250.00 Discoveries of Synergetics

250.01 Discovery

250.02 Discoveries are uniquely regenerative to the explorer and are most powerful on those rare occasions when a generalized principle is discovered. When mind discovers a generalized principle permeating whole fields of special-case experiences, the discovered relationship is awesomely and elatingly beautiful to the discoverer personally, not only because to the best of his knowledge it has been heretofore unknown, but also because of the intuitively sensed potential of its effect upon knowledge and the consequently improved advantages accruing to humanity's survival and growth struggle in Universe. The stimulation is not that of the discoverer of a diamond, which is a physical entity that may be monopolized or exploited only to the owner's advantage. It is the realization that the newly discovered principle will provide spontaneous, common-sense logic engendering universal cooperation where, in many areas, only confusion and controversy had hitherto prevailed.

250.10 Academic Grading Variables in Respect to Science Versus Humanities

250.101 Whether it was my thick eyeglasses and lack of other personable favors, or some other psychological factors, I often found myself to be the number-one antifavorite amongst my schoolteachers and pupils. When there were disturbances in the classroom, without looking up from his or her desk, the teacher would say, "One mark," or "Two marks," or "Three marks for Fuller." Each mark was a fifteen-minute penalty period to be served after the school had been let out for the others. It was a sport amongst some of my classmates to arrange, through projectiles or other inventions, to have noises occur in my vicinity.

250.11   Where the teacher's opinion of me was unfavorable, and that, in the humanities, was—in the end—all that governed the marking of papers, I often found myself receiving lower grades for reasons irrelevant to the knowledge content of my work—such as my handwriting. In science, and particularly in my mathematics, the answers were either right or wrong. Probably to prove to myself that I might not be as low-average as was indicated by the gradings I got in the humanities, I excelled in my scientific classes and consistently attained the top grades because all my answers were correct. Maybe this made me like mathematics. But my mathematics teachers in various years would say, "You seem to understand math so well, I'll show you some more if you stay in later in the afternoon." I entered Harvard with all As in mathematics, biology, and the sciences, having learned in school advanced mathematics, which at that time was usually taught only at the college level. Since math was so easy, and finding it optional rather than compulsory at Harvard, I took no more of its courses. I was not interested in getting grades but in learning in areas that I didn't know anything about. For instance, in my freshman year, I took not only the compulsory English A, but Government, Musical Composition, Art Appreciation, German Literature, and Chemistry. However, I kept thinking all the time in mathematics and made progressive discoveries, ever enlarging my mathematical vistas. My elementary schoolwork in advanced mathematics as well as in physics and biology, along with my sense of security in relating those fields, gave me great confidence that I was penetrating the unfamiliar while always employing the full gamut of rigorous formulation and treatment appropriate to testing the validity of intuitively glimpsed and tentatively assumed enlargement of the horizon of experientially demonstrable knowledge.

250.12   My spontaneous exploration of mathematics continued after I left Harvard. From 1915 to 1938—that is, for more than twenty years after my days in college—I assumed that what I had been discovering through the postcollege years, and was continuing to discover by myself, was well known to mathematicians and other scientists, and was only the well-known advanced knowledge to which I would have been exposed had I stayed at Harvard and majored in those subjects. Why I did not continue at Harvard is irrelevant to academics. A subsequent special course at the U. S. Naval Academy, Annapolis, and two years of private tutelage by some of America's leading engineers of half a century ago completed my formally acknowledged "education."

250.20   **My Independent Mathematical Explorations**

250.21   In the twentieth year after college, I met Homer Lesourd, my old physics teacher, who most greatly inspired his students at my school, Milton Academy, and who for half a century taught mathematics at Harvard. We discovered to our mutual surprise that I had apparently progressed far afield from any of the known physio-mathematical concepts with which he was familiar or of which he had any knowledge. Further inquiry by both of us found no contradiction of our first conclusion. That was a third of a century ago. Thereafter, from time to time but with increasing frequency, I found myself able to elucidate my continuing explorations and discoveries to other scientists, some of whom were of great distinction. I would always ask them if they were familiar with any mathematical phenomena akin to the kind of disclosures I was making, or if work was being done by others that might lead to similar disclosures. None of them was aware of any other such disclosures or exploratory work. I always asked them whether they thought my disclosures warranted my further pursuit of what was becoming an ever-increasingly larger body of elegantly integrated and coordinate field of omnirationally quantified vectorial geometry and topology. While they could not identify my discoveries with any of the scientific fields with which they were familiar, they found no error in my disclosures and thought that the overall rational quantation and their logical order of unfoldment warranted my further pursuing the search.

250.30   **Remoteness of Synergetics Vocabulary**

250.301   When one makes discoveries that, to the best of one's knowledge and wide inquiry, seem to be utterly new, problems arise regarding the appropriate nomenclature and description of what is being discovered as well as problems of invention relating to symbolic economy and lucidity. As a consequence, I found myself inventing an increasingly larger descriptive vocabulary, which evolved as the simplest, least ambiguous method of recounting the paraphernalia and strategies of the live scenario of all my relevant experiences.

250.31   For many years, my vocabulary was utterly foreign to the semantics of all the other sciences. I drew heavily on the dictionary for good and unambiguous terms to identify the multiplying nuances of my discoveries. In the meanwhile, the whole field of science was evolving rapidly in the new fields of quantum mechanics, electronics, and nuclear exploration, inducing a gradual evolution in scientific language. In recent years, I find my experiential mathematics vocabulary in a merging traffic pattern with the language trends of the other sciences, particularly physics. Often, however, the particular new words chosen by others would identify phenomena other than that which I identify with the same words. As the others were unaware of my offbeat work, I had to determine for myself which of the phenomena involved had most logical claim to the names involved. I always conceded to the other scientists, of course (unbeknownst to them); when they seemed to have prior or more valid claims, I would then inventor select appropriate but unused names for the phenomena I had discovered. But I held to my own claim when I found it to be eminently warranted or when the phenomena of other claimants were ill described by that term. For example, quantum mechanics came many years after I did to employ the term *spin.* The physicists assured me that their use of the word did not involve any phenomena that truly spun. *Spin* was only a convenient word for accounting certain unique energy behaviors and investments. My use of the term was to describe a direct observation of an experimentally demonstrable, inherent spinnability and unique magnitudes of rotation of an actually spinning phenomenon whose next fractional rotations were induced by the always co-occurring, generalized, a priori, environmental conditions within which the spinnable phenomenon occurred. This was a case in which I assumed that I held a better claim to the scientific term *spin.* In recent years, spin is beginning to be recognized by the physicists themselves as also inadvertently identifying a conceptually spinnable phenomenon—in fact, the same fundamental phenomenon I had identified much earlier when I first chose to use the word spin to describe that which was experimentally disclosed as being inherently spinnable. There appears to be an increasing convergence of scientific explorations in general, and of epistemology and semantics in particular, with my own evolutionary development.

250.32   Because physics has found no continuums, no experimental solids, no things, no real matter, I had decided half a century ago to identify, mathematical behaviors of energy phenomena only as *events.* If there are no things, there are no nouns of material substance. The old semantics permitted common-sense acceptance of such a sentence as, "A man pounds the table," wherein a noun verbs a noun or a subject verbs a predicate. I found it necessary to change this form to a complex of events identified as me, which must be identified as a verb. The complex verb me observed another complex of events identified again ignorantly as a "table." I disciplined myself to communicate exclusively with verbs. There are no *wheres* and *whats;* only angle and frequency events described as *whens.*

250.40   *The Climate of Invention*

250.401   In the competitive world of money-making, discoveries are looked upon as exploitable and monopolizable claims to be operated as private properties of big business. As a consequence, the world has come to think of both discoveries and patents as monopolized property. This popular viewpoint developed during the last century, when both corporations and government supported by courts have required individuals working for them to assign to them the patent rights on any discoveries or inventions made while in their employ. Employees were to assign these rights during, and for two years after termination of, their employment, whether or not the invention had been developed at home or at work. The drafting of expert patent claims is an ever more specialized and complex art, involving expensive legal services usually beyond the reach of private individuals. When nations were remote from one another, internal country patents were effective protection. With today's omniproximities of the world's countries, only world-around patents costing hundreds of thousands of dollars are now effective, with the result that patent properties are available only to rich corporations.

