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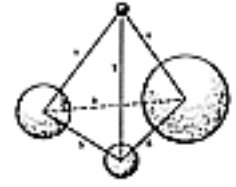
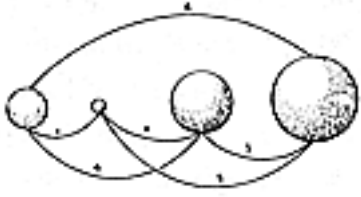
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## 500 CONCEPTUALITY

### 501.00 Definition: Conceptuality

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501.01 The greatest of all the faculties is the ability of the imagination to formulate conceptually. Conceptuality is subjective; realization is objective. Conceptuality is metaphysical and weightless; reality is physical.

501.02 Definition requires conceptuality. All local systems are conceptual. Conceptual totality is inherently prohibited. There is systematic conceptuality within the totality, but it is always cosmically partial.

501.03 The artist was right all the time. Nature is conceptual. This is the difference between visibility and invisibility. The invisible does not mean nonconceptual. Conceptuality is independent of visibility or invisibility. You can have conceptuality, or an understanding of the principles, independent of size, which makes it possible to conceive of events as they occur at magnitudes that would be subvisible or supravisible. Conceptuality operates experimentally, independent of size. Size alone can come to zero, not conceptuality.

501.04 Conceptuality requires the generalization of patterns gleaned from special-case experiences and thus defines the basic event experiences that constitute structure.

501.05 We may think conceptually of assemblies of triangles or basic, generalized, structural arrangements that will hold true at either an atomic-nucleus size or a super-galaxy size, because all angularly defined systems are conceptually independent of the relative sizes of special-case experiences.

501.06 There is no half-profile of you. All conceptuality is systemic; it has to be finitely closed. Conceptuality has to have both frequency and angle. The angle part has to do with the circuitry design.

501.07 *Momentarily conceptual* means standing dynamically together like star groups. (See Sec. [324.00](#), Scenario Universe, and Sec. [510](#), Star Events.)

*Aggregate* means nonunitarily conceptual as of any one moment.

501.08 We may hypothesize that information as it increases exponentially—explodes. Conceptuality implodes, becoming increasingly more simplified.

#### 501.10 **Omnidirectional Halo**

501.101 Any conceptual thought is a system and is structured tetrahedrally. This is because all conceptuality is polyhedral. The sums of all the angles around all the vertexes—even crocodile, or a 10,000-frequency geodesic (which is what the Earth really is) —will always be 720 degrees less than the number of vertexes times 360 degrees.

501.11 The difference between nonconceptual, nonsimultaneous Universe and *thinkability* is always two tetrahedra: one as macro, to complete the convex localness outside the system, and one as micro, to complete the concave localness inside the system, to add up to finite but nonconceptual Universe. Thus the thinkable system takeout from Universe has a "left-out" outside irrelevancy tetrahedron and a "left-in" inside irrelevancy tetrahedron.

501.12 You have to have the starkly nonvisible to provide the complementary tetrahedron to account for the visibility, since concave and convex are not the same. That stark invisible reality of the nonconceptual macro- and micro-tetrahedra also have to have this 720-degree elegance. But the invisible outside tetrahedron was equally stark. The finite but nonconceptual inness and outness: that is the Omnidirectional Halo.

501.13 Complementarity requires that where there is conceptuality, there must be nonconceptuality. The explicable requires the inexplicable. Experience requires the nonexperienceable. The obvious requires the mystical. This is a powerful group of paired concepts generated by the complementarity of conceptuality. Ergo, we can have annihilation and yet have no energy lost; it is only locally lost.

501.131 **Omnidirectional Halo:** Every time we have annihilation into eternity, it is not lost in principle; it is only locally lost in the relative inaccuracy that we must have to differentiate and to have awareness.

501.14 The invisibility of negative Universe may seem a discrepancy, but only because the conceptual is such a fantastically limited part of the total, not just in the electromagnetic spectrum range, but in metaphysical, cosmic thinkability itself.

