

200.00 SYNERGETICS

200.001 **Definition: Synergetics**

200.01 Synergetics promulgates a system of mensuration employing 60-degree vectorial coordination comprehensive to both physics and chemistry, and to both arithmetic and geometry, in rational whole numbers.

200.02 Synergetics originates in the assumption that dimension must be physical; that conceptuality is metaphysical and independent of size; and that a triangle is a triangle independent of size.

200.03 Since physical Universe is entirely energetic, all dimension must be energetic. Synergetics is energetic geometry since it identifies energy with number. Energetic geometry employs 60-degree coordination because that is nature's way to closest-pack spheres.

200.04 Synergetics provides geometrical conceptuality in respect to energy quanta. In synergetics, the energy as mass is constant, and nonlimit frequency is variable.

200.05 Vectors and tensors constitute all elementary definition.

200.06 Synergetics shows how we may measure our experiences geometrically and topologically and how we may employ geometry and topology to coordinate all information regarding our experiences, both metaphysical and physical. Information can be either conceptually metaphysical or quantitatively special case physical experiencing, or it can be both. The quantized physical case is entropic, while the metaphysical generalized conceptioning induced by the generalized content of the information is syntropic. The resulting mind-appreciated syntropy evolves to anticipatorily terminate the entropically accelerated disorder.

201.00 **Experientially Founded Mathematics**

201.01 The mathematics involved in synergetics consists of topology combined with vectorial geometry. Synergetics derives from experientially invoked mathematics. Experientially invoked mathematics shows how we may measure and coordinate omnirationally, energetically, arithmetically, geometrically, chemically, volumetrically, crystallographically, vectorially, topologically, and energy-quantum-wise in terms of the tetrahedron.

201.02 Since the measurement of light's relative swiftness, which is far from instantaneous, the classical concepts of instant Universe and the mathematicians' instant lines have become both inadequate and invalid for inclusion in synergetics.

201.03 Synergetics makes possible a rational, whole-number, low-integer quantation of all the important geometries of experience because the tetrahedron, the octahedron, the rhombic dodecahedron, the cube, and the vector equilibrium embrace and comprise all the lattices of all the atoms.

201.10 **Accommodation of Proclivities, Phases, and Disciplines**

201.11 The tetrahedral and vector equilibrium models in the isotropic vector matrix provide an absolute accommodation network of energy articulation, including the *differentiated proclivities* of:

associative-disassociative

convergent-divergent-oscillating-pulsating

dynamic-kinetic

energetic-synergetic

entropic-syntropic

expansive-contractive

explosive-implosive

gravitational-radiational

hydraulic-pneumatic

importing-exporting

inside-outing-outside-inning

involuting-evoluting

omnidirectional-focal push-pulling

radial-circumferential

rotational-ovational gearing
synchronous-dissynchronous
torque-countertorque
turbinizing-counterturbinizing
vector-tensor

together with the *integrated synergetic proclivities* of:

inward-outward and three-way aroundness;
precessional processing of plus-minus polarization; and
wave propagation mechanics;

together with the intertransformative behavioral *phases* of:

incandescent
liquid
plasmic
thermal
vapor;

and the mensurabilities elucidating the *disciplines* of:

biological
chemical
cryogenic
crystallographic
electrical
genetic
geodesic
geodetic
geological
geometrical
logical

mathematical
mechanical
nonbiological structuring
physiological
scientific
teleologic
thermodynamic
virological

explorations for comprehensive rational interrelationship number constants. (See [Sec. 424.01.](#))

201.20 **Synergetic Hierarchy: Grand Strategy**

201.21 Although we are deeply and inescapably aware of the vast ranges of unexploited geometry, we must not permit such preoccupations to obscure our awareness of the generalized, comprehensively coordinate, arithmetical, geometrical, and factorial system employed by nature in all her energetic-synergetic transformative transactions. With the general systems' discovery of the tetrahedron as the basic structural unit of physical Universe quantation, we find that there is a fundamental hierarchy of vectorial-geometric relationships that coincides with and integrates topology, quantum mechanics, and chemistry.