250.41   So now the major portions of extant inventions belong to corporations and governments. However, invention and discovery are inherently individual functions of the minds of individual humans. Corporations are legal fabrications; they cannot invent and discover. Patents were originally conceived of as grants to inventors to help them recover the expenses of the long development of their discoveries; and they gave the inventor only a very short time to recover the expense. Because I am concerned with finding new technical ways of doing more with less, by which increasing numbers of humanity can emerge from abject poverty into states of physical advantage in respect to their environment, I have taken out many patent claims—first, to hold the credit of initiative for the inspiration received by humanity's needs and the theory of their best solution being that of the design revolution and not political revolution, and second, to try to recover the expense of development. But most importantly, I have taken the patents to avoid being stopped by others—in particular, corporations and governments—from doing what I felt needed doing.

250.50   Coincidental Nature of Discoveries

250.501   What often seems to the individual to be an invention, and seems also to be an invention to everyone he knows, time and again turns out to have been previously discovered when patent applications are filed and the search for prior patents begins. Sometimes dozens, sometimes hundreds, of patents will be found to have been issued, or applied for, covering the same idea. This simultaneity of inventing manifests a forward- rolling wave of logical exploration of which the trends are generated by the omni- integrating discoveries and the subsequent inventions of new ways to employ the discoveries at an accelerating rate, which is continually changing the metaphysical environment of exploratory and inventive stimulation.

250.51   I have learned by experience that those who think only in competitive ways assume that I will be discouraged to find that others have already discovered, invented, and patented that which I had thought to be my own unique discovery or invention. They do not understand how pleased I am to learn that the task I had thought needed doing, and of which I had no knowledge of others doing, was happily already being well attended to, for my spontaneous commitment is to the advantage of all humanity. News of such work of others frees me to operate in other seemingly unattended but needed directions of effort. And I have learned how to find out more about what is or is not being attended to. This is evolution.

250.52   When I witness the inertias and fears of humans caused by technical breakthroughs in the realms of abstract scientific discovery. I realize that their criteria of apprehension are all uninformed. I see the same patterns of my experience obtaining amongst the millions of scientists around the world silently at work in the realm of scientific abstract discovery, often operating remote from one another. Many are bound to come out with simultaneous discoveries, each one of which is liable to make the others a little more comprehensible and usable. Those who have paid-servant complexes worry about losing their jobs if their competitors' similar discoveries become known to their employers. But the work of pure science exploration is much less understood by the economically competitive-minded than is that of inventors. The great awards economic competitors give to the scientists make big news, but no great scientist ever did what he did in hope of earning rewards. The greats have ever been inspired by the a priori integrities of Universe and by the need of all humanity to move from the absolute ignorance of birth into a little greater understanding of the cosmic integrities. They esteem the esteem of those whom they esteem for similar commitment, but they don't work for it.

250.53   I recall now that when I first started making mathematical discoveries, years ago, my acquaintances would often say, "Didn't you know that Democritus made that discovery and said just what you are saying 2,000 years ago?" I replied that I was lucky that I didn't know that because I thought Democritus so competent that I would have given up all my own efforts to understand the phenomena involved through my own faculties and investment of time. Rather than feeling dismayed, I was elated to discover that, operating on my own, I was able to come out with the same conclusions of so great a mind as that of Democritus. Such events increased my confidence in the resourcefulness and integrity of human thought purely pursued and based on personal experiences.

250.60   **Proofs**

250.61   I know that many of the discoveries of synergetics in the book of their accounting, which follows, may prove in time to be well-known to others. But some of them may not be known to others and thus may be added to the ever-increasing insights of the human mind. Any one individual has inherently limited knowledge of what total Universe frontiering consists of at any one moment. My list embraces what I know to be my own discoveries of which I have no knowledge of others having made similar discoveries earlier than my own. I claim nothing. Proofs of some of my theoretical discoveries have been made by myself and will be made by myself. Proofs may have been made by others and will be made by others. Proofs are satisfying. But many mathematical theorems provide great living advantages for humanity over long periods of time before their final mathematical proofs are discovered. The whys and wherefores of what is rated as mathematical proof have been evolved by mathematicians; they are formal and esoteric conventions between specialists.

251.00   Discoveries of Synergetics: Inventory

251.01   The ability to identify all experience in terms of only angle and frequency.

251.02   The addition of angle and frequency to Euler's inventory of crossings, areas, and lines as absolute characteristics of all pattern cognizance.

251.021   Synergetics adds four additional topological aspects to Euler's three cosmically unique aspects of vertexes, faces, and edges. Synergetics adds (1) angles, (2) irrelevant untuned insideness and outsideness, (3) convexity and concavity, and (4) axis of spin, making a total of seven topological aspects (see Sec. 1044.00); synergetics has also recognized the addition of frequency as being always physically manifest in every special case.

251.03   The omnirational accommodation of both linear and angular acceleration in the same mathematical coordination system.

251.04   The discovery that the pattern of operative effectiveness of the gravitational constant will always be greater than that of the radiational constant—the excess effectiveness being exquisitely minute, but always operative, wherefore the disintegrative forces of Universe are effectively canceled out and embraced by the integrative forces.

251.05   The gravitational is comprehensively embracing and circumferentially contractive—ergo, advantaged over the centrally radiational by a 6:1 energy advantage; i.e., a circumference chord-to-radius vectorial advantage of contraction versus expansion, certified by the finite closure of the circumference, ergo, a cumulative series versus the independent, disassociating disintegration of the radii and their separating and dividing of energy effectiveness. (This is an inverse corollary of the age-old instinct to divide and conquer.) (See Secs.529.03, 541.00 and 1052.00.)

251.06   The gravitational-radiational constant $10F^2+2$.

251.07   The definition of gravity as a spherically circumferential force whose effectiveness has a constant advantage ratio of 12 to 1 over the radial inward mass-attraction.

251.10   The introduction of angular topology as the description of a structural system in terms of the sum of its surface angles.

251.11   The definition of structure as the pattern of self-stabilization of a complex of events with a minimum of six functions as three edges and three vertexes, speaking both vectorially and topologically.

251.12   The introduction of angular topology as comprised entirely of central-angle and surface-angle phenomena, with the surface angles accounting for concavity and convexity, and the thereby-derived maximum structural advantage of omni-self- triangulating systems.

251.13   As a result of the surface-angle concave-convex take-outs to provide self-closing finiteness of insideness and outsideness, central angles are generated, and they then function in respect to unique systems and differentiate between compoundings of systems.

251.14   One of the differences between atoms and chemical compounds is in the number of central-angle systems.

251.15   The tetrahedral trisecting of angles: the trisection of a 180-degree angle. (See Secs. 841.16 and 841.30.)

251.16   The rational volumetric quantation or constant proportionality of the octahedron, the cube, the rhombic triacontahedron, and the rhombic dodecahedron when referenced to the tetrahedron as volumetric unity. (See Sec. 1053.21.)

251.17   The rational and symmetric surface subdivision of the icosahedron, the octahedron, the cube, and the rhombic dodecahedron by the 48 spherical triangle tiles of the vector equilibrium's 25-great-circle grid, rationally quantized in a reverse order of magnitude in whole, low-order, even numbers. (See Secs. 1053.20-21.)

251.18   The seven unique axes of great-circle spinnability that also describe the seven great circles foldable into bow ties. (See Sec.1040.)

251.19   The definition of the omniequiangled and omnitriangulated tetrahedron, octahedron, and icosahedron, with respectively three, four, and five triangles around each of their vertexes, as altogether constituting the topological and finitely limited set of prime structural systems. (See Sec. 610.20.)

251.20   The discovery of the mathematically regular, three-way, greatcircle, spherical-coordinate cartographic grid of an infinite frequency series of progressive modular subdivisions, with the spherical radii that are perpendicular to the enclosing spherical field remaining vertical to the corresponding planar surface points of cartographic projection; and the commensurate identification of this same great-circle triangulation capability with the icosahedron and vector equilibrium, as well as with the octahedron and the tetrahedron. (See Secs. 527.24 and 1009.98.)

251.21   The development of the spherical triangular grid bases from the spherical tetrahedron, spherical cube, spherical octahedron, and the spherical vector equilibrium and its alternate, the icosahedron, and the discovery that there are no other prime spherical triangular grids. All other spherical grids are derivatives of these.