### 501.20 **Cosmic Timetable of Cyclic Events**

501.21 An angle is a convergent-divergent pattern: in terms of human experience it is a directionally focused happening—an event—an eVe-nt—a conVening—interference eVent whose V-angle of conVergence is a linear crossing fiX and, as such, is mentally conceptual and finitely think-about-able independent of the outwardly extendable length of the two lines. Even though the lines diverge outwardly—inferentially toward infinity—the angle formed by their inwardly converging lines is finite.

501.22 By the same logic a triangle or three-angled polygon is not only thinkably conceptual independent of size, but all its lines also terminate in angular convergences. Ergo, the triangle has no loose ends; the triangle is integrally and comprehensively finite. The triangle demonstrates finite conceptuality independent of time-sizing.

501.23 Conceptuality is always referenced to previous experience. The triangle is conceptually independent of time-sizing because it is a generalization of many triangular experiences. All of Euler's generalized topological trio of *vertexes*, *faces*, and *edges*—his irreducible family of three unique geometrical aspects and their respectively unique constancies of always-and-only-co-occurring relative abundance  $V + F = E + 2$ —are all conceptually finite and considerable independent of special-case geometric shaping and sizing.

501.24 The relative size of any phenomenon is measurable only in time, for it takes time to measure. The relative magnitudes or microtudes of phenomena are measurable in equal, elapsed-time-per-whole-cycle increments relative to a specified cyclic system. (See Secs. [265.08](#) through [265.13](#), [526.23](#), and [1033.601](#).) The prime time increments and their respective frequency of recurrence within specific cyclic periods as employed by science are those of the only-gravitationally-intercohered galactic and nuclear systems. The celestial galaxies and the atomic nuclei alike are axially and orbitally unrestrained angular momentums of independently operative energy substances. The relative frequencies of the macrocelestial and microatomic systems and their local, individual, integral, inwardly-outwardly-pulsative, intertransforming characteristics have been reliably and informedly measured and interreferenced to



constitute the cosmic timetable of cyclic events.

## 502.00 Experience

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502.01 Experience is the raw material of science.

502.02 It is the nature of all our experiences that they begin and end. They are packaged. Our experiences, both physical and metaphysical, are all finite because they all begin and end. Experience is always special-case. Special cases are all biterminal, i.e., having both beginning and ending.

502.03 **Complexity:** Experiences are never elementary; ergo, they are always complex. The concept *one* as unity is available only in respect to one-half of twoness. There is no experience without the finite furniture of twoness.

502.04 Thinking is inherently exclusive. Experience, which comes before thinking, is inherently inclusive.

502.05 Experience is always special case but always governed by generalized laws. Among the generalized laws governing experience is the law that there are three directional aspects of all experience: in, out, and around. These directions manifest an inward-outward pulsing and a surface-articulated patterning. The pulsing patterning has six consequences:

1. the change in size wave frequency;
2. the plurality of precessionally induced surface vertex-vortex rotations of the expansive-contractive pulsations acting as omninonpolar vertex, alternately winding and unwinding, alternately and symmetrically to take in the slack of the contracting system or unwinding locally to permit symmetrical expansion;
3. the inherent axial rotation of the whole system;
4. the inherent orbitally occasioned surface changings occasioned by external forces operating precessionally upon the conceptual system considered;
5. the precessionally induced inside-outing transformations; and
6. the local-surface spiral wrinklins caused by axial torque; i.e., when opposite poles rotate in opposite directions (as with the Earth's clockwise rotation of high-pressure, clear-weather atmospheric motions and the counterclockwise, spirally wrinkled, cloud-cover pattern of the low-

pressure stormy weather in the Northern Hemisphere and the oppositely spiraling behaviors in the Southern Hemisphere in respect to the same fair and stormy weather conditions).

502.10 Many years ago, I developed a system of question-asking in which I ruled that I must always answer the questions from experience. My answers must not be based on hearsay, beliefs, axioms, or seeming self-evidence.

502.11 It has been part of my experience that there are others who, while experiencing what I was experiencing, were able to describe what we mutually were experiencing as well as, or better than, I could. Therefore, my experience taught me that I could trust the reporting of some others as reliable data to be included in my "answering" resources. For instance, I could include the experimentally derived data of scientists.