201.22 All of the exact sciences of physics and chemistry have provided for the accounting of the physical behaviors of matter and energy only through separate, unique languages that require awkward translation through the function of the abstract interpreters known as the *constants*. But synergetics now embraces the comprehensive family of behavioral relationships within one language capable of reconciling all the experimentally disclosed values of the XYZ—CG_tS mensuration systems adopted by science. The adoption of the tetrahedron as mensural unity, as proposed in [Table 223.64](#), and the recognition of the isotropic vector matrix as the rational coordinate model, are all that is needed to reveal the implicit omnirationality of all chemical associating and disassociating. Thus we can provide a single language to recognize and accommodate—

Avogadro's law of gases;

Bohr's fundamental complementarity;

Bridgman's operational procedure;
Brouwer's fixed-point theorem;
Gibbs' phase rule;
Field equations;
Einstein's energy equation;
Euler's topology of points, areas, and lines;
Kepler's third law;
Newton's theory of gravity;
Pauling's chemical structuring;
Pauli's exclusion principle;
Thermodynamic laws;
L.L. Whyte's point system

202.00 **Angular Topology**

202.01 Synergetics is a triangular and tetrahedral system. It uses 60-degree coordination instead of 90-degree coordination. It permits conceptual modeling of the fourth and fifth arithmetic powers; that is, fourth- and fifth-dimensional aggregations of points or spheres in an entirely rational coordinate system that is congruent with all the experientially harvested data of astrophysics and molecular physics; that is, both macro- and micro-cosmic phenomena. It coordinates within one mensurational system the complete gears-interlocking of quantum wave mechanics and vectorial geometry.

202.02 Synergetics topology integrates laws of angle and volume regularities with Euler's point, area, and line abundance laws.

202.03 **Angular Topology:** Synergetics discovers the relative abundance laws of Euler's point-area-line conceptual regularities and integrates them with geometrical angle laws, prime number progression, and a primitive geometrical hierarchy. All of this synergetic integration of topology with the angular regularities of geometrical transformabilities is conceptually generalizable independent of special case, time-space-sizing relations.

203.00 **Scope**

203.01 Synergetics explains much that has not been previously illuminated. It is not contradictory to any of the experimentally based knowledge of the classically disciplined sciences. It does not contradict the calculus or any other mathematical tool for special-case applications, although it often finds them inadequate or irrelevant.

203.02 Experientially founded synergetics clearly identifies the conceptual limitations and coordinate functionings of all the classical tools of mathematics, and it shows how their partial functioning often frustrates comprehension of experience.

203.03 Synergetics follows the cosmic logic of the structural mathematics strategies of nature, which employ the paired sets of the six angular degrees of freedom, frequencies, and vectorially economical actions and their multialternative, equieconomical action options.

203.04 Rather than refuting the bases of presently known Euclidean and non-Euclidean and hyperbolic and elliptic geometry, synergetics identifies the alternate freedoms of prime axiomatic assumption from which the present mathematical bases were selected. It embraces all the known mathematics. All of the axiomatic alternatives are logical. Thus, original assumptions eliminate the necessity for subsequent assignment of physical qualities to nonconceptual mathematical devices. Classical mathematics has, of necessity, assigned progressively discovered attributes of physical Universe to irrational relationships with the ghostly, a priori Greek geometry. The quest for a mathematics expressing nature's own design has been an elusive one. Synergetics has developed as the search for the omnirational, comprehensive, coordinate system employed by nature, i.e., Universe, throughout all its complementary and interaccommodatively transforming transactions.

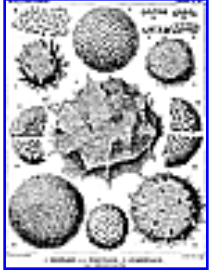
203.05 As Werner Heisenberg says "if nature leads us to mathematical forms of great simplicity and beauty . . . to forms that no one has previously encountered, we cannot help thinking that they are 'true,' and that they reveal a genuine feature of nature."¹

(Footnote 1: *Physics and Beyond*, Harper & Row, New York, 1970, p. 68.)

203.06 Synergetics altogether forsakes axioms as "self-evident," premicroscope, superficial beliefs. It predicates all its relationship explorations on the most accurately and comprehensively statable observations regarding direct experiences. The new set of data employed by synergetics seemingly results in sublimely facile expression of hitherto complex relationships. It makes nuclear physics a conceptual facility comprehensible to any physically normal child.

203.07 Synergetics discloses the excruciating awkwardness characterizing present-day mathematical treatment of the interrelationships of the independent scientific disciplines as originally occasioned by their mutual and separate lacks of awareness of the existence of a comprehensive, rational, coordinating system inherent in nature.