251.22   The spherical triangular grids are always identified uniquely only with the first four prime numbers 1, 2, 3 and 5: with the tetrahedron always identifying with the prime number l; the octahedron with 2, the face-triangulated cube with 3; and the vector equilibrium and icosahedron with the prime number 5; with the other Platonic, Archimedean, and other symmetrical polyhedra all being complex compoundings and developments of these first four prime numbers, with the numbers compounded disclosing the compounding of the original four base polyhedra.

251.23   The number of the external crossings of the three-way spherical grids always equals the prime number times the frequency of modular subdivision to the second power times two, plus the two extra crossings always assigned to the polar axis functioning to accommodate the independent spinnability of all systems.

251.24   The mathematical regularity identifies the second power of the linear dimensions of the system with the number of nonpolar crossings of the comprehensive three-way great circle gridding, in contradistinction to the previous mathematical identification of second powering exclusively with surface areas.

251.25   The synergetic discovery of the identification of the surface points of the system with second powering accommodates quantum mechanics' discrete energy packaging of photons and elucidates Einstein's equation, $E = Mc^2$, where the omnidirectional velocity of radiation to the second power—c^2—identifies the rate of the rational order growth of the discrete energy quantation. This also explains synergetics' discovery of the external point growth rate of systems. It also elucidates and identifies the second power factoring of Newton's gravitational law. It also develops one-to-one congruence of all linear and angular accelerations, which are factorable rationally as the second power of wave frequency.

251.26   The definition of a system as the first subdivision of finite but nonunitary and nonsimultaneous conceptuality of the Universe into all the Universe outside the system, and all the Universe inside the system, with the remainder of the Universe constituting the system itself, which alone, for the conceptual moment, is conceptual.

251.27   The definition of Universe as a scenario of nonsimultaneous and only partially overlapping events, all the physical components of which are ever-transforming, and all the generalized metaphysical discoveries of which ever clarify more economically as eternally changeless.

251.28   The vector model for the magic numbers, which identifies the structural logic of the atomic isotopes in a symmetrical synergetic hierarchy.

251.29   The trigonometric identification of the great-circle trajectories of the seven axes of symmetry with the 120 basic disequilibrium *LCD* triangles of the spherical icosahedron. (See Sec. 1043.00.)

251.30   The rational identification of number with the hierarchy of all the geometries.

251.31   The *A* and *B* Quanta Modules.

251.32   The volumetric hierarchy of Platonic and other symmetrical geometricals based on the tetrahedron and the *A* and *B* Quanta Modules as unity of coordinate mensuration.

251.33   The identification of the nucleus with the vector equilibrium.

251.34   Omnirationality: the identification of *triangling* and *tetrahedroning* with second- and third-powering factors.

251.35   Omni-60-degree coordination versus 90-degree coordination.

251.36   The identification of waves with vectors as waviform vectors; the deliberately nonstraight line.

251.37   The comprehensive, closed-system foldability of the great circles and their identification with wave phenomena.

251.38   The accommodation of odd or even numbers in the shell-generating frequencies of the vector equilibrium.

251.39   The hierarchy of the symmetrically expanding and contracting pulsations of the interpolyhedral transformations, and their respective circumferentially and radially covarying states. (Also described as the symmetrical contraction, "jitterbugging," and pumping models.)

251.40   The provision for the mathematical treatment of the domains of interferences as the domains of vertexes (crossings).

251.41   Mathematical proof of the four-color map theorem.

251.42   The introduction of the tensegrity structural system of discontinuous compression and continuous tension.

251.43   The identification of tensegrity with pneumatics and hydraulics.

251.44   The discovery of the number of primes factorial that form the positives and negatives of all the complex phenomena integratively generated by all possible permutations of all the 92 regenerative chemical elements.

251.45   The disclosure of he rational fourth-, fifth-, and sixth-powering modelability of nature's coordinate transformings as referenced to the 60° equiangular, isotropic vector equilibrium.

251.46   The discovery that once a closed system is recognized as exclusively valid, the list of variables and the degrees of freedom are closed and limited to six positive and six negative alternatives of action for each local transformation event in Universe.

251.47   The discovery of the formula for the rational-whole-number expression of the tetrahedral volume of both the spherical and interstitial spaces of the first- and third- power concentric shell-growth rates of nuclear closest-packed vector equilibria.

251.48   The disclosure of a hierarchy of rational quantation and topological interrelationships of all physically experiential phenomena that are omnirationally accounted when we assume the volume of the tetrahedron and its six vectors to constitute both metaphysical and physical quantation unity. (See Secs.221.01 and 620.12.)

251.50   The integration of geometry and philosophy in a single conceptual system providing a common language and accounting for both the physical and metaphysical.

260.00   **The Epistemography of Generalization and Special Case**

[260.00-269.07 Nature in a Corner Scenario]

260.10   **Invisibility of Macro- and Microresolutions**

260.11   The eye of a healthy human can comfortably perceive an interval of 1/50th of an inch, and the human's timing sense can recognize the rhythm of identical minimum intervals lying between the black vertical lines of an engineer's white ivory measuring scale, but with optimum naked eyesight humans can only with great difficulty read on a scale that equals l/100th of an inch. Humans' eyesight cannot "resolve," i.e., differentially perceive l/200th-inch intervals between microdots of l/200th-of-an-inch diameter. For these reasons black-and-white or color printing plates for picture reproductions, which consist of subvisible benday screen dots spread l/200th of an inch apart, produce pictures whose surface information appears to humans as being realistically "continuous" and as a progressive color blending—ergo, natural.

260.12   The diameter of the spherical activity domain of a single atom, including the electrons orbiting its nucleus, is called one angstrom. And one angstrom is l/2,500,000th the diameter of the smallest humanly seeable *speck.* Moreover, the diameter of the atomic nucleus is l/10,000th of one angstrom, and the nucleus has now been found to consist of a plurality of further "particles" such as quarks, leptons, hadrons, and so forth. Humans have now developed electromagnetic sensors, have microphotographed individual atoms, and have macrophotographed a billion galaxies, each of hundreds of billions of star- population magnitudes—99.9999 percent of which information about reality is invisible to the naked human eye. (See Sec. 1238.60.) What humans have been experiencing and thinking of "realistically" as dim "somethings" or "points" in a field of omnidirectional seeming nothingness now requires experimentally provable reconsideration, epistemographic reconceptioning, and rewording.

260.20   **Convergent vs Parallel Perception**

260.21   All exclusively three-dimensional matrixes, consisting only of parallel lines and perpendicular rectilinear interactions—like parallel railroad tracks—inherently fail to accommodate any terminal convergence. Such matrixes fail to accommodate the inherent strategy of range-finding: the fact that the linear-distance relationship between our two human eyes—and also those of other optically equipped creatures—was designed to provide the baseline of a triangle whose opposite apex occurs at the position of a sighted object. The convergent apex angle of the object provides the human brain's computer circuitry with a limited, distance-to-object-magnitude appraising, or range-finding perceptivity, whose maximum terrestrial range is the horizon. Beyond the horizon the distances between remote objects are reduced to optically nontunable angle-size or -frequency discernibility. Ergo, at the maximum tunability of differential-wavelength- perceptivity, our range-finding optical system produces a false image of a seemingly convergent pair of parallel railroad tracks. It is not that the tracks or the ties are coming together, but that the distance between them is subtunable.
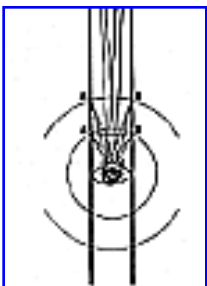
260.211   Our two eyes form the baseline of an isosceles triangle and seek to discern the convergent angle at an opposite object apex: for instance, tracks A or B, with the distance between A and B constant. The farther away they are, they become relatively shorter and shorter chords of ever larger circles A and B, and finally they appear to be congruent. See Fig. 260.211.
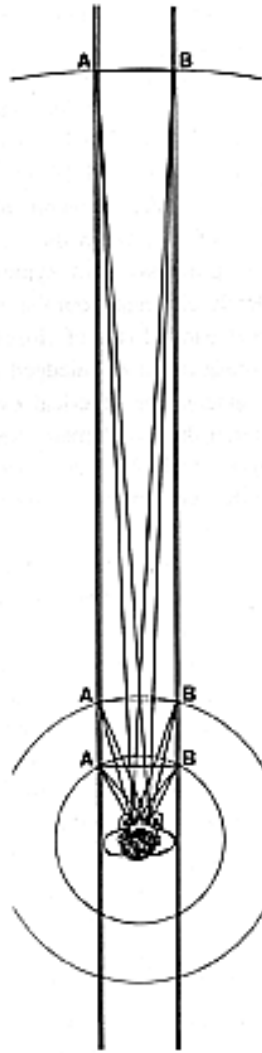
Fig. 260.211 *Humans' Range-finding Optical System:* Our two eyes form the baseline of an isosceles triangle and seek to discern the convergent angle at the opposite object apex: for instance, tracks A or B, with the distance between A and B constant. Farther away they become shorter chords of ever larger circles and finally appear to be congruent.