502.12 I am willing to accredit the experiences of other men when I am convinced by my experiences that they communicate to me faithfully; that is, I am able to enlarge my experience by the experience of others.

502.13 Certainly, my experience and your experience includes the fact that we dream. This doesn't have to be realized reality. There may be people who lie to you, but manipulation of the data doesn't alter your determination to rely upon experience, for it now becomes a part of your experience that some people lie, and you learn which ones are reliable as suppliers of your experience inventorying. Our experience includes the becoming. It includes the multiplication of experiences. It includes dichotomy.

502.20 All experiences are finitely furnished with differentiated cognitions, recognitions, and comprehensions. The finite furniture consists of widely ranging degrees of comprehensive constellar complexities.

502.21 Experience is inherently discontinuous and islanded. Each special experience represents a complex of generalized principles operative in local-angle and frequency- modulated realizations.

502.22 Among the irreversible succession of self-regenerative human events are experiences, intuitions, speculations, experiments, discoveries, and productions. Because experience always alters previous experience, the process is both irreversible and nonidentically repetitive.

502.23 Since experience is finite, it can be stored, studied, directed, and turned with conscious effort to human advantage. This means that evolution pivots on the conscious, selective use of cumulative human experience and not on Darwin's hypothesis of chance adaptation to survival nor on his assumption of evolution independent of individual will and design.

502.24 Consciousness is experience. Experience is complex consciousness of being, of self coexisting with all the nonself. Experience is plural and nonsimultaneous. Experience is recurrent consciousness of sequences of self reexperiencing similar events. Reexperienced consciousness is recognition. Recognitions generate identifications. Recognition of within-self rhythms of heartbeat or other identities generates a matrix continuum of time consciousness upon which, as on blank music lines, are superimposed all the observances by self of the nonself occurrences.

502.25 Experience is inherently omnidirectional; ergo, there is not just one "other." There are always at least twelve "others." The connection between the six degrees of freedom and omnidirectionality is, of course, the vector equilibrium. Pulsation in the vector equilibrium is the nearest thing we will ever know to eternity and god: the zerophase of conceptual integrity inherent in the positive and negative asymmetries that propagate the problems of consciousness evolution. Our inherently limited perceptivity requires these definitions of the asymmetric emphasis of experience. Experience is inherently terminal, partial, and differentiable: the antithesis of eternal integrity

### 502.30 **Experimentally Demonstrable vs. Axiomatic**

502.31 The difference between synergetics and conventional mathematics is that it is derived from experience and is always considerate of experience, whereas conventional mathematics is based upon "axioms" that were imaginatively conceived and that were inconsiderate of information progressively harvested through microscopes, telescopes, and electronic probings into the nonsensorially tunable ranges of the electromagnetic spectrum. Whereas *solids, straight lines, continuous surfaces, and infinity* seemed imaginatively obvious, i.e., axiomatic; physics has discovered none of the foregoing to be experimentally demonstrable. The imaginary "abstraction" was so logical, valid, and obviously nonsolid, nonsubstantial in the preinstrumentally-informed history of the musings of man that the mathematician assumed abstraction to be systemic conceptuality, i.e., metaphysical absolutely devoid of experience: He began with oversight.

### 502.40 **The "Purely Imaginary Straight Line"**

502.41 In speaking of his "purely imaginary straight line," the mathematician uses four words, all of which were invented by man to accommodate his need to communicate his experience to self or others:

- a. *Purely*: This word comes from the relativity of man's experiences in relation to impurities or "undesirable presences."
- b. *Imaginary*: "Image-inary" means man's communication of what he thinks it is that he thinks his brain is doing with the objects of his experience. His discovery of general conceptual principles characterizing all of his several experiences—as the rock having insiderness and outsiderness, the many pebbles having their corners knocked off and developing roundness—means that there could be pure "roundness" and thus he imagined a perfect sphere.
- c. *Straight*: Man's experiences with curvilinear paths suggested that the waviness could be reduced to straightness, but there was naught in his experience to validate that nonexperienced assumption. Physics finds only waves. Some are of exquisitely high frequency, but inherently discontinuous because consisting of separate event packages. They are oscillating to and from negative Universe, that is to say, in pulsation.
- d. *Line*: Line is a *leading*, the description of man's continual discovery of the angularly observable directional sequences of events. Lines are trajectories or tracteries of event happenings in respect to the environmental events of the event happening.