203.08 Synergetics makes possible the return to omniconceptual modeling of all physical intertransformations and energy-value transactions, as exclusively expressed heretofore—especially throughout the last century—only as algebraic, nonconceptual transactions. The conceptual modeling of synergetics does not contradict but complements the exclusively abstract algebraic expression of physical Universe relationships that commenced approximately a century ago with the electromagnetic-wave discoveries of Hertz and Maxwell. Their electrical-apparatus experiments made possible empirical verification or discard of their algebraic treatment of the measured data without their being able to see or conceptually comprehend the fundamental energy behaviors. The permitted discrete algebraic statement and treatment of invisible phenomena resulted in science's comfortable yielding to complete abstract mathematical processing of energy phenomena. The abandonment of conceptual models removed from the literary men any conceptual patterns with which they might explain the evolution of scientific events to the nonmathematically languaged public. Ergo, the lack of modelability produced the seemingly unbridgeable social chasm between the humanities and the sciences.



[Fig. 203.09](#)

203.09 A study of the microbiological structures, the radiolaria, will always show that they are based on either the tetrahedron, the octahedron, or the icosahedron. The picture was drawn by English scientists almost a century ago as they looked through microscopes at these micro-sea structures. The development of synergetics did not commence with the study of these structures of nature, seeking to understand their logic. The picture of the radiolaria has been available for 100 years, but I did not happen to see it until I had produced the geodesic structures that derive from the discovery of their fundamental mathematical principles. In other words, I did not copy nature's structural patterns. I did not make arbitrary arrangements for superficial reasons. I began to explore structure and develop it in pure mathematical principle, out of which the patterns emerged in pure principle and developed themselves in pure principle. I then realized those developed structural principles as physical forms and, in due course, applied them to practical tasks. The reappearance of tensegrity structures in scientists' findings at various levels of inquiry confirms the mathematical coordinating system employed by nature. They are pure coincidence—but excitingly valid coincidence.

203.10 Synergetics represents the coming into congruence of a mathematical system integrating with the most incisive physics findings and generalized laws. At no time am I being scientifically perverse. I am astonished by a philosophic awareness of the highest scientific order, which accommodates the most mystical and mysterious of all human experience. What we are experiencing is vastly more mystically profound by virtue of our adherence to experimentally harvested data than has ever been induced in human comprehension and imagination by benevolently implored beliefs in imagined phenomena dogmatically generated by any of the formalized religions. We are conscious of aspects of the mysterious integrity Universe which logically explains that which we experience and the integrity of the Universe to far more comprehensible degree than that occurring in the make-believe, nonscientifically founded communications of humanity.