260.22   Though the diameter of Betelguese in Orion's Belt is greater than the diameter of the planet Earth's orbit around the Sun, Betelguese appears to Earthians only as a fine point of light. As in the rate of information recall by the mind from brain storage, there is also an inherent lag in the rate human optical equipment can apprehend newly perceived phenomena. The pulsative frequency of alternating current electric light is 60 cycles per second, which is designed to coincide with the frequency corresponding to humans' "second look" stroboscopic rate of apprehending. In a like manner the frequency rate of the cinema's picture-frame running is synchronized to coincide with the human rate of mental-mouthful digestibility of new information receptivity, which must check the new information with the old to permit recognition or new cognition. The static frames themselves—as in benday screen printing—are frequency-subdivided into local increments whose wavelength-spacing is infratunable by the human-brain-apprehending set. The human brain apprehends 200 info-bits per inch as omnicontinuous, despite the separate frequency islands of their different color light points, each of which is an island of different electromagnetic frequencies. All of the spots are frequency islands like events and novents (see Sec.524.01).

260.30   **Physical Experience and Closest Packing of Spheres**

260.31   The *XYZ*-rectilinear coordinate system of humans fails to accommodate any finite resolution of any physically experienced challenge to comprehension. Physical experience demonstrates that individual-unit wavelength or frequency events close-pack in spherical agglomerations of unit radius spheres. Two unit-radius spheres in tangency provide a seemingly linear pattern, but a third closest-packed sphere nests in the valley of the first two and produces triangulation. In equilateral triangular growth of closest-planar- packed unit-radius spheres the triangle's edges are never parallel. As human experience increases—event by event—the number of experience spheres along the faraway edge of the triangle of individual observations also increases. Each successive row of closest- packed spheres away from the observer always increases by one event. While the rows are parallel to one another, the outermost row can be taken perpendicularly away from the master triangle and from any one of its sides without disturbing the integrity of equiangular symmetry. This progression of symmetrical shrinkage of the triangle is a property completely different from that of the square, wherein the removal of any one outer most parallel row of closest-packed cubes from any of the four sides leaves a nonsquare, nonequiedged rectangle.

260.32   Closest-packed spheres, or spherical events, of equal frequency and wavelength produce tetrahedral agglomerations which, as events transpire, produce additional layers, each of which consists of equilateral triangles of one more edge row than the previous one. (See the event relationship law at Sec. 227.)

260.33   Because nature always operates most economically—ergo, most closest packed—and because all asymmetries are observable only relative to idealized symmetry, we find all the similar-magnitude events of experience tend to close pack triangularly in symmetrical convergent or divergent aggregations. (See Secs. 223.05, 505.62, and 532.10.)

260.34   The *XYZ* coordinates of parallels and perpendiculars have nothing to do with the way Universe is operating. Universe is operating in radiational-divergence and gravitational-convergence. Events in parallel never get resolved; convergent events become exquisitely resolved. You cannot have a nucleus in a perpendicular or a parallel system. You can have nuclei only when you have symmetrical tetrahedral convergence.

260.40   **Convergence to a Nucleus**

260.41   The coordinate system of nature as manifest in synergetics is one in which nature operates in convergent-divergent, associative-disassociative agglomerating, a system in which the inherent symmetry is maintained only by the equiangular triangles. Synergetically, nature is both expansively radiant and convergently gravitational: radiant as radiation—an expansive, disintegrative, ever more disorderly coming apart—or nature as gravitationally convergent with increasing symmetry and order. Nature resolves her problems by their resolution to inherent nuclei.

260.42   The synergetic coordinate system of nature and its finite macro-micro turnaround-limited hierarchy of primitive ascending or descending timeless-sizeless, omnisymmetrically concentric, polyhedral components provides the human mind with a rational means of resolving problems by bringing nature into a corner—a convergent terminus center, a four-dimensional corner of the four-dimensional planes of the tetrahedron. Only with the four-dimensional convergence and divergence of synergetics can the human mind reduce problems to comprehension as minimum-limit systems. The minimum polygon is a triangle; the minimum polyhedron is a tetrahedron; both of their structural behaviors are unique (see Secs. 614.00 and 621.00). By their academic training humans think only in terms of parallel and rectilinear coordination, and so they tend to hold to

the unresolvable parallel interpretations of their lives' experiences. They seek to maintain the status quo and—despite the organic and biologic manifests of birth and death—they fail to be able to take advantage of the cornerability of comprehension and the positional fixes provided by the four-dimensional, synergetic, convergent-divergent coordination.

260.50 Precession of Two Sets of 10 Closest-Packed Spheres

260.51   Two identical sets of 10 spheres in closest packing precess in 90-degree action to form a prime, nonnucleated, four-ball-to-the-edge tetrahedron with a total of 20 spheres. Each of the two sets of 10 balls consists of a line of four balls arranged in a tangentially cohered row nested in the long valley of a rectangle consisting of three pairs of balls tangentially cohered to one another in a parallel array, with two balls on one end and three balls on the other end. Cohering the four-ball row tangentially to the valley of the six-ball quadrangle produces a 10-ball aggregate. When brought together, these two 10-ball assemblies produce the prime, four-ball-edge tetrahedron of 20 balls, the largest single-shell tetrahedron without a nuclear ball. (This 20-ball tetrahedron is at the heart of the tetrahedral assembly of 120 balls comprised of two sets of 60 closest-packed spheres—see Sec. 417.00.) To bring them into tetrahedral symmetry of assembly, each four-ball edge of the two separate assemblies must be precessed (turned at right angles) to the other's four-ball edge. In these conditions the two-ball edges of the six-ball rectangle are now addressing the three-ball edges of the other quadrangle. To the trained eye and rationale of rectilinear coordination it seems illogical to address two balls to three balls or three balls to two balls. In matching such assemblies people think of doing so only in parallels or perpendiculars. (See Sec. 527.08.)

260.52   In universally convergent-divergent coordinate growth or shrinking, each row is greater (or lesser) by one than the next. Three automatically goes to two in a convergent, planar-arrayed, structurally stable system and two automatically goes to three in a divergent, planar-arrayed, structurally stable system. Tetrahedral expansion or contraction produces a structurally stable systematic model of universal behavior. In tetrahedral growth one goes to three and three goes to six and six goes to 10 (see Sec. 415.55 and Fig. 415.55A). Tetrahedral growth from unity is special-case angularly directional. Vector equilibrium growth from unity is nuclear-divergent at a growth rate of ten times frequency to the second power plus two:

1 $\longrightarrow$ 12

12 ➔ 42

42 ➔ 92, etc.

(See Sec. 418.01.)

260.53   A tetrahedron has three—and only three—inherent polar symmetries; their axes run between the midpoints of the tetrahedron's three pairs of opposite edges. (See Sec. 622.) These midpoints are in edges that are oriented at 90 degrees to one another.

261.00   Getting Nature into a Corner

261.01   Getting nature into a corner is the essence of synergetics' exploratory strategy. Synergetics is the coordination of thought and physical action, the genesis of geometry, system, and structure. Physics and metaphysics are resonantly integral: the integrity of their intertransformative mathematics into all the special case, variably enduring associabilities cognized by humans as structural design. The frequency rates are the separate, static frame rates of inspection and are recognized by humans' brains as mechanics when the frequency of inspection by humans synchronizes with the cinema frames' running. The difference between structures and machinery is the same as the difference between "moving" and "static" pictures as both relate to human information comprehending. This is the grand strategy.