### 502.50 **Experiment**

502.51 A voluntary experience is an *experiment*. To be experimental, we must have an observer and the observed, the articulator and the articulated. Experiences include experiments: there are experimentally demonstrable cyclic regularities, such as frequencies of the occurrence of radiation emissions of various atomic isotopes, which become the fundamental time increment references of relative size measurement of elemental phenomena.

### 502.60 **Happening**

502.61 An involuntary experience is a happening. To be experiential, to have a happening, we must have an observer and the observed.

## 503.00 **Happenings**

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503.01 A happening is an involuntary experience. You cannot program "happen."

503.02 Happenings contradict probability. That's why they are happenings. Probability is not a reliable anticipatory tool; it is stronger than "possibility" but crude in comparison to "navigation" and "astronomy." If probability were *reliable*, there would not be a stock market or a horse race.

503.03 The vector equilibrium is the minimum operational model of happenings.

503.031 **Starting Point:** The vector equilibrium nucleus of the isotropic vector matrix is the zero starting point for happenings or nonhappenings: it is the empty theater and empty Universe intercoordinatingly ready to accommodate any act and any audience.

503.04 Evolution is the scenario of happenings permitted by nature's precise external laws governing angular degrees and frequencies of event freedoms.

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## 504.00 Special Case

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504.01 Experience is always special case.

504.011 **Events:** Energy events and structures are always special case (see Sec. [1075](#)).

504.02 The human brain apprehends and stores each sense-reported bit of information regarding each special-case experience. Only special-case experiences are recallable from the memory bank.

504.03 There is in Universe a vast order. It never forsakes. I throw a coin in the air, and it returns and hits the floor *every time*. Nature is never at a loss about what to do about anything. Nature never vacillates in her decisions. The rolling oceans cover three-quarters of Earth. Along the beaches, the surf is continually pounding on the shore. No two successive local surf poundings have ever been the same nor will they ever be the same. They typify the infinitude of individualism of every special-case event in the Universe.

504.04 Weightless, abstract human mind reviews and from time to time discovers mathematically reliable and abstractly storable interrelationships existing between and amongst, but not "in" or "of," any of the special-case experience components of the relationship. When a long-term record of testing proves the relationship to persist without exception, it is rated as a scientifically generalized principle. Whenever human mind discovers a generalized principle to exist amongst the special-case experience sets, the *discovery event* itself becomes a *new* special-case experience to be stored in the brain bank and recalled when appropriate. Amongst a plurality of brain-stored, *newly understood experiences*, mind has, from time to time, discovered greater and more significant understandings, which in their turn as discoveries, which are "experiences," constitute further *very* special-case experiences to be stored in the recallable and reconsiderable brain bank's wealth of special-case experiences.

504.10 **Truth as Special Case Realizations**

504.11 We may say that thinking about the truth alters truth, but only to the extent of defining it. We may always clarify and redefine the truth by making it more comprehensively considerate and more incisively exquisite. Truth alters truth only by refining the definition. The substance of the sensing and instrumental control of the physical means of communication is always refinable and tends toward the ephemeralization of doing ever more with ever less, but you can never get to the exact, most economical statement of the truth, for the very communication will have ephemeralized to pure metaphysics. Truths are like generalized principles: interaccommodative and nonintercontradictory. Truths are special case realizations of the generalized principles; by these very aspects are they discovered to be truths.

504.12 The experience of life inevitably brings inspirational glimpsing of the cosmic orderly vectors, all of which point convergingly to the absolute. The synergetic integral of all truths—being absolute—is incomprehensible to temporality.

504.13 Truth is special case. Truths tend to articulate generalized principles. All the cosmic generalized principles are omniembracing. Truth, like gravity, is nonlinear; it is omniembracing. Of all the creatures on our planet only humans have demonstrated the ability to discover progressive truths.

