### 986.770 Shell Growth Rate Predicts Proton and Neutron Population of the Elements

986.771   Thus far we have discovered the physical modelability of Einstein's equation and the scientific discovery of the modelability of the transformation from matter to radiation, as well as the modelability of the difference between waves and particles. In our excitement over these discoveries we forget that others may think synergetics to be manifesting only pure coincidence of events in a pure-scientists' assumed-to-be model-less world of abstract mathematical expressions, a world of meaningless but alluring, simple geometrical relationships. Hoping to cope with such skepticism we introduce here three very realistic models whose complex but orderly accounting refutes any suggestion of their being three successive coincidences, all occurring in the most elegantly elementary field of human exploration-that of the periodic table of unique number behaviors of the proton and neutron populations in successive stages of the complexity of the chemical elements themselves.

986.772   If we look at Fig. 222.01 (*Synergetics 1*), which shows the three successive layers of closest-packed spheres around the prime nuclear sphere, we find the successive layer counts to be 12, 42, 92 . . . that is, they are "frequency to the second power times 10 plus 2." While we have been aware for 40 years that the outermost layer of these concentric layers is 92, and that its first three layers add to

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12

42

96

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146

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which 146 is the number of neutrons in uranium, and uranium is the 92nd element—as with all elements, it combines its total of inner-layer neutrons with its outer-layer protons. In this instance of uranium we have combined the 149 with 92, which gives us Uranium- 238, from which count we can knock out four neutrons from eight of the triangular faces without disturbing symmetry to give us Uranium-234.

986.773   Recently, however, a scientist who had been studying synergetics and attending my lectures called my attention to the fact that the first closest-packed layer 12 around the nuclear sphere and the second embracing closest-packed layer of 42 follow the same neutron count, combining with the outer layer number of protons—as in the 92 uranium-layer case—to provide a physically conceptual model of magnesium and molybdenum. (See Table 419.21.)

986.774   We can report that a number of scientists or scientific-minded laymen are communicating to us their discovery of other physics-evolved phenomena as being elegantly illustrated by synergetics in a conceptually lucid manner.

986.775   Sum-totally we can say that the curve of such events suggests that in the coming decades science in general will have discovered that synergetics is indeed the omnirational, omniconceptual, multialternatived, omnioptimally-efficient, and always experimentally reevidenceable, comprehensive coordinate system employed by nature.

986.776   With popular conception of synergetics being the omniconceptual coordinate system of nature will come popular comprehension of total cosmic technology, and therefore popular comprehension that a competent design revolution—structurally and mechanically—employing the generalized principles governing cosmic technology can indeed, render all humanity comprehensively—i.e., physically and metaphysically—successful, i.e., becoming like "hydrogen" or "leverage" —regular member functions of an omnisuccessful Universe.

986.800   **Behavioral Proclivities of Spheric Experience**

986.810   **Discard of Abstract Dimensions**

986.811   Inspired by the $E=Mc^2$ modelability, I did more retrospective reconsideration of what I have been concerned with mathematically throughout my life. This reviewing led me to (1) more discoveries, clarifications, and definitions regarding spheres; (2) the discard of the concept of axioms; and (3) the dismissal of three- dimensional reality as being inherently illusory—and the discard of many of mathematics' abstract devices as being inherently "roundabout," "obscurational," and "inefficient."

986.812   Reversion to axioms and three-dimensional "reality" usually occurs on the basis of "Let's be practical...let's yield to our ill-informed reflex- conditioning...the schoolbooks can't be wrong...no use in getting out of step with the system...we'll lose our jobs...we'll be called nuts."

986.813   Because they cannot qualify as laws if any exceptions to them are found, the generalizable laws of Universe are inherently eternal-timeless-sizeless. Sizing requires time. Time is a cosmically designed consequence of humanity's having been endowed with innate *slowness* of apprehension and comprehension, which lags induce time-lapse-altered concepts. (Compare Sec. 529.09.)

986.814   Time-lapsed apprehension of any and all energy-generated, human-sense- reported, human-brain-image-coordinated, angular-directional realization of any physical experiences, produces (swing-through-zero) momentums of misapprehending, which pulsatingly unbalances the otherwise equilibrious, dimensionless, timeless, zero-error, cosmic intellect perfection thereby only inferentially identified to human apprehending differentiates the conceptioning of all the special case manifests of the generalized laws experienced by each and every human individual.