204.00 **Paradox of the Computer**

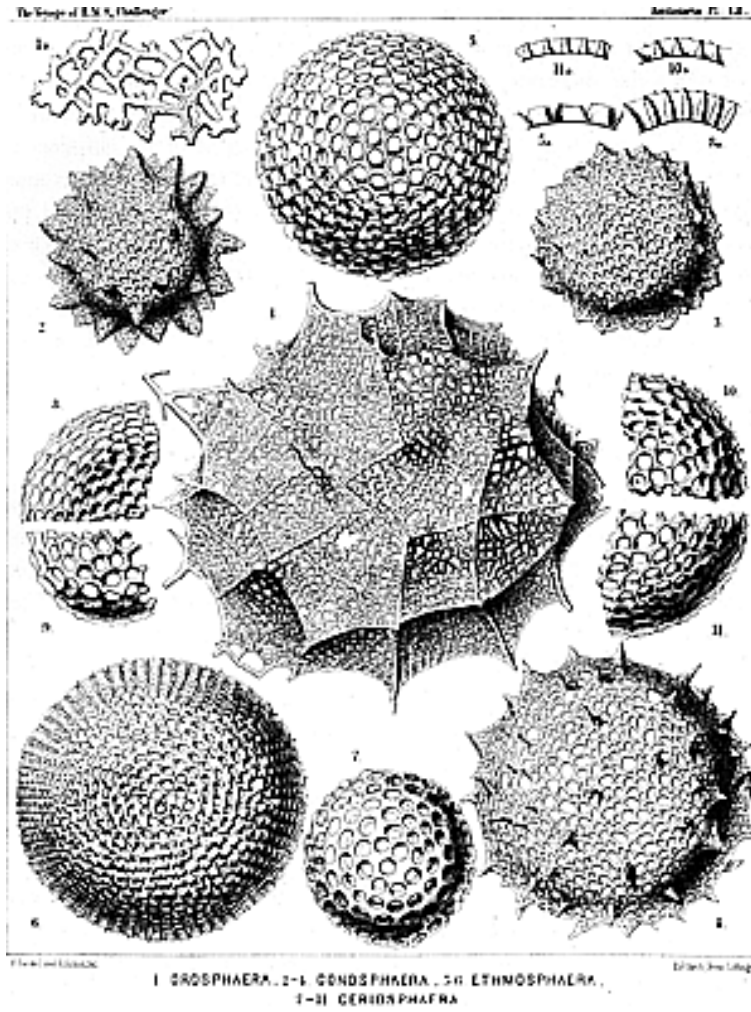


Fig. 203.09 Examples of Geodesic Design in Nature.

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204.01 Scientific entry into the present realm of nuclear competence was accomplished with the awkward irrational tools of the centimeter-gram-second (CGS)² measurement and the Cartesian XYZ 90-degree coordinate system. But the awkwardness had to be corrected by Planck's constant to produce reliable, usable information. The development and adoption of the great computers has now relieved humans of the onerous computational tasks entailed in the corrective processing by the irrational constants necessitated by the ineptness of the arithmetical rigidity of arbitrarily exclusive, three-dimensional interpretation of Euclidean geometric mensuration. These irrational constants interlink the many separately evolved quantation techniques of the separately initiated explorations of the many separate facets of universal experience—for instance, biology, crystallography, or physics are called separate, "specialized" scientific inquiries by academic departments and surrounded by NO TRESPASSING signs and electrically charged barbed wire. Because these tasks are being carried by the computers, and men are getting along all right on their blind-flown scientific pilgrimages, realization of the significance of the sensorially conceptual facility of dealing with nature that is opened up by synergetics has been slow.

(Footnote 2: Or, more properly, the centermeter-gram-temperature-second, $CG_T S$ measurement.)

204.02 It is a paradox that the computer, in its very ability to process nonconceptual formulae and awkwardly irrational constants, has momentarily permitted the extended use of obsolescent mathematical tools while simultaneously frustrating man's instinctive drive to comprehend his direct experiences. The computer has given man physical hardware that has altered his environmental circumstances without his understanding how he arrived there. This has brought about a general disenchantment with technology. Enchantment can only be sustained in those who have it, or regained by those who have lost it, through conceptual inspiration. Nothing could be more exciting than the dawning awareness of the discovery of the presence of another of the eloquently significant eternal reliabilities of Universe.

205.00 **Vector Equilibrium**

205.01 The geometrical model of energy configurations in synergetics is developed from a symmetrical cluster of spheres, in which each sphere is a model of a field of energy all of whose forces tend to coordinate themselves, shuntingly or pulsatively, and only momentarily in positive or negative asymmetrical patterns relative to, but never congruent with, the eternality of the vector equilibrium. The vectors connecting the centers of the adjacent spheres are identical in length and angular relationship. The forces of the field of energy represented by each sphere interoscillate through the symmetry of equilibrium to various asymmetries, never pausing at equilibrium. The vector equilibrium itself is only a referential pattern of conceptual relationships at which nature never pauses. This closest packing of spheres in 60-degree angular relationships demonstrates a finite system in universal geometry. Synergetics is comprehensive because it describes instantaneously both the internal and external limit relationships of the sphere or spheres of energetic fields; that is, singularly concentric, or plurally expansive, or propagative and reproductive in all directions, in either spherical or plane geometrical terms and in simple arithmetic.

205.02 When energy-as-heat is progressively extracted from systems by cryogenics, the geometries visibly approach equilibrium; that is to say, removing energy-as-heat reduces the asymmetrical pulsativeness in respect to equilibrium. As the asymmetric kinetics of energy-as-heat are removed, and absolute zero is neared, the whole field of vectors approaches identical length and identical angular interaction; that is to say, they approach the model of closest-packed spherical energy fields. The lines interconnecting the adjacent spheres' centers constitute a vectorial matrix in which all the lines and angles are identical, which is spoken of by the mathematical physicists as the isotropic vector matrix, i.e. where all the energy vectors are identical, i.e., in equilibrium: the cosmically absolute zero.

205.03 Metaphysically, the isotropic vector matrix is conceptually permitted. The difference between the physical and the metaphysical is the omnipulsative asymmetry of all physical oscillation in respect to the equilibrium. Metaphysical is equilibrious and physical is disequilibrious.