261.02   What Euler and all professional topologists and mathematicians called "areas" are only windows in polyhedrally conceptual systems. You look out the window at the nothingness of undimensional night—or of fog. The "faces" of presynergetics topology packaged the undimensionable nothingness into arbitrary somethingness, which thus misassumed the dimensions of the face windows and their closed-circuit edges to constitute dimensional attributes of the undimensional nothingness so framed. Academically misinformed teachers go to the blackboard, drawing a "square," and saying to the students, "A square is an area bound by a closed line of four equal-length edges and four equiangled corners," without paying any attention to the inherently existent complementations of Universe. To start off with, the phenomenon "square" is dependent on the phenomenon "blackboard," whose structural matrix alone maintained the symmetrical shape of the nonstructurally stabilized pattern of the square. (Compare Sec. 617.04.) The closed-line pattern of the square inadvertently subdivides the whole surface of the polyhedral blackboard into two areas, both bound by the closed line of four equal edges and four equal angles. The four equal edges of the large complementary

square are the same length as those of the small square; the big square's corners are each 270 degrees, while the small square's corners are each 90 degrees. (Compare Sec. 810.) Moreover, the drawing of the square also inadvertently subdivides the insideness and outsideness of the blackboard into concave and convex big and little squares; it also deposits part of the Universe as "chalk" atoms onto the blackboard's agglomeration of atoms, which inadvertently rearranges the chemical element resources of Scenario Universe.

261.03   In the layer-around-layer, symmetrical closest packing of unit radius spheres around a nuclear sphere of the same radius, the number of spheres in each layer will always be 10 times the second power of the frequency of comprehensively concentric layer enclosings plus the number 2—i.e., $10F^2 + 2$. By this we discover that in the first layer, where frequency (F) = 1, we have $1^2 = 1$, and $10 \times 1 = 10$, $10 + 2 = 12$. Thus we find experimentally that 12 unit radius spheres comprehensively omni-inter-close-pack around the single nuclear sphere. Where frequency is two, in the case of the second layer, we have

$2^2 = 4$, $4 \times 10 = 40$, $40 + 2 = 42$

spheres symmetrically embrace the 12-ball system. Thus the number of unit radius spheres in the third layer is 92, and so forth (see Sec.418).

261.04   Since the central or nuclear sphere has no outer layer and is only the nucleus, its frequency of layer enclosures is zero. (See Sec. 415.10.) Following our symmetrically and convergently diminishing uniform rate of contraction to its inherent minimum and terminal frequency case of zero, and applying our generalized formula $10F^2 + 2$, we have

$0^2 = 0$, $0 \times 10 = 0$, $0 + 2 = 2$

and we discover that unity is two. The single nuclear sphere consists of both its concave inside and its exterior convex sphere, its inbounding and outbounding co-occur at the convergent, center-of-volume turnaround point. Unity is plural and at minimum two (see Secs. 224.12 and 240.03). That the nuclear ball is inherently two has been incontrovertibly discovered by reducing nature to her omnidirectionally convergent, nuclear-center terminal case.

262.00   Conceptual Minimum

262.01   Since there was nothing more exaltedly high than heaven and nothing more degradingly low than hell, *up* and *down* were limited or terminal dimensions.

—Since humans were so tiny in respect to their laterally surrounding world, and since the tales of travelers reported greater mountains as one went inland from the sea, and since the sea ever surrounded the land, the best-informed humans assumed Earth to be an island floating on a sea that extended laterally to infinity in all horizontal directions as a plane, a plane whose surface could be made rough by god-blown winds, while the skies were filled with gods disguised as clouds blowing winds.

—Since the shortest distances between two points seemed obviously to be a straight, stretched-hair line, all the straight lines on the infinite plane of the world ran to infinity; and since humans could never reach infinity, they need not worry about where the points were located between which the straight infinite lines were stretched. All they had to do was to have two local points through which to run their "straight" line, which could thus be extended to infinity in two opposite directions. This was the genesis of "flat land," from which humans have not yet emerged. In flat land there are infinite biggest and smallest: In the vertical sense this means giants bigger than mountains and gods bigger than giants—ergo, the biggest greatest god, the biggest of visually engendered conceptioning enthroned on the highest mountain, while the invisibly smallest emerged as the elves and the evil spirits existing in things.

262.02   The human concept of a geometrical point was established eons before the inventive conceptualizing by anyone that humans might develop a microscope. The point seemed to be the terminal, smallest visual experience. The visual smallest was smaller than the smallest touchable, handleable experience. The visual smallest engendered the assumption of an infinitely smaller nondimensional point. The point is premicroscopic.

262.03   Similarly, the concept of spatial nothingness is pretelescopic, established eons before anyone knew that humans might develop a telescope. Now that humans have acquired discretely measured knowledge regarding the speed and other behavioral characteristics of all radiation, including the refraction of light, and have developed the science of optics and the chemistry of light-sensitive emulsions for phototelescopy, they have discovered a macrocosm of billions of galaxies consisting of an average of 100 billion stars each; 99.9999 percent of these progressively outwardly considered, discovered phenomena are invisible to the naked human eye. In the opposed or inwardly considered experience field the physicists have discovered and measured the unique frequency characteristics of each of the chemical elements together with frequency characteristics and other energetic characteristics of atomic components. Physicists employing the same

radiation-sensitive emulsion photography—first through the human-spectrum-range microscope, subsequently through the scanning electron microscope, and after that through the field emission microscope—have photographed individual atoms. In this inwardly and diminishing magnitude progression humans have photographically harvested knowledge of physical reality that is 99.9999 percent infra- or subvisible to humans, meaning untunable within the very limited electromagnetic frequency range of the human senses' crystal-equipped radio sets. The exponential, fourth-power, historical acceleration rate of these outwardly exploding and inwardly permeating human cognitive events has become too sudden for societal digestion and recognition of the significance of what seemed to be *terminal* yesterday. The reality of the *point* and the *space* have been variously conceptualized in the purely theoretical and physically unexperienceable rationalizations of progressively misinformed humans.

262.04   Man suddenly got to thinking of the atom as the terminal, the conceptual minimum. He had the terminal case of the atom as a point, but then later found that the atoms consisted of at minimum a proton, a neutron, an electron, and an atomic nucleus, and so forth. And so for a while the atomic nucleus was the terminal limit, until humans began smashing the atom and breaking the nucleus into new component particles: Thus the quarks became the most recently apparent terminally smallest limits of considerability. But the characteristics of the quarks are very exciting because they, too, incontrovertibly manifest a complex of a plurality of interdependent and numerically consistent behaviors. So what physics is really discovering is primitive *system conceptuality* independent of time and size. And in synergetics conceptuality independent of time and size discloses a complex hierarchy of nuclear system intertransformabilities with low-order numerical and topological relationships, a complex of interrelationships consistently characterizing every one of their realizations as special case, experimentally demonstrable, sense-tuned, physical reality.

262.05   Whenever we look at something that is special case—call it a nucleus or call it a quark—we find that the special cases all break up into the complex of pure principles of conceptuality independent of size and time as elucidated by synergetics. Physically discovered, i.e., experientially, i.e., sense-tuned terminal discoveries, are always special case. Special cases have always time-incremented duration magnitudes—ergo, they are terminal.

262.06   There are no terminal generalizations. Generalizations are eternal independent of size and time. The weightless, sizeless, frequency-innocent principles are dealt with in synergetics and are exclusively mind-employable. Synergetics represents an exclusively mind-conceptual, complex system of numerically identifiable, geometrical interrelationships holding eternally true in all special case manifestations and physical discoverabilities, utterly independent of time-size. (See Sec. 445.11.)

262.07   Our Scenario Universe will continually open up more thing-and-thingness special cases and our beautiful—because eternally exquisite—generalized thingless principles will tend to become conceptually ever more lucidly clear and more evidently operative at no matter what magnitude: macro . . . medio . . . micro.

262.08   The physical is always special case; this is why we spell Universe with a capital U.

262.09   So our new understanding of reality involves an eternal extension of the tunability in pure unlimited principle. Physical energy occurs only in finite packages. Physical Universe is a discontinuity of such finite islanded events. Events and novents: so life and death—so high-frequency intermingled as to be distinguishable only by our live- event-frequency-tuning capability. Death is as-yet-untuned reality. We used to have two structurally static Universes of life and afterlife. That we seem to be accelerating toward a unified Scenario Universe field seems to be implicit.