986.815   Academic thought, overwhelmed by the admitted observational inexactitude of special case human-brain-sense experiences, in developing the particular logic of academic geometry (Euclidean or non-Euclidean), finds the term "identical" to be logically prohibited and adopts the word "similar" to identify *like* geometrical entities. In synergetics, because of its clearly defined differences between generalized primitive conceptuality and special-case time-size realizations, the word "identical" becomes logically permitted. This is brought about by the difference between the *operational* procedures of synergetics and the *abstract* procedures of all branches of conventional geometry, where the word "abstract" deliberately means "nonoperational," because only axiomatic and non-physically-demonstrable.
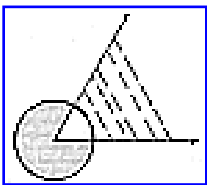
986.816   In conventional geometry the linear characteristics and the relative sizes of lines dominate the conceptioning and its nomenclature-as, for instance, using the term "equiangular" triangle because only lengths or sizes of lines vary in time. Lines are unlimited in size and can be infinitely extended, whereas angles are discrete fractions of a discrete whole circle. Angles are angles independently of the lengths of their edges. (See Sec. 515.10.) Lengths are always special time-size cases: angles are eternally generalized.... We can say with scientific accuracy: "identical equiangular triangles." (See Fig. 986.816.)

986.817   In summary, lines are "size" phenomena and are unlimited in length. Size measuring requires "time." Primitive synergetics deals only in angles, which are inherently whole fractions of whole circular azimuths.
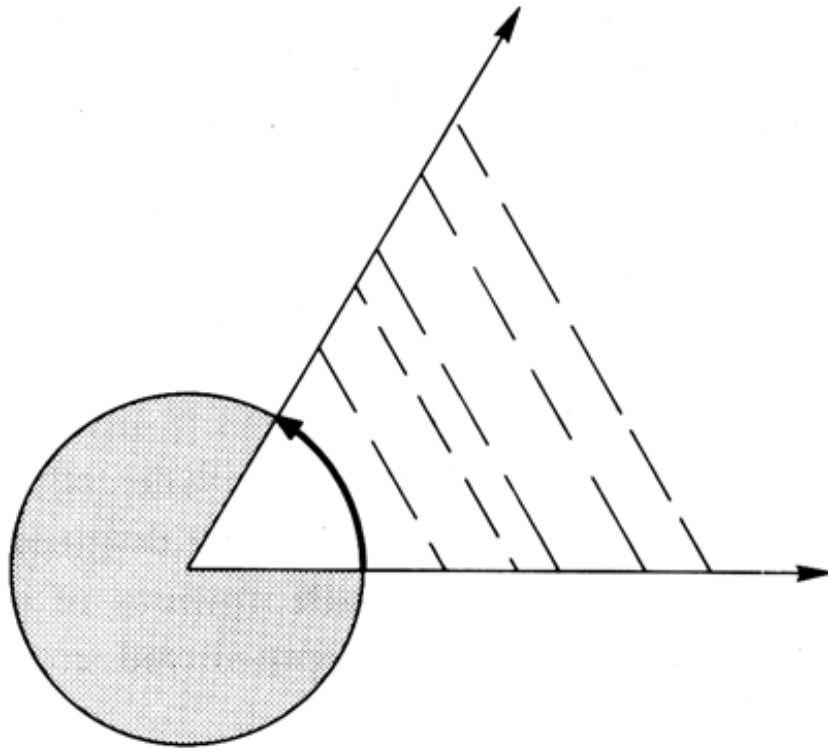
Fig. 986.816 Angles Are Angles Independent of the Length of their Edges. Lines are "size" phenomena and unlimited in length. Angle is only a fraction of one cycle.

986.818   Angles are angles independent of the length of their edges. Triangles are triangles independent of their size. Time is cyclic. Lacking one cycle there is no time sense. Angle is only a fraction of one cycle.

