

270.10 Topological Accountability of All Vanishing and Elsewhere-Reappearing Quanta

270.11 The whole of synergetics' cosmic hierarchy of always symmetrically concentric, multistaged but continually smooth (click-stop subdividing), geometrical contracting from 20 to 1 tetravolumes (or quanta) and their successive whole-number volumes and their topological and vectorial accounting's intertransformative convergence- or-divergence phases, and in particular the series of posters appearing in [color plates 1-10](#), elucidate conceptually, and by experimentally demonstrable evidence, the elegantly exact, energetic quanta transformings by which

- a. *energy-exporting structural systems precisely accomplish their entropic, seemingly annihilative quantum "losses" or "tune-outs," and*
- b. *new structural systems appear, or tune in at remote elsewheres and elsewhens, thereafter to agglomerate syntropically with other seemingly "new" quanta to form geometrically into complex systems of varying magnitudes, and how*
- c. *such complex structural systems may accommodate concurrently both entropic exporting and syntropic importing, and do so always in terms of whole, uniquely frequenced, growing or diminishing, four-dimensional, structural-system quantum units.*

270.12 In the era before the measurement of the speed of light scientists assumed an instant, unitarily conceptual, normally-at-rest (but for the moment, and only locally, perversely restless) Universe. Before the 20th-century discoveries of other galaxies and in the early days of thermodynamics and its disclosure of entropy—the inexorable systemic loss of energy—the scientists were prone to assume that the vast instantaneous cosmic machine as a thermodynamic system must itself be "running down"—that is, continually spending itself entropically and trending eventually to self-annihilation.

270.13 Boltzmann contradicted that assumption by saying in effect that the a priori fact of the existence of billions of stars radiantly and entropically broadcasting their energies must require an as-yet-undiscovered but obviously operative energy redistribution system by which stars are elsewhere and elsewhen assemblingly formed. Boltzmann therefore assumed a cosmic complex of invisible energy-importing centers whose nonsimultaneous formations but sum-total, long-run energy importing exactly balances all the long-run cosmic exportings. The entropic radiance of the exporting centers makes them visible to us, while the importing centers are inherently invisible, except when starlight bounces reflectively off them as does Sunlight make the Moon—and the planets Venus, Jupiter, Mars, and Saturn—reflectively visible to us Earthians.

270.14 Because Boltzmann could not demonstrate the astrophysical presence of such inherently invisible importing centers, his concept was not widely accepted by other scientists. Einstein, however, later supported Boltzmann's concept as constituting a logical corollary of Einstein's own implicit concept of the Universe as an aggregate of nonsimultaneous, variously enduring, and only partially overlapping energy events. Though Einstein did not employ the analogy, his was in effect an endless ropelike concept of variously enduring, finite, special case episodes converging in generalized principle to apparent irrelevance and overlapping one another momentarily to constitute a fat- or thin-diametered rope of meaningful concern as might preoccupy any one cosmologist at any one time.

270.15 Among their many sophisticated mathematical devices mathematicians' most advanced conceptual tool is the topology of Leonhard Euler, whose three irreducible visualizable aspects of *vertexes V*, *planar faces or areas F*, and *edges of faces or lines E* seem to the geometrically heedless mathematical physicists and astrophysicists to have no inherent correspondence with experimentally demonstrable energetic reality.

270.16 Synergetics defines *structure* as meaning the self-interstabilization by a complex of forces operative in six degrees of freedom. This complex definition can be resolved into only one word—*triangulation*. The faculty of the Massachusetts Institute of Technology has defined mathematics as "the science of structure and pattern in general."

270.17 Synergetics and operational mathematics find that by combining topology and vectorial geometry, and by always requiring structural stability and intertransformative proofs in four-dimensional electromagnetic reality for all propositions, and by starting with minimum conceptuality of a substantive entity as having inherent insiderness and outsiderness, *it is in evidence*

- that the minimum polyhedron (the tetrahedron) consists entirely of minimum polygons (triangles);
- that the minimum polyhedron systematically and inherently divides all Universe into (a) an excluded macrocosm, (b) an included microcosm, and (c) the remainder of Universe constituting the dividing system itself;
- that this tune-in-able minimum, systemic, primitive entity is apprehensible conceptually because of its contrast to the “nothingness” of the presently untuned- in and un-tune-in-able (within the limited frequency range of the human observer's given equipment);
- that the cosmically comprehensive equilibrium of all vectors provides the geometrically conceptual field of *structuring-as-you-go* reference and is known as the four-dimensional isotropic vector, meaning cosmically everywhere and everywhen *the same* energy conditions—ergo undifferentiable, ergo untunable and unapprehensible in any special case time-size reality—but both intellectually and geometrically conceptualized in synergetics' vectorial, angular-oriented comprehensivity; and
- that there is no "space"; there is only the tuned-in and the at-present-untuned- in—over ten million invisible electromagnetic waves of radio, TV, and other broadcasts are surrounding you and permeating you in what we usually call space.

