four times and the volume eight times their original magnitude. In the case of the nuclear (one sphere) vector equilibrium with radius = 1 and volume = 2 1/2, when surrounded with 12 closest-packed, uniradius spheres and when the center of the nuclear sphere is connected to the respective centers of the 12 surrounding spheres, the distance between the center of the nuclear sphere and the center of any one of its 12 surrounding spheres is equal to 2 radii, or one *diameter* of the uniradius spheres. With radius 2, 2 1/2 × 8 = 20. (Compare Sec. 1033.63.)

1053.849   **Table: Initial Frequencies of Vector Equilibrium:**

Closest-packed Uniradius Spheres	Frequency	Tetravolumes
Radius 1	$VE^{0/2}$	2 1/2
Radius 1	VE^{0}	5
Radius 2	VE^{1}	20
Radius 4	VE^{2}	160

1053.85   **Inventory of Alternatives to Positive**

TACTILE: — range-reachable, frequency dense, ergo interferable, ergo "solidly" or firmly touchable vs out-of-reach untunable

— cold-warm; also frequency conditions

— push-pull

AUDIBLE: — infra- or ultratunable

— sound and noise; we say "noise" when the frequencies are not differentiable but altogether overlap the frequency limit of our equipment

VISUAL: — frequency; again, electromagnetic

— infra- and ultratunable

	—	distance factor not a matter of resolution but of wavelength
	—	you can't differentiate the untunable
OLFACTORY:	—	sweet vs obnoxious
	—	*decay;* the divergent, the coming apart; decaying tends to be malodorous
	—	*cay* (growth); the convergent freshness tends to be olfactorily welcome
ELECTRO-MAGNETICS:	—	attractions and repulsions.

What are the relative frequency ranges involved? (Compare Sec. 100.020.)

1054.00 Relationship of Gibbs to Euler

1054.10 Synergetic Analysis: Euler's topology and Willard Gibbs' phase rule give us synergetic-analysis capability. Euler differentiated all physical Universe into lines, crossings, and areas: the fundamental visual aspects of our experiences having to do with our eyes, radiation frequencies, and conceptual images. Gibbs' phase rule differentiated the physical Universe into liquid, crystalline, and gaseous phases, which are not so much visual as thermal, which is tactile, and which are always characterized by unique whole- number interattractions, i.e., restraints. Conversely, with successive whole-number degrees of freedom, thermal, sonic, or viscosity frequencies are differentiated in respect to their condition within their respective states as well as between those states.

1054.11 Euler's synergetic differentiation and equatingly accomplished reintegration of Universe deals with energy disassociative as radiation; Gibbs deals with energy associative as matter at various thermal stages. Euler's and Gibbs' are two different system aspects or behaviors of Universe. Euler deals with the static, geometrical field aspects of Universe. Gibbs deals with energy associative as matter, and what the degrees of energetic freedom may be within a local physical complex, and what amounts of energy would have to be added locally to bring about other states.

1054.20 Relationship of Gibbs to Euler

EULER		GIBBS
Visual		Tactile
Energy as radiation		Energy as matter
(coming apart)		(associative)
Differentiated		Integrated
Locally superfical		Internal
	They come together	
	in vertexial bonding	
	which implies	
which is always	= Mass attraction =	which is kinetically
potentially directional		active in GIBBS
and descriptive in EULER		

1054.30 Synergetic Integration of Topology and Quanta: Synergetics' "breakthrough" integration of Euler's topology and Willard Gibbs' phase rule is explained by the number of intertetrahedral bonds:

Phases:	Bonds:	States:		
				R
			Face	I
Eccentric	3 bonds	= Ice	bond	G
			tetra	I
				D
				F
			Edge	L

Concentric   2 bonds   = Water   bond E
(medium phase)   (medium phase) tetra X
                                                                F C
                                                         Point L O
Eccentric   1 bond   = Vapor   bond E M
                                                              tetra X P
                                                                        R
                                                                        E
                    Additional bond   S
                    energies present in = Medium +2   S
                    the eccentric phases   phase   I
                                                                        V
                    3+1, 1+3   = 2+2   E

1054.31   The rigid ice stage is characterized by load concentration, no degrees of freedom, and slow creep. The flexible, fluid stage is characterized by hinge-bonding, load distribution, one degree of freedom, and noncompressibility. The flexible, fluid vapor stage is characterized by universal jointing, load distribution, six degrees of freedom, and compressibility.

1054.32   Median unity is two, therefore unity plus two equals four.

Median state   = Unity + 2

Frozen state   = Median unity - 1 = 1

Vapor state   = Median unity + 1 = 3

(3+ 1 =4; 1 +3=4; 2+2=4)

Ice   = Median freedom minus one freedom

Water   = Median freedoms

Vapor   = Median freedoms plus one freedom

1054.40   **Topology and Phase** (see Table 1054.40)

1054.50   **Polyhedral Bonding:** Willard Gibbs' phase rule treats with the states of the environment you can sense with your eyes closed: crystallines, liquids, gases, and vapors. Euler's points, lines, and areas are visually described, but they too could be tactilely detected (with or without fingers).