986.819   Synergetics procedure is always from a given whole to the particular fractional angles of the whole system considered. Synergetics employs multiplication only by division.... only by division of finite but non-unitarily-conceptual Scenario Universe, subdivided into initially whole primitive systems that divide whole Universe into all the Universe outside the system, all the Universe inside the system, and the little bit of Universe that provides the relevant set of special case stars of experience that illuminatingly define the vertexes of the considered primitive generalized system of consideration. (See Sec. 509.)

Conventional geometry "abstracts" by employment of nonexistent—ergo, nondemonstrable—parts, and it compounds a plurality of those nonexistents to arrive at supposedly real objects.

986.820   Because the proofs in conventional geometry depend on a plurality of divider-stepped-off lengths between scribed, punched, or pricked indefinably sized point- speck holes, and because the lengths of the straightedge-drawn lines are extendible without limit, conventional geometry has to assume that any two entities will never be exactly the same. Primitive synergetics has only one length: that of the prime unit vector of the VE and of the isotropic vector matrix.

986.821   Synergetics identifies all of its primitive hierarchy and their holistic subdivisions only by their timeless-sizeless relative angular fractional subdivisions of six equiangular triangles surrounding a point, which hexagonal array equals 360 degrees, if we assume that the three angles of the equiangular triangle always add up to 180 degrees. Synergetics conducts all of its calculations by spherical trigonometry and deals always with the central and surface angles of the primitive hierarchy of pre-time-size relationships of the symmetrically concentric systems around any nucleus of Universe—and their seven great-circle symmetries of the 25 and 31 great-circle systems (Sec. 1040). The foldability of the four great-circle planes demonstrates the four sets of hexagons omnisurrounding the cosmic nucleus in omni-60-degree angular symmetry. This we call the VE. (See Sec. 840.) Angular identities may be operationally assumed to be identical: There is only one equiangular triangle, all of its angles being 60 degrees. The 60-ness comes from the 60 positive and 60 negative, maximum number of surface triangles or T Quanta Modules per cosmic system into which convergent-divergent nuclear unity may be subdivided. The triangle, as physically

demonstrated by the tube necklace polygons (Sec. 608), is the only self-stabilizing structure, and the equiangular triangle is the most stable of all triangular structures. Equiangular triangles may be calculatingly employed on an "identical" basis.

## 986.830   Unrealizability of Primitive Sphere

986.831   As is shown elsewhere (Sec. 1022.11), synergetics finds that the abstract Greek "sphere" does not exist; nor does the quasisphere—the sense-reported "spheric" experiencings of humans—exist at the primitive stage in company with the initial cosmic hierarchy of timeless-sizeless symmetric polyhedra as defined by the six positive and six negative cosmic degrees of freedom and their potential force vectors for adequately coping with all the conditions essential to maintain the individual integrity of min-max primitive, structural, presubdivision systems of Universe.

986.832   The sphere is only dynamically developed either by profiles of spin or by multiplication of uniformly radiused exterior vertexes of ever-higher frequency of modular subdivisioning of the primitive system's initial symmetry of exterior topology. Such exclusively time-size events of sufficiently high frequency of modular subdivisioning, or high frequency of revolution, can transform any one of the primitive (eternal, sizeless, timeless) hierarchy of successive = 2½, 1, 2½, 3, 4, 5, 6-tetravolumed concentrically symmetric polyhedra into quasispherical appearances. In respect to each such ever-higher frequency of subdividing or revolving in time, each one of the primitive hierarchy polyhedra's behavioral appearance becomes more spherical.

986.833   The volume of a static quasisphere of unit vector length (radius = l) is 4.188. Each quasisphere is subexistent because it is not as yet spun and there is as yet no time in which to spin it. Seeking to determine anticipatorily the volumetric value of the as-yet- only-potential sphere's as-yet-to-be-spun domain (as recounted in Secs. 986.206-214), I converted my synergetics constant 1.0198255 to its ninth power, as already recounted and as intuitively motivated to accommodate the energetic factors involved, which gave me the number 1.192 (see Sec. 982.55), and with this ninth-powered constant multiplied the incipient sphere's already-third-powered volume of 4.188, which produced the twelfth-powered value 4.99206, which seems to tell us that synergetics' experimentally evidenceable only-by-high-frequency-spinning polyhedral sphere has an unattainable but ever-more-closely-approached limit tetravolume-5.000 (alpha) with however a physically imperceptible 0.007904 volumetric shortfall of