205.04 The metaphysically permitted frame of reference for all the asymmetrical physical experience of humanity is characterized by the 60-degree coordination with which synergetics explores nature's behaviors—metaphysical or physical.

205.05 The phenomenon of time entering into energy is just a metaphysical concept. It explains our slowness and our limitations. Temporality is time, and the relative asymmetries of oscillation are realizable only in time— in the time required for pulsative frequency cycling. Synergetics correlates the verities of time and eternity. The awareness of life is always a complex of cognition and recognition lags. Lags are wave frequency aberrations.

206.00 The vectorial coordinate system deriving from closest packing of spheres permits fourth- and fifth-power models of modular-volume symmetrical aggregations around single points in an omnidirectional, symmetrical, allspace-filling radial growth. (See illustration [966.05](#).) The unit of modular volumetric measurement is the tetrahedron, whose 60-degree angles and six equilateral edges disclose omnipersistent, one-to-one correspondence of *radial wave modular growth with circumferential modular frequency growth* of the totally involved vectorial geometry. This means that angular and linear accelerations are identical. This is a rational convenience prohibited by 90-degree coordination, whose most economical circumferential geometries are in most cases inherently irrational.

207.00 The angular and linear accelerations of synergetics' isotropic, vectorially triangulated, omnidirectional matrix initiations are rational and uniformly modulated; whereas in the XYZ 90-degree coordinate analysis and plotting of the computational findings of the calculus, only the linear is analyzable and the angular resultants are usually irrationally expressed.

208.00 The frequency and magnitude of event occurrences of any system are comprehensively and discretely controllable by *valving*, that is, by angle and frequency modulation. Angle and frequency modulation exclusively define all experiences, which events altogether constitute Universe. (See [Sec. 305.05](#).)

209.00 It is a hypothesis of synergetics that forces in both macrocosmic and microcosmic structures interact in the same way, moving toward the most economic equilibrium patternings. By embracing all the energetic phenomena of total physical experience, synergetics provides for a single coherent system of geometric principles and secures a metaphysical and evolutionary advantage for all experiential accounting and prospecting.

210.00 Synergetics provides vectorial modeling of heretofore only instrumentally apprehended phenomena—for instance, those discovered in nuclear physics. Since it discloses nature's own most economical coordinate system, it provides conceptual models for humanity to accommodate the scientists' energy experiment discoveries.

211.00 Synergetics both equates and accommodates Heisenberg's indeterminism of mensuration inherent in the omnisymmetry of wavelinear physical pulsations in respect to the only metaphysical (ergo, physically unattainable) waveless exactitude of absolute equilibrium. It is only from the vantage of eternal exactitude that metaphysical mind intuitively discovers, comprehends, and equates the kinetic integrities of physical Universe's pulsative asymmetries.

212.00 The whole theory of structure is both altered and enormously expanded and implemented by the introduction of a mathematically coordinate, comprehensively operative, discontinuous-compression, continuous-tension system as inherent to synergetics and its omnirationality of vectorial energy accounting.

213.00 The solving of problems in synergetics starts with the known behaviors of the whole system plus the known behavior of some of the system's parts, which makes possible the discovery of other heretofore unknown parts of the system and their respective behaviors. For instance, in geometry, the known sum of a triangle's angles—180 degrees—plus the known behavior of any two sides and their included angle, or vice versa, permits the discovery and measurement of the values of the other three parts.

214.00 In its search for a coordinate system of nature, synergetics has continually reexamined and reconsidered the experimentally based successive discoveries of what seemed to be a hierarchy of generalized principles possibly governing all of the physical Universe's intertransforming transactions. Thus it aims at a total epistemological reorientation and a unique philosophical reconceptioning regarding the regenerative constellar logic of Universe, making possible the formulating of more comprehensive and symmetrical statements regarding dawningly apparent natural laws.

215.00 **A Geometry of Vectors**

215.01 Assuming an energy Universe of curved paths generated by angular accelerations of varying intertensions, rates, and radii, resulting in orbits of high-frequency continuities, and separating time out of the compound dynamic system, there remain only the relative attractions and repulsions expressed in relative vectorial terms in respect to the radius of any one interattracted couple of the set of all the radii expressed.