1054.51   The mathematicians get along synergetically using Euler's topology alone. It is the chemists and physicists who cannot predict synergetically without using Gibbs' phase rule.

1054.52   Euler deals with the superficial aspects of polyhedra: of visual conceptuality. He deals only with the convex surfaces of polyhedral systems. Euler deals with unit, integral, single polyhedra, or with their subaspects. He is not concerned with the modus operandi of the associabilities or disassociabilities of a plurality of polyhedra.

1054.53   But Gibbs unknowingly deals with polyhedra that are composited of many polyhedra, i.e., compounds. He does not think or talk about them as polyhedra, but we find the connection between Euler and Gibbs through the polyhedral bonding in respect to Euler's aspects. Euler's lines are double bonds, i.e., hinges. Euler's vertexes are single bonds. Euler's areas are triple bonds. Gibbs accommodates the omnidirectional system complementations of the other senses—thermal, tactile, aural, and olfactory—not just associatively, but radiationally. Gibbs brings in time. Time is tactile. Time is frequency. Our pulses measure its passing.

1054.54   People see things move only relative to other things and feel small vibrations when they cannot see motion. The tactile *feels* angular promontories or sinuses with the fingers or body. *Sinus* means "without"— "nothing," invisible, ergo, nonidentified by Euler. The frequencies we call heat are tactilely sensed. We have radiation-frequency tunability range. Our skin structuring is tuned to frequencies beyond the eye-tunable range, i.e., to ultraviolet and infrared.

1054.55   Euler did not anticipate Gibbs. Gibbs complements Euler—as does synergetics' identification of the two excess vertexes as constituting the axis of conceptual observation in respect to all independent, individual orientations of all systems and subsystems; i.e., quantum mechanics' abstract, nonspinnable "spin."

	Inherent Qualities			Old Equation	New Equation	New Equation	New Equation reduced to common factor		Prime Numbers	Relative Abundance
	Vertexes	Faces	Edges	$V + F = E + 2$	$* + F = E$	$\div 2$ ◉				$* + F = E$
Tetrahedron	4	4	6	4 + 4 = 6 + 2	2 + 4 = 6	1 + 2 = 3	1 (1+2=3)		1	
Octahedron	6	8	12	6 + 8 =12 + 2	4 + 8 =12	2 + 4 = 6	2 (1+2=3)		2	
Cube	8	12	18	8 +12 =18 + 2	6 +12 =18	3 + 6 = 9	3 (1+2=3)	$\rho^x \sim \text{U}^x \cdot$	3	·◉·[1 + 2 = 3] + ❷
Icosahedron	12	20	30	12+20 =30 + 2	10+20 =30	5 +10 =15	5 (1+2=3)		5	
Vect. Equilib.	12	20	30	12+20 =30 + 2	10+20=30	5 +10 =15	5 (1+2=3)		5	

DEFINITIONS:

* Number of points (vertexes) other than those on poles = (V-2=*) = non-polar vertexes.
❷ Polarity Constant that modifies all systems under consideration, additive twoness.
◉ Zonality Constant (Zone of Tunability), multiplying twoness.
V Number of vertexes.
F Number of faces.
E Number of edges.
Ʋ Frequency - Modular breakdown.
ρ Wave length.

Gibbs' Phase Rule: $F = C + 2 - P$

where: F = Degrees of Freedom, i.e. number of variables.
        C = Number of Chemical Components.
        P = Phases of the System.
        2 = Constant.

The phase rule is an equation for determining the number of possible degrees of freedom (variables) that can be given arbitrary values in a system in equilibrium without upsetting the equilibrium. For example in a system consistiing of ice, water. and water vapor, there are three phases: vapor, liquid, and crystalline; and one component: water. Therefore: F = 0.   The three phases of water can coexist in equilibrium at a fixed temperature and pressure only, there are no degrees of freedom.

	Single-bonded	Double-bonded	Triple-bonded
Equivalents			
Phase	gas	liquid	crystalline
Bonds (vertexial)	single	double	triple
Connection	pin	hinge	fix
Inherent Qualities	vertex	edge	face

Fig. 1054.40

1054.56   We find Euler and Gibbs coming together in the *vertexial* bonds, or polyhedral "corners," or point convergency of polyhedral lines. The bonds have nothing to do with the "faces" and "edges" they terminally define. Two bonds provide the hinge, which is an edge bonding. One bond gives a universal joint. Triple or areal bonding gives rigidity.

1054.57   Mass-interattraction is always involved in bonding. You may not have a bond without interattraction, mass or magnetic (integral or induced), all of which are precessional effects. As Sun's pull on Earth produces Earth orbiting, orbiting electrons produce directional field pulls. This was not considered by Euler because he was dealing only with aspects of a single system.

1054.58   Gibbs requires the mass-interattraction without saying so. Mass-interattraction is necessary to produce a bond. Gases may be tetrahedrally bonded singly, corner to corner, or as a universal joint. Gibbs does not say this. But I do.