tetravolume-5, the limit 4.99206 being the maximum attainable twelfth-powered dynamism—being a sphericity far more perfect than that of any of the planets or fruits or any other of nature's myriads of quasispheres, which shortfallers are the rule and not the exceptions. The primitively nonconceptual, only- incipient sphere's only-potentially-to-be-demonstrated domain, like the square root of minus one, is therefore a useful, approximate-magnitude, estimating tool, but it is not structurally demonstrable. The difference in magnitude is close to that of the T and E Quanta Modules.

986.834   Since structure means an interself-stabilized complex-of-events patterning (Sec. 600.01), the "spheric" phenomenon is conceptually—sensorially—experienceable only as a time-size high-frequency recurrence of events, an only-by-dynamic sweepout domain, whose complex of involved factors is describable only at the twelfth-power stage. Being nonstructural and involving a greater volumetric sweepout domain than that of their unrevolved structural polyhedral domains, all quasispheres are compressible.

986.835   Independently occurring single bubbles are dynamic and only superficially spherical. In closest packing all interior bubbles of the bubble aggregate become individual, 14-faceted, tension-membrane polyhedra, which are structured only by the interaction with their liquid monomer, closed-system membranes of all the trying-to- escape, kinetically accelerated, interior gas molecules—which interaction can also be described as an omniembracing restraint of the trying-to-escape gaseous molecules by the sum-total of interatomic, critical-proximity-interattracted structural cohesion of the tensile strength of the bubble's double-molecule-layered (double-bonded) membranes, which comprehensive closed-system embracement is similar to the cosmically total, eternally integral, nonperiodic, omnicomprehensive embracement by gravitation of the always-and-only periodically occurring, differentiated, separate, and uniquely frequenced nonsimultaneous attempts to disintegratingly escape Universe enacted by the individually differentiated sum-total entities (photons) of radiation. Gravity is always generalized, comprehensive, and untunable. Radiation is always special case and tunable.

986.836   Bubbles in either their independent spherical shape or their aggregated polyhedral shapes are structural consequences of the omnidirectionally outward pressing (compression) of the kinetic complex of molecules in their gaseous, single-bonded, uncohered state as comprehensively embraced by molecules in their liquid, double-bonded, coherent state. In the gaseous state the molecules operate independently and disassociatively, like radiation quanta—ergo, less effective locally than in their double- bonded, integrated, gravity-like, liquid-state embracement.

986.840   **Primitive Hierarchy as Physical and Metaphysical**

986.841   A special case is time-size. Generalization is eternal and is independent of time-size "Spheres," whether as independent bubbles, as highfrequency geodesic polyhedral structures, or as dynamically spun primitive polyhedra, are always and only special case time-size (frequency) physical phenomena. The omnirational primitive- numbered-tetravolume-interrelationships hierarchy of concentric symmetric polyhedra is the only generalized conceptuality that is both physical and metaphysical. This is to say that the prime number and relative abundance characteristics of the topology, angulation, and the relative tetravolume involvements of the primitive hierarchy are generalized, conceptual metaphysics. Physically evidenced phenomena are always special case, but in special cases are manifests of generalized principles, which generalized principles themselves are also always metaphysical.

986.850   **Powerings as Systemic-integrity Factors**

986.851   Synergetics is everywhere informed by and dependent on experimental evidence which is inherently witnessable—which means conceptual—and synergetics' primitive structural polyhedra constitute an entire, infra-limit-to-ultra-limit, systemic, conceptual, metaphysical hierarchy whose entire interrelationship values are the generalizations of the integral and the "internal affairs" of *all systems* in Universe—both nucleated and nonnucleated. Bubbles and subatomic A, B, T, and E Quanta Modules are nonnucleated containment systems. Atoms are nucleated systems.