504.14 As humans are physically situate halfway between the largest and smallest known bio-organisms, they are also halfway between the astro-largest and nuclear-smallest physical phenomena; humans thus find themselves between an absolute, omnidirectional, equilibrious, dimensionless, metaphysical core contained within a spheric twilight zone of macro-almost-true and themselves containing a spheric twilight zone of micro-almost-true. As humans are in the middle of the cosmic scheme metaphysically, truth itself is an unreachable, omnidirectional, cosmic center. The truth is zero eternal. Temporality=tempo-reality=time-reality. In temporality you cannot reach the truth. You cannot be exact because truth is zero. Absolute truth is an omnizerophase condition. The metaphysical comprehension passes through, expandingly and contractively, but fails ever to remain at the zero core of equilibrious truth.

504.15 As we reduce the tolerance for error, we begin to get near the eternal, which is what we call the truth. But we will never quite get there. The inexhaustibly attractive and truthfully inspired thoughts of human minds ever approach an evolutionary refinement while constantly intertransforming as a precessional consequence of progressively experienced complexes of omniinteraccommodative, intercomplementary transactional events; the process results in ever-closer proximity to perfect equilibrium of all intertransformative forces, but it never attains such equilibrium.

504.16 Truth may be dealt with only as relative relationships of interactions of dynamic principles. Degrees of accuracy are refinements that in no way affect the fundamental reliability of the directional or angular sense toward centralized truths. Truth is a relationship; it is a direction rather than an attainment. The search for truth is a yielding to the integrity of the intellect, revealing information and nuances that are ever more impressive, more delicate, and more exciting.

504.17 Truth is the progressive diminution of residual error. The generalizations are eternal. The more accurately we state the truth, the less frequently it becomes necessary to modify our statement of it. We have to change what we say less and less. Eventually it works back to the eternality of No Change.

## 505.00 **Pattern**

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505.01 When we speak of pattern integrities, we refer to generalized patterns of conceptuality gleaned sensorially from a plurality of special-case pattern experiences that have been proven experimentally to be existent always, without exception, in every special case within the required class of experiences.

505.02 Special-case events may appear to be both continuous and "linear" —but only as locally and momentarily experienced. For all experimental observations of at first seemingly "continuous" and "straight-line" experiences (subjective) or of experimental experiences (objective), when projected or prolonged, are always discovered to have been short increments of larger multidirectionally peregrinating, curvilinear, wave actions of discontinuous events (stars) in Milky Way—like, stepping-stone, "linear" arrays.



505.03 All experiences are omnidirectionally oriented. Omnidirectional experiences resolve themselves scientifically into discrete angle and frequency patterns. That is life! Relationships are local to pattern. Patterns are comprehensive to relationships.

505.04 In a comprehensive view of nature, the physical world is seen as a patterning of patternings whose constituent functions are fields of force, each of which compenetrates and influences other localized fields of force.

505.05 Action and interaction of events are accompanied by relative omnidirectional displacements and accommodations of other events. In considering a total inventory of the relative abundance of different patterns, it becomes apparent that patterns are reciprocal.

505.06 The artist frequently conceives of a unique pattern in his imagination before the scientist finds it objectively in nature.

#### 505.10 **Euler: Minimum Aspects of Pattern**

505.101 Euler said that we are dealing in pattern. Mathematics is pattern, and there are irreducible aspects of pattern. That is, the patterns represent events. A line is a unique kind of pattern. If I have two lines, where the two lines cross is distinctly different from where the two lines do not cross. Euler called this the vertex, the convergence. He saw this as absolute pattern uniqueness. (See Sec. [523](#).)

505.11 Euler showed that all optical experiences that we can pattern or form are composed exclusively of three patterning elements: lines, vertexes, and areas—or *trajectories*, *crossings*, and *openings*, as they are known in synergetics. These incontrovertible minimum aspects of pattern are all that is necessary to analyze and inventory all parts of all optically apprehended patterns as well as of all whole patterns. And Euler disclosed three algebraic formulae characterizing the constant relative- abundance relationships of these three fundamental topological elements in all patterns.