262.10   We do not have two Universes: this world and the next world. Death is only the as-yet-unexperienced, superlow frequencies. Both death and life are complementary functions of our electromagnetic experience. (See Secs. 526.25 and 531.10.)

263.00   **Nothingness and Tunability**

263.01   Having introduced the electromagnetic concept of the infratunable-to-human-sense frequency range set and the ultratunable-to-human-sense frequency range set, it becomes manifest that the nothingness is simply the as-yet-not-tuned-in information. We never deal in nothingness. *Nothing* occurs only as the at-present-untuned-in information broadcasting of nature—when we tune into the next higher or lower frequency, our senses resonate again and anew and may detect significant information, as in the inadvertently discovered photographic emulsion tuning in of the theretofore- unknown unique frequencies of the inherently regenerative set of the 92 chemical elements.

263.02   Our brains are physical tuning capabilities consisting of uniquely resonant atoms and cells. Apprehension consists of resonant atoms tuning into congruently resonant atoms. There is a cosmic meshingness; an angle-and-frequency congruence similar to that of mechanical gear trains when the number of teeth per circular perimeter and the angular modulation of the valleys and peaks of the individual teeth of the larger, smaller, or unit radius gears must mesh with minimally tolerated aberrational error; wherein the aberrations of metallic gears must be compensatingly interfilled with lubricants that prevent the aberrations of one part from reaching the aberrations of the reciprocating part. In much modern machinery nylon and other plastic gears have provided interyieldability, obviating the use of lubricants. Such yielding is demonstrably employed by nature in the hydraulic-pneumatic, crystalline structuring of all biological organisms. (See Sections 522.36 and 1052.52.)

263.03   Special cases are inherently terminal. Brain, which deals only with special case experiences, each of which is energetically terminal, demands knowledge of how everything begins and ends. But principles are eternal, a word with which the brain is not familiar. All inputs to the brain are finite. (See Sec. 504.04.)

263.04   We have what we refer to as events and novents (Sec. 524.01). Experiences are always special case event programs. The special cases of music or noise are temporarily tunably sensed frequencies, of whose message significance we become progressively aware and in between which unsensed, untunable, eternal interrelationships persist. There is no verb for eternity. Verbs are always special case.

264.00   **Geometry of Self and Otherness**

264.01   A point is a something, a complex entity system, but an infratunable system. A point occurs as the first moment of awareness of a looming-into-tunability of any system in Universe. A point—or a noise—appears in an angularly determinable direction within the total omnidirectional spherical sphere of reference of the individual observer's sense- informed environment. It is oriented in respect to the observer's head-to-heel axis of reference in respect to which the direction from which the somethingness of infradiscrete tunability—as well as the non-tune-outability of the static—is emanating, as distinct from the nothingness of untuned-in, omnidirectional withinness and withoutness. (See Secs. 505.65, 505.74, and 527.25.)

264.02   At minimum, life involves awareness, self involves otherness, and otherness involves somethingness. Awareness is of otherness: awareness of the outside superficiality of the observer's "finger" by the externality-searching optical system of the observer. Indeed, the externality-searching for the nipple of its mother's breast by the olfactorily guided external nose-mouth of the newborn constitutes initial otherness awareness. As a fertilized ovum of an integrally evolving female organism umbilically circuited with the female organism, no otherness awareness is involved except that of the mother even as she may be sensorially aware of a sore spot on her arm.

264.03   Otherness involves somethingness: This brings us to the consideration of the nature of the epistemographic evolution of experience that—at one historical moment—evolved the misconceptioning of a nothingness—ergo, dimensionless—point.

264.10   **Prime Othernesses: Single and Plural Otherness**

264.11   While environment plus me equals Universe, Universe minus me does not equal environment.

264.12   Environment does not exist without me. I the observer am the living human experience. Life is the present experience. Experience begins with awareness. No otherness: No awareness.

264.13   I am one of the two prime othernesses: I am the single otherness; environment is the plural otherness. I am the present otherness; environment is the past otherness. By the time I have become aware, other as-yet-untuned-in events of nonunitarily conceptual Universe have transpired. Environment is inherently historical. Universe is eternally inclusive of all past, present, and future experiences plus all the at- present-untune-inable otherness of Universe. Universe is eternally general; environment is always special case.

264.14   Environment is the complex of all observed experiences of all life. Environment is the present scene, and all the remembered scenes, and all the scenes remembered by all the other scenes, which I cannot remember but memories of which are all registered in the environment to be redisclosed from time to time.

264.15   Every individual is an evolutionary pattern integrity. Each individual's environment of the moment is different from that of the next moment and from that of every other individual, though two or more individuals may think that they are mutually experiencing the same environment. The individual is the product and servant of a plurality of semisimilarities of mutual tuned-in-ness.

265.00   Unity of Triangulation

265.01   Otherness involves somethingness; This brings us to reconsideration of the nature of epistemological evolution and of the gradual transition in degrees of relative adequacy of macroscale of human comprehending and in microscale of definitive exactitude in interpreting what is being humanly experienced. Humans were included in the cosmic system's design to fulfill critical functions in respect to maintenance of the integrity of eternally regenerative Scenario Universe. To arrive full-blown and functioning in its cosmic role, humanity has been given the capability to inventory its tactical resources progressively and to reorient its functioning from an omniautomated behavior to a progressively more conscious and responsible behavioral pattern.

265.02   The epistemological evolution of individual humans has also included progressive appraisal of the relative significance of the separate scenarios of experience as periodically elucidated by the synergetically accruing concepts. Thus the sum of all human experiences seems periodically to explain how humans fit into the cosmic scheme, as that cosmic scheme itself evolves as emergingly and sum-totally appraised and disclosed by scholars—together with those cosmologists' controversial explanatory theories.

265.03   At one early historical moment in that epistemological evolution humans evolved the mathematical concept of dimensionless points, lines, and planes. Their dimensionless lines and planes were aggregates of the dimensionless points, yet these self- contradictory concepts have persisted in the children's school curricula of today, despite the fact that they were adopted long before humans had even dreamed of optical magnifying lenses, let alone electron microscopes. The philosophy that adopted such nonoperational educational devices was predicated—they said—upon "purely imaginary phenomena," and since the image-ination of the brain is entirely furnished with special case experiences of system conceptuality (see Secs. 504.04 and 1056.15), it is appropriate in this moment of instrumentally informed experience to reformulate our experience- substantiated philosophy.

265.04   Considerability (*con-sidus*—the interrelationship of a plurality of stars) is experientially furnished and is inherently systemic. The axial spinnability of all systems provides observational orientation in azimuth around the head-to-heel axis, statable in measurable fractions of circular unity. In the special case of humans as the observing system we have the head-to-heel axis of observational reference. We have therefore the human observer's system's inherent "additive twoness" provided by the system's two poles of such axial spin. In humans' organic systems we have also the multiplicative twoness of insideness-outsideness—i.e., the system's convex-concave congruity.

265.05   The observed otherness can be an organically integral part of the individual observer, for the individual human organism is—at simplest—a system comprised of a myriad of systems, which in turn are comprised of myriads of subsystems of subsystems of subsystems—to the limit of present microexploration capability. And the individual human organism will always consist of systems and never of nonsystems, for less-than-system systems are inherently nondiscoverable. (See Sec.400.011.)

265.06   Observing individuals can be visually or tactilely aware of another (complex or subsystem) part of their own systemic organism—for example, the child's hand tactilely discovering its own foot's temperature, texture, olfactoral, taste, relative size, and conformation. This self-discovery, otherness-aroused awareness of the individual includes the child's cerebral-cortex feeling that its stomach is hungry, whereby the brain instructs the child's fourfold aural-communication-system-defining mouth, throat, tongue, and lungs to start pumping in and out of the smellable, nonorganically integral, otherness atmosphere to produce "crying" for contact with an external udder of the nonintegral otherness—the m-m-motherness from which to suck (pump) out her nonintegral otherness milk produced by her digested consumption of a plurality of nonintegral othernesses. This is an objective- subjective awareness of the complex individual's integral otherness parts.

265.07   Here is the complex integral otherness with which philosophers have for so long failed to confront themselves in their epistemological considerations. They have erroneously assumed that original, or initial, cognizable otherness exists exclusively in a separate external entity other than that of the organism of the observer. The individual is inherently complex, having four different sensing systems: the same four separate and differentially unique apprehending advantages that are always acquired to define a tetrahedron as the minimum system in Universe.