986.852   The systemically internal interrelationship values of the primitive cosmic hierarchy are all independent of time-size factorings, all of which generalized primitive polyhedra's structurings are accommodated by and are governed by six positive and six negative degrees of freedom. There are 12 integrity factors that definitively cope with those 12 degrees of freedom to produce integral structural systems—both physical and metaphysical—which integrity factors we will henceforth identify as *powerings.*

986.853   That is, we are abandoning altogether the further employment of the word *dimension,* which suggests (a) special case time-size lengths, and (b) that some of the describable characteristics of systems can exist alone and not as part of a minimum system, which is always a part of a priori eternally regenerative Universe. In lieu of the no longer scientifically tenable concept of "dimension" we are adopting words to describe time-size realizations of generalized, timeless, primitive systems as event complexes, as structural selfstabilizations, and structural intertransformings as first, second, third, etc., local powering states and minimum local systemic involvement with conditions of the cosmic totality environment with its planetary, solar, galactic, complex-galactic, and supergalactic systems and their respective macro-micro isotropicities.

986.854   In addition to the 12-powered primitive structurings of the positive and negative primitive tetrahedron, the latter has its primitive hierarchy of six intertransformable, tetravolumed, symmetrical integrities which require six additional powerings to produce the six rational-valued, relative-volumetric domains. In addition to this 18-powered state of the primitive hierarchy we discover the integrally potential six- way intertransformabilities of the primitive hierarchy, any one of which requires an additional powering factor, which brings us thus far to 24 powering states. Realization of the intertransformings requires time-size, special case, physical transformation of the metaphysical, generalized, timeless-sizeless, primitive hierarchy potentials.

986.855   It is demonstrably evidenceable that the physically realized superimposed intertransformability potentials of the primitive hierarchy of systems are realizable only as observed from other systems. The transformability cannot be internally observed. All primitive systems have potential external observability by other systems. "Otherness" systems have their own inherent 24-powered constitutionings which are not additional powerings—just more of the same.

986.856   All systems have external relationships, any one of which constitutes an additional systemic complexity-comprehending-and-defining-and-replicating power factor. The number of additional powering factors involved in systemic self-systems and otherness systems is determined in the same manner as that of the fundamental interrelationships of self- and otherness systems, where the number of system interrelationships is

$$\frac{n^2 - n}{2}.$$

986.857   Not including the

$$\frac{n^2 - n}{2}.$$

additional intersystems-relationship powerings, beyond the 24 systemically integral powers, there are six additional, only- otherness-viewable (and in some cases only multi-otherness viewable and realizable), unique behavior potentials of all primitive hierarchy systems, each of which behaviors can be comprehensively accounted for only by additional powerings. They are:

25th-power =  axial rotation of the system

26th-power =  orbital travel of the system

27th-power =  expansion-contraction of the system

28th-power =  torque (axial twist) of the system

29th-power =  inside-outing (involuting-evoluting) of the system

30th-power =  intersystem precession (axial tilting) of the system

31st-power =  external interprecessionings amongst a plurality of systems

32nd-power = self-steering of a system within the galaxy of systems (precessionally accomplished)

33rd-power = universal synergistic totality comprehensive of all intersystem effects and ultimate micro- and macroisotropicity of VE-ness

986.860   **Rhombic Dodecahedron 6 Minus Polyhedron 5 Equals Unity**

986.861   High-frequency, triangulated unit-radius-vertexed, geodesically interchorded, spherical polyhedral apparencies are also structural developments in time-size. There are therefore two kinds of spherics: the highfrequency-event-stabilized, geodesic, structural polyhedron and the dynamically spun, only superficially "apparent" spheres. The static, structural, multifaceted, polyhedral, geodesic sphere's vertexes are uniformly radiused only by the generalized vector, whereas the only superficially spun and only apparently profiled spheres have a plurality of vertexial distances outward from their systemic center, some of which distances are greater than unit vector radius while some of the vertexes are at less than unit vector radius distance. (See Fig. 986.861.)