505.12 All happening patterns consist of experience recalls. The recallable ingredients of experiences consist inherently of paired-event quanta of six- vectored positive and negative actions, reactions, and resultants.

#### 505.20 **Pattern Integrity**

505.201 A pattern has an integrity independent of the medium by virtue of which you have received the information that it exists. Each of the chemical elements is a pattern integrity. Each individual is a pattern integrity. The pattern integrity of the human individual is evolutionary and not static.

505.21 Each of the chemical elements is a uniquely complex pattern of energy event interrelatednesses which interact inter-interferingly to continually relocalize the involved quantity of energy. These self-interference patterns of atomic element components are in many ways similar to the family of knots that are tied with rope by sailors to produce various local behaviors, all of which, however, result in further contraction of the knot as the two ends of the rope immediately outside the knot are pulled away from one another by forces external to the knot—and thus all the attractive forces of Universe operating upon the atoms may result precessionally in keeping the atomic knots pulled together. (See [Sec.506.14.](#))

### 505.30 **Waves**

505.301 When we drop a stone into water, we see a wave emanate outwardly in a plane. We agree that it is not water but that we are seeing a wave in pure principle. It is not simultaneous: therefore to conceptualize we are using our memory and afterimage. We can never have static waves; they have nothing to do with statics. We see a wave operative in time and in pure principle. If we initiate wave-propagating energy action at one point, a complete omnidirectional wave develops.

505.31 When a stone is dropped into a tank of water, the stone does not penetrate the water molecules. The molecules are jostled; they "accommodate" the stone and in the process jostle their neighboring molecules, which, in turn, jostle their own outwardly surrounding water molecule neighbors. Thus waves of relayed jostling are propagated. Each relayed wave, although a composite of locally forwarded actions, provides a synergetic continuity scenario of those actions. The consequence is a pattern of events that has an integrity of its own, independent of the local displacement accommodations (which are innocent with respect to the overall synergetic pattern).

505.32 The same stone dropped successively in pools of water, milk, or gasoline will generate the same wave patterns. Yet the waves are essences neither of milk nor of water nor of gasoline. The waves are distinct and measurable pattern integrities in their own right, visibly growing and traveling outwardly as each locally involved molecule of the liquids develops a narrow vertical ellipse circuitry returning to where it started, unless a powerful wind operating parallel to and above the liquid blows the top molecules free as bubbles to tumble down the wave side like water on a hillside. (See Sec. [1005.14](#).)

505.33 Individuals regenerate their own sound and air displacement waves and ripples in the physical environment just as stones create waves and ripples in the different liquids into which they are thrown. They also propagate metaphysical wave patterns that develop local pattern displacements in the human affairs cosmos. They also propagate both conscious and unconscious electromagnetic waves. The wave is as abstract as the concept of an angle. Waves are weightless patterns.

505.34 The room we sit in is permeated by thousands of weightless waves, each of unique character. You can tune in hundreds of wide-frequency-range radios within your room, and each can bring in a different program from a different part of the world because the individual, weightless waves flow through trees and house walls. That extraordinary world of weightless, invisible waves is governed by mathematical laws, not by the opinions of men. The magnificent orderliness of that ever individually and uniquely patterning weightless wave Universe is not of man's contriving. The infinite variety of evolutionary complexities, inherent to the orderliness of complementary principles operative in Universe, is of unending synergetic uniqueness.

#### 505.40 **Wave or Particle**



[Fig. 505.41](#)

505.41 One of the things we have to make clear for society is the intellectual dilemma of the Max Planck-descended scientists: the way they do their problems, they can have either a wave or a particle but not both simultaneously. Heisenberg has the same dilemma. They make the error of thinking of a wave as a physical continuity rather than as a metaphysical, weightless pattern integrity, experimentally detectable only by virtue of the medium of the locally displaced, frequency tuned, physical phenomenon—a principle operating utterly independent of any physical medium. (See Secs. [973.30](#) and [1009.36](#).)

#### 505.50 **Abstract vs Energetic**