265.08   As with the "out" of in-out-and-around directions, the ultratunable is ultra to both external and internal experiences of human record. The ultratunable nothingness persists where the electromagnetic wavelengths involved are greater than the span of all humanly remembered experiences; wherefore the last time such a phenomenon occurred was prior to human experience recording, the next time its wave is to peak is unpredictable, because it always takes a minimum of two experiences to define a wavelength, but it always takes a minimum of three identical-magnitude events (waves) and their identical-magnitude wave intervals to definitively arouse humans' awareness that they are experiencing an unfamiliar wave-frequency phenomenon—ergo, to trigger humans' re-cognition capability thus to become aware of the same phenomenon being repeated for a third time (tres-pass) with the same interval of time between them occurring for the second time. (See Sec. 526.23.)

265.09   But it takes a fourth equifrequenced and equiwavelengthed experience in the angular direction deviations of the never-occurring straightlinedness of wavilinear Scenario Universe to produce the altitude from which sensing advantage the intertriangulatability of the first three experiences may be apprehended—which triangular pattern integrity becomes realized by mind as forming the base, the three separate directions toward which three previous event corners provide altogether the six unique lines of interrelationship direction of the four experience events that constitute a system, of whose presence the observer-sensor is now initially aware. Conceptuality is tetrahedral.

265.10   The operational self-discovery of any given conceptually periodic frequency is predicated upon a minimum experience quota of four successively experienced, similar events. This is because the three original time intervals between four angularly finite events constitute the minimum number of experience intervals necessary to establish the human mind's awareness that it is experiencing an identical interval repetition between what seem to be similar events. The first interval between the first two similar experiences was entirely unanticipated and—as of the moment of first recurrence—seemed to be only an inconsequential happenstance. But the *third repeat* of a similar, angularly conformed, finite experience that is recurring at a second and similar interval of elapsed time to that intervening between the first and second experiences could—and sometimes does—arouse an intuitive sense of there being a possible time-lapse-identifying significance present in the second successively similar lapse of time between the *now-threefold* similarity of angularly conformed experiences.

265.11   On the occasion of the third similar experience intuition can—and sometimes does—educe a hypothetical assumption and prediction by the experiencing individual of the possibility or probability of the future recurrence of a fourth such similar experience, which predicative hypothesis can only be confirmed by the actual fourth-time experiencing of the similar, angularly conformed, finite event recurring on schedule after the third experiencing of the same interval of elapsed time. If this fourth finite event does occur as hypothetically predicted after the third interval of the same time lapse, it provides experimental evidence of the existence of a consistent frequency and interval system of event recurrences. This may be recorded by humans as scientifically reliable—ergo, as operationally usable data.

265.12   A frequency of four events provides the three intervals that also form the base triangle of the tetrahedron apexed by the initially unpaired, angularly finite event. The insideness and outsideness of this primitively evolved tetrahedron constitute the minimum macrocosm-microcosm-differentiating system of the Universe. This tetrahedron has six angularly directional interrelationship lines interconnecting its four finite events. (See "Observer as Tetrasystem," Sec. 267.)

265.13   The chief characteristic of *frequency* is the accommodation of special case systems. Frequency identification begins only upon the recurrence of a directionally continuous fourth similar event along any one line of vertexial interrelationships of a system—ergo, with a minimum of three similar time intervals. An angle, as we learn at Sec. 515.00, is inherently a subfrequency event. Four nonsimultaneous, unique, angular event experiences occurring successively as a trajectory trending in the same direction constitute the minimum constituents for the time-size-measurable special case—i.e., temporal case—identifications.

266.00   **Science and Mathematics in the Language of Electromagnetics**

266.01   The ability of humans to tune in information is dependent on their being initially equipped with limited-range tuning apparatus, such as that of seeing, hearing, touching, smelling; human tunability is also dependent upon the special case data of experience stored in their recallable brain banks, the interrelatedness of which is only intuitively apprehended at first and later is experimentally reconfirmed, but comprehended only by human minds. Infra or ultratunability at any one moment of human experience neither precludes nor promises—but can suggest to intuition—the possibility of further tunability to be developed by humans to occur beyond any time-and-event predictability of our experience-cognition projecting—quite possibly billions of years either *ago* or *hence*. The infrequency may involve wavelength intervals between the too-recent-to-be-experienced and the too-late-to-be-experienced cyclic phenomena. This brings all our synergetic, event-vector convergence-divergence into congruence with the meanings of the language of electromagnetics.

266.02   A geodesic always is the operationally most economically accomplishable, and therefore most accommodatingly steerable, line of interrelationship existing exclusively between any two event foci. While generalizable as "straight," all geodesic realizations are superficially special-case—ergo, line events involving energy expenditures. Their lines of interrelationship accomplishment are radiationally noninstantaneous, and because of omni-in-motion Universe are wavilinear, as progressively modulated and accommodated for the differential changes of interpositioning of the interrelated events. From all that has yet been learned the gravitational or convergent forces may be assumed to be instantaneous and continually operative—ergo, always prevailing over the speed- limited radiational entropy. And being omniembracing rather than linear, gravity may also be assumed to have no directional identification.

266.03   A geodesic line is a component concept of systems' interrelationships.

266.04   So we now comprehend that humans' initial experiences of subresolvable, as- yet-discretely-non-tune-in-able, but directionally oriented awareness sensing of "twilight" specks or noise signals were reasonably defined by the human as a realistic somethingness occurring in a specific point-to-able direction, which is an as-yet-frequency-untunable system.

266.05   Self as observer is part of a system observing the integral-to-organic-system self's integral or separate otherness systems, or systemic subsystems—a system's as-yet- untuned systemic parts observing its as-yet-untuned systemic parts. The organic self has built-in, cerebrally coordinated equipment for in-tuning, as with the unique crystals of a radio set.

266.06   Humans' integral sensing and brain-operated tunability is always special-case, size-and-frequency limited. But the conceptioning and comprehending of a human's mind is concerned exclusively with relative-magnitude-and-frequency interrelationships constituting limitless synergetic systems in pure, abstract, generalized, eternal principle. All humans' minds are now and always have been capable of employing those principles as soon as they have been apprehended, experimentally verified, and mathematically quantified, to enlarge multibillionsfold both the macro- and microranges of special case, definitively exquisite harvesting of cosmic information, the significance of which is almost undetected and unrealized by humanity's common-sense, socioeconomic, and spontaneous recreational preoccupations.

266.07   The exclusive parallel-perpendicular coordination of physics—the XYZ Cartesian and centimeter-gram-second systems—probes blindly in fields of nonconceptuality. The exclusively convergent-divergent coordination of synergetics deals exclusively in conceptuality—conceptuality of omniinterrelatedness independent of size and time. Size depends on frequency, and frequency is cyclic. Angle, as only a fraction of a circle, is inherently subcyclic and subsize. But angle expresses a direction: This is where geometry enters into conceptuality. An angle—or a noise—has direction in respect to the head-to-heel axis or other system initiators.

267.00   Observer as Tetrasystem

267.01   The unity-at-minimum-twoness of the observed somethingness and the unity- at-minimum-twoness of the observer provide the initial four-dimensional foci of a tetrasystem. Otherness as a noise always has a direction relative to both the vertical human observer's head-to-heel axis and the horizontal axis of any pair of the human's two nostrils, ears, eyes, hands, and arms. The two polar terminals of the vertical axis derive from the initial head-to-heel axis of the observer. The diametric axis is generated subsequently and spun horizontally and cirumferentially in the observational plane of any two of its terminally sensing facilities. The two polar terminals of the head-to-heel axis and any two of the sensing terminals of the diametric observational axis are intertriangularly connectable to produce the six interrelationships of the inherent systemic tetrahedron of the observer system. The interim orbital repositioning of the observer system totality during the spin cycle inherently occasions the occurrence of the diametric axis in a plane always other than that in which the original axis of spinnability had occurred.
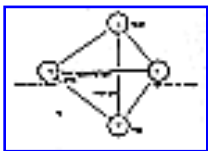
Fig. 267.02A-B

267.02

Tactile: touch _____ omnidirectionally outward

Olfactory   _____ inward

Sight: optical _____ frontally oriented

Hearing   _____ sidewise

Inherent tetrahedral relationship. (See Fig. 267.02A.)
Observer is inherently a tetra-system. (See Fig. 267.02B.)