986.862   Among the symmetrical polyhedra having a tetravolume of 5 and also having radii a little more or a little less than that of unit vector radius, are the icosahedron and the enenicontahedron whose mean radii of spherical profiling are less than four percent vector-aberrant. There is, however, one symmetrical primitive polyhedron with two sets of its vertexes at greater than unit radius distance outwardly from their system's nucleic center; that is the rhombic dodecahedron, having, however, a tetravolume of 6. The rhombic dodecahedron's tetravolume of 6 may account for the minimum intersystemness in pure principle, being the space between omni-closest-packed unit-radius spheres and the spheres themselves. And then there is one symmetric primitive polyhedron having a volume of exactly tetravolume 5 and an interpattern radius of 0.9995 of one unit vector; this is the T Quanta Module phase rhombic triacontahedron. There is also an additional rhombic triacontahedron of exact vector radius and a tetravolume of 5.007758031, which is just too much encroachment upon the rhombic dodecahedron 6 minus the triacontahedron 5 $\longrightarrow$ 6 - 5 = 1, or one volumetric unit of unassigned cosmic "fail-safe space": BANG—radiation-entropy and eventual turnaround precessional fallin to syntropic photosynthetic transformation into one of matter's four states: plasmic, gaseous, liquid, crystalline.

986.863   All the hierarchy of primitive polyhedra were developed by progressive great-circle-spun hemispherical halvings of halvings and trisectings of halvings and quintasectings (see Sec. [100.1041](#)) of halvings of the initial primitive tetrahedron itself. That the rhombic triacontahedron of contact-facet radius of unit vector length had a trigonometrically calculated volume of 4.998 proved in due course not to be a residual error but the "critical difference" between matter and radiation. This gives us delight in the truth whatever it may be, recalling that all the discoveries of this chronicle chapter were consequent only to just such faith in the truth, no matter how initially disturbing to misinformed and misconditioned reflexes it may be.

986.870   **Nuclear and Nonnuclear Module Orientations**

986.871   The rhombic triacontahedron may be fashioned of 120 trivalently bonded T Quanta Module tetrahedra, or of either 60 bivalently interbonded positive T Modules or of 60 bivalently interbonded negative T Modules. In the rhombic triacontahedron we have only radiantly arrayed basic energy modules, arrayed around a single spheric nuclear- inadequate volumetric domain with their acute "corners" pointed inwardly toward the system's volumetric center, and their centers of mass arrayed outwardly of the system—ergo, prone to escape from the system.

986.872   In the tetrahedron constructed exclusively of 24 A Modules, and in the octahedron constructed of 48 A and 48 B Modules, the asymmetric tetrahedral modules are in radical groups, with their acute points arrayed outwardly of the system and their centers of mass arrayed inwardly of the system—ergo, prone to maintain their critical mass interattractive integrity. The outer sharp points of the A and B Modules are located at the centers of the four or six corner spheres defining the tetrahedron and octahedron, respectively. The fact that the tetrahedron's and octahedron's A and B Modules have their massive centers of volume pointing inwardly of the system all jointly interarrayed in the concentric layers of the VE, whereas in the rhombic triacontahedron (and even more so in the half-Couplers of the rhombic dodecahedron) we have the opposite condition—which facts powerfully suggest that the triacontahedron, like its congruent icosahedron's nonnuclear closest-possible-packed omniarray, presents the exclusively radiational aspect of a "one" or of a "no" nuclear-sphere-centered and isolated most "spheric" polyhedral system to be uniquely identified with the nonnuclear bubble, the one-molecule-deep, kinetically-escape-prone, gas-molecules-containing bubble.

986.8721   In the case of the rhombic dodecahedra we find that the centers of volume of their half-Couplers' A and B Modules occur almost congruently with their respective closest-packed, unit-radius sphere's outward ends and thereby concentrate their energies at several spherical-radius levels in respect to a common nuclear-volume-adequate center—all of which suggests some significant relationship of this condition with the various spherical-radius levels of the electron "shells."

986.873   The tetrahedron and octahedron present the "gravitational" model of self- and-otherness interattractive systems which inherently provide witnessable evidence of the systems' combined massive considerations or constellations of their interbindings.

986.874   The highly varied alternate A and B Module groupings permitted within the same primitive rhombic dodecahedron, vector equilibrium, and in the Couplers, permit us to consider a wide spectrum of complexedly reorientable potentials and realizations of intermodular behavioral proclivities Lying in proximity to one another between the extreme radiational or gravitational proclivities, and all the reorientabilities operative within the same superficially observed space (Sec. 954). All these large numbers of potential alternatives of behavioral proclivities may be circumferentially, embracingly arrayed entirely within the same superficially observed isotropic field.

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