215.02 In such a timeless and equilibrious instant, the remainder of the system may be discovered as a vector construction of force interrelationships between centers. A geometry composed of a system of interrelated vectors may be discovered that represents the complete family of potential forces, proclivities, and proportional morphosis by octave introversion and extroversion .

216.00 **Significance of Isotropic Vector Matrix**

216.01 Even with foreknowledge of the exact elegant congruences of the isotropic vector matrix ([Sec. 420](#)) with nature's eternally transforming transaction needs, we can still understand the ease with which humanity's optical-illusion-producing, minuscule stature in relation to his spherical planet magnitude made it logical for him to institute experience analysis as he did, with lines, planes, squares, perpendiculars, and cubes; and present knowledge of the significance of the isotropic vector matrix also explains lucidly why scientists' faithful measuring and calculation discovered the family of irrational mathematical constants correlating their findings as seemingly expressible only in the terms of cubism's centimeter-gram-second, *XYZ* rectilinear coordination of seemingly obvious "three-dimensional" reality.

216.02 Humanity's escape from the irrational awkwardness of the axiomatic hypothesis trap of eternal askewness which snags him, involves all young humanity's discovery of the isotropic vector matrix synergetics' elegant rational simplicity and its omniaccommodation of all experimentally founded research. Popular understanding and spontaneous employment of synergetics' isotropic vector matrix coordination involves young, popular, experience-induced, spontaneous abandonment of exclusively rectilinear *XYZ* coordination, but without loss of the *XYZ*'s uneconomically askew identity within the system—all occurring "naturally" through youth's spontaneous espousal of the most exquisitely economical comprehension of the most exquisitely economical freedoms of opportunity of individual realizations always regeneratively inspired by the inherent a priori otherness *considerations* (see [Sec. 411](#)).

216.03 Comprehension of conceptual mathematics and the return to modelability in general are among the most critical factors governing humanity's epochal transition from bumblebee-like self's honey-seeking preoccupation into the realistic prospect of a spontaneously coordinate planetary society. Insect and avian bumbling in general inadvertently cross-fertilizes all the vegetation's terrestrial impoundments of the star-radiated energy which alone regenerates all biological life around Earth planet. The vegetational impoundments would be dehydrated were they not osmotically watercooled by their root-connected hydraulic circuitry of Earth waters' atomization for return into the sky-distributed, fresh-water-regenerating biological support system; and the rooting frustrates integral procreation of the vegetation which is regeneratively cross-fertilized entirely by the insect and avian, entirely unconscious, pollen-delivering inadvertencies. It is highly probable that universal comprehension of synergetics is strategically critical to humanity's exodus from the womb of originally permitted absolute helplessness and ignorance at birth and entry into the realization that planetary society can spontaneously coordinate in universally successful life support, that is, achieve freedom from fundamental fear and political bias inherent in the ignorant assumption of life-support inadequacy.

217.00 Prospects for Synergetics

217.01 Synergetics recognizes the history of progressively larger and more incisive conceptionings, which have eliminated previously uncomprehended behaviors of local Universe. It recognizes that the elegant conceptionings of one period that greatly widened the horizons of human understanding reached their limits of informative capability to be progressively obsoleted by ever greater conceptioning accruing to the ever-mounting harvest of cosmic experience.

217.02 The rate of change and number of special-case self-retransformings of physical evolution tend ever to accelerate, differentiate, and multiply; while the rate of change and numbers of self-remodifyings of generalized law conceptionings of metaphysical evolution tend ever to decelerate, simplify, consolidate, and ultimately unify. (See [Sec. 323.](#))

217.03 In the inherently endless scenario model of Einstein's Universe, truth is ever approaching a catalogue of alternate transformative options of ever more inclusive and refining degrees, wherefore the metaphysical might continually improve the scenario by conceptual discoveries of new generalized principles. (See Secs. [529.07](#) and [1005.50.](#))

217.04 Synergetics augments the prospect of humanity becoming progressively exploratory. There is clearly disclosed the desirability of commencing scientific exploration with synergy-of-synergies Universe: metaphysical and physical. While synergetics seems to open new ranges of cosmic comprehension, we assume that the time will come when the inventory of experiences that have catalyzed both its conceptioning and inception will have become overwhelmed by vaster experientially based knowledge and may well become progressively useful but, in its turn, obsolete. Because the generalized principles cannot be principles unless they are eternal, and because human experience is inherently limited, there can be no finality of human comprehension.

[Next Section: 220.00](#)

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