267.03   Physical self is inherently a tetrahedral observing system with four alternate, "fail-safe," distance-and-direction-sensing circuits.

267.04   Special case is angularly referenced to the inherent twoness of the polar axis of the system doing the observing, because the observer is a system and the system is four- dimensional. The fact that unity is two (Sec. 513.03) means that an observer is at minimum two, but realistically four, because the observer is a system; and the observed is at minimum two, but being a system, is realistically four. A range-finder is inherently tetrahedral.

267.05   The sensing apparatus and the action apparatus with which humans are integrally equipped are both designed to provide them with angular orientation and the triangulated observation of distance. The two ears, two eyes, two nostrils, two arms, and two legs all produce triangulated distance-to-object information. They are range-finders. Using the distance between any pair of their integral sensing instruments as the baseline of a triangle whose opposite vertex is marked by the external object they are viewing, touching, hearing, or smelling, they sense the relative magnitude of the angles at the sensing ends of the baseline—which gives them the sense of magnitude of the complementary third angle at the apex of the triangle where the sensed object is located. Range-finding is triangulation. Sensing is triangulation.

268.00   **Omnioriented Tunability**

268.01   We call it a triangle only because the observing system lacks the frequency tunability to see the altitude of the tetrahedron.

268.02   System insideness and outsideness means two congruent, concave-convex systems, four corner-defining *ins*, and their four opposite windows through which the omnidirectional *out* nothingness is revealed. The eight were there all the time. The fourness of self and the fourness of otherness = comprehension. Comprehension involves tuned-in octave resonance as well as omnidirectional and local angular integrity. The sum of all the angles around all of the system vertexes must add up to 720 degrees, which is not only four triangular enclosures but is also unity as two, for 360 degrees is one cycle—ergo, 720 degrees = unity two.

268.03   A system's parameters are the exact number of lucidly relevant somethings constituting the system. Parameters are the consideration. *Sidus* = star; *con- sidus—* consideration: how many interrelationships between the tunably relevant events con-sidered. There must be six or multiples of six to satisfy the generalized Eulerean topological equation.

268.04   All who have been educationally conditioned in science's formal, three-dimensional, XYZ, CG_tS, rectilinearly coordinate frame of omniparallel lines of conceptual reference are condemned to infinite travel in three sets of opposite directions, along and between whose infinite parallelism there are no inherent resolutions of answers to infinite questions. It is quite otherwise when they are advantaged by the inherent nucleated, omnidirectionally-concentrically enclosing, wave-frequency magnitude gradations of radiant growth or gravitational contraction of synergetics, whose convergent-divergent, systemic resonatability and tunability have the capability to run nature into terminal minimum-involvement systems of omnioriented considerability.

268.05   Conditioned to linear, special-case-directions thinking by the formally adopted educational systems of world-around society, humans think of life as a continuous linear experience despite all experiencing being inherently omnidirectionally informed. But they fail to consider that for every two eighthour periods of seemingly continuous consciousness they stop conscious experiencing for eight hours—two on and two off—two on and two off. And they fail to realize that their sight is stroboscopically discontinuous and that there are inherent lags between sightings and cognitions, with the intervals between sights and cognitions too short to be cerebrally tunable. Here again we have evidence of the omnidirectional, finitely islanded, closed-system moments of awareness, which moments alone can be identified with what we call life. Here we have infratunable discontinuity of life occurring 60 times every second and tunably discontinuing for eight hours every 16 hours—with no human ever having the capability to prove that he is the same human who went to sleep nor that what he calls being awake is not a more vivid dream.

268.06   In view of the experimental provability—and ever reprovability—of the omnidirectionally islanded discontinuities of the packaged moments of life of which we are unaware, we must nonetheless comprehend that we have also been unconsciously "dying" 60 times a second. We must also become aware of the possibility that there is a periodicity of unconsciousness that is only as yet supratunable in terms of the as-yet-only-minuscule, cosmic duration of human experience.

268.07   This inference is also implicit in the closest-packed uniradius spheres, as photographically manifest by atomic agglomerations whose spherical domains are those of their spherical triangles' stabilized orbiting electrons' great circle patterns and their comprehensive constants of axial rotations, between whose closest packing are the spaces whose space-to-sphere ratio is one to six. Inasmuch as the rhombic triacontahedron volume is five (when the tetrahedron's volume is 1) and the allspace volume is six as manifest by the allspace-filling rhombic dodecahedron that tangentially embraces the sphere—the space-to-space ratio (or its nonexperience-to-experience, inherently spherical ratio) is clearly manifest in the co-occurring $10F^2 + 2$ and $6F^2 + 2$ rates of concentric closest packing of uniradius spheres around a nuclear sphere in which the rate of occurrence of the concentric layers of space modules is twice that of the whole sphere layer occurring—ergo, $5F^2 + 2$ is to $6F^2 + 2$ as 5:6. (See Secs. 983.04 and 986.860-64.)

269.00   **Topology of Ins, Outs, and Interrelationships**

269.01   The self or otherness somethingnesses seem initially to be infra-tune-in-able. Thinking in terms of Euler and advantaged by all electromagnetically harvested experience, we may now employ the term *inframicrosystems* instead of "points" and *ultramacrosystems* instead of "space." The tuner and the tuned have a minimally-energy- expensive—ergo, geodesic—set of interrelationships. Tune-in-ability and tune-out-ability systems function as transceivers. Tune-out-ability is omnidirectional transmission: it does not mean shut off, as does "turning out the light." The tuner and the tuned inherently constitute an in-out transceiver system—a coordinate, concentric, convergent-divergent, frequency-differentiable system.

269.02   The silence is ultratunable; the noise is infratunable; and the music is tunability itself. Color is special case tunable.

269.03   *In* and *out* are characteristic of the tunability language of electromagnetics. Any or no direction is of equal information importance.

269.04   We can call the focals the *ins*. Focal point = *in*; *in* vs omnidirectional. The focal ins are special case, while the outness is generalization. This is how conceptuality produces geometry independent of size and time. *Outness* is ultratuned conceptuality independent of time-size. *Inness* is conceptually oriented independent of size.

269.05   But there are always the outsideness and the insideness of tetrahedral system unity—the ultratunable, omnidirectionless nothingness and the infratunable, twilight- radiant-threshold-crossing, directionally oriented somethingness. Instead of Euler's vertexes, crossings, or points, we say:

- *inframicrosystems,* which are only directionally identifiable; specific directional ins; threshold-crossing, twilight-radiant, twilight-frequency somethingnesses tune-in-able only as noise.
- ultramacrosystems, which are nondirectionally identifiable; the omnidirectional outs, never-as-yet and maybe never-ever tunable; wherever and whenever the seeming nothingness may have color only as threshold-crossing, twilight-radiant, twilight- frequency, nondirectional, ultratunable *outness;* a number of glimpsed or window-framed views of nothingness.
- *interrelationships,* the directionally orientable, local-azimuthally-angled, cyclically- fractionated aroundness from this moment to that; the most economic geodesic interrelationship lines occurring as curvilinear arc segments of complex orbital accelerations. (Compare Sec. [1007.22](#).)

269.06   The observer and the observed are two ins with one relationship. Euler said V + A = L + 2, but we may now say: The number of somethings + the number of nothings = the number of interrelationships + 2.

- *Or we may say: The number of* ins + *the number of outs = the number of most economical interrelationships between the* ins + *the number* 2.
- *Or we may say: Observer + observed +* outness = *three elements = one interrelationship + the number* 2.

The complete generalization of Euler does away with the windows. Windows were the rims of the eyeglass-framing separate views of the same nothingness.

269.07   In generalized topology we may use symbols for *ins, outs,* and *interrelationships:*

S =   *Somethingness ins*

N =   *Nothingness outs*

R =   *Minimum number of interrelationships*

Ⓢ =   *Multiplicative twoness*

P =   *Additive twoness*

Ⓢ =   Multiplicative twoness = Euler's + 2 unity = twoness = the inherently co-occurring, concave-convex, systemic, inward-outwarddichotomy.

P =   Additive twoness = Euler's + 2 unity = twoness = the two axial poles of inherent rotatability of all systems

We may say:

Ⓢ (S + N = R + P)

2(S + N = R + P)

2(S + N = R + 2)

[Next Section: 270.00](#)