270.18 Euler shows that in respect to all uncored polyhedra the number of vertexes plus the number of faces always equals the number of edges plus the number 2 ($V+F=E+2$). But the diversion of this formula into local aspects of polyhedra introduced a nonexistent two-dimensionality, allowing the mathematicians to detour around reality. Academic mathematicians (themselves indifferent to physical manifestation of experimental evidence) have detoured Euler's concepts into such games as that of the pretended existence of a substanceless rubber sheet having no insiderness but only a one-way-at-a-time-facing surface with no edge thickness or obverse surface. On such an imaginary surface Euler's vertexes, faces, and edges have been distortingly redeployed.

270.19 Euler was almost blind, but with his compensatorily vivid imagination he discovered that all visual experiences could be reduced to three prime aspects: *lines*, and where lines converge to *vertexes*, and where lines surroundingly cross one another to describe *areas* bound by those lines. Because his topology was concerned with only visual aspects, Euler was able to overlook substantial textures, sounds, tastes, and smells; temperatures, weights, and volumes; durations, intensities, frequencies, and velocities. But he was so great a scientist and so competent a mathematician that he evolved the fundamentals of structural analysis employed in the 20th century in designing structures of land, sea, sky, and extraterrestrial functioning.

270.20 The chemist Willard Gibbs, developed the phase rule dealing with liquid, gaseous, and crystalline states of substances, apparently not realizing that his phase rule employed the same generalized mathematics as that of Euler's topological vertexes, faces, and edges.

270.21 Synergetics is concerned exclusively with physically demonstrable, and thus experimentally evidenceable, phenomena. Synergetics adds to Euler's topology its discovery of the mathematically generalizable constant relative interabundance of angles, volumes, and all the physical characteristics of time-space velocity, force, wavelength and frequency, directional orientation, and systems consideration—always identifying Euler's edge lines *E* as representative only of physical energy vectors or metaphysical lines of unique interrelationships of vertexially located phenomena. Vectors are discrete in length, being the product of physical velocity and mass operating in a given angularly describable direction in respect to a given axis of observation. Velocity is a product of time and distance, while mass is a relative density of energy events per given volume; wherefore all the qualities of physical experience are describable in a unified four-dimensional field, a state at which physical Universe never tarries, and relative to which (and through which) all of nature's physical manifestations are local, differentially frequenced aberratings and pulsative omniconvergent-divergent, omniinteraccommodative transformings.

270.22 Since the sum of the chordally convergent angles of any triangle (right, isosceles, or scalene) is always 180 degrees, the sum of the angles of any chordally defined tetrahedron, regular or irregular, is always 720 degrees; therefore, all its topological and geometrical interrelationship properties are consistently similar—ergo, universal independently of time-size considerations.

270.23 We start our vectorial, topological, structuring-as-you-go exploration with the primitive state of conceptuality (independent of size and time) of the universal tetrahedron, with its four triangular facets, its four corners, its 12 angles, and its six most economical, chordal, interrelationship lines running between its four-corner event foci.

270.24 In exploring the intertransformability of the primitive hierarchy of structuring-as-you-go, with its omnitriangularly oriented evolution and the interbonding of its evolving structural components, we soon discover that the universal interjointing of systems and their foldability permit the angularly hinged convergence into congruence of vectors, faces, and vertexes as demonstrated in the *vector equilibrium jitterbug* (Sec. [460](#)), each of whose multicongruences appears as only one edge or one vertex or one face aspect. Topological accounting as conventionally practiced accounts each of these multicongruent aspects as consisting of only one such aspect. Only synergetics accounts for the presence of all the congruent aspects—double, triple, or fourfold—by always accounting for the initial inventory of the comprehensive tetravolume-48 rhombic dodecahedron and the 20 tetravolume vector equilibrium, together with their initial or primitive inventory of vertexes, faces, and edge lines, which are always present in all stages of the $48 \rightarrow 1$ jitterbug convergence transformation, though often imperceptibly so.

270.25 With recognition of the foregoing topological deceptiveness, and always keeping account of the primitive total inventory of such aspects, we find it possible to demonstrate conceptually and to prove the validity not only of Boltzmann's concepts but of all quantum phenomena. This makes it possible to interlink the mathematical accounting of synergetics conceptually with the operational data of physics and chemistry as well as with the complex associabilities of their related disciplines.

[Next Chapter: 300.00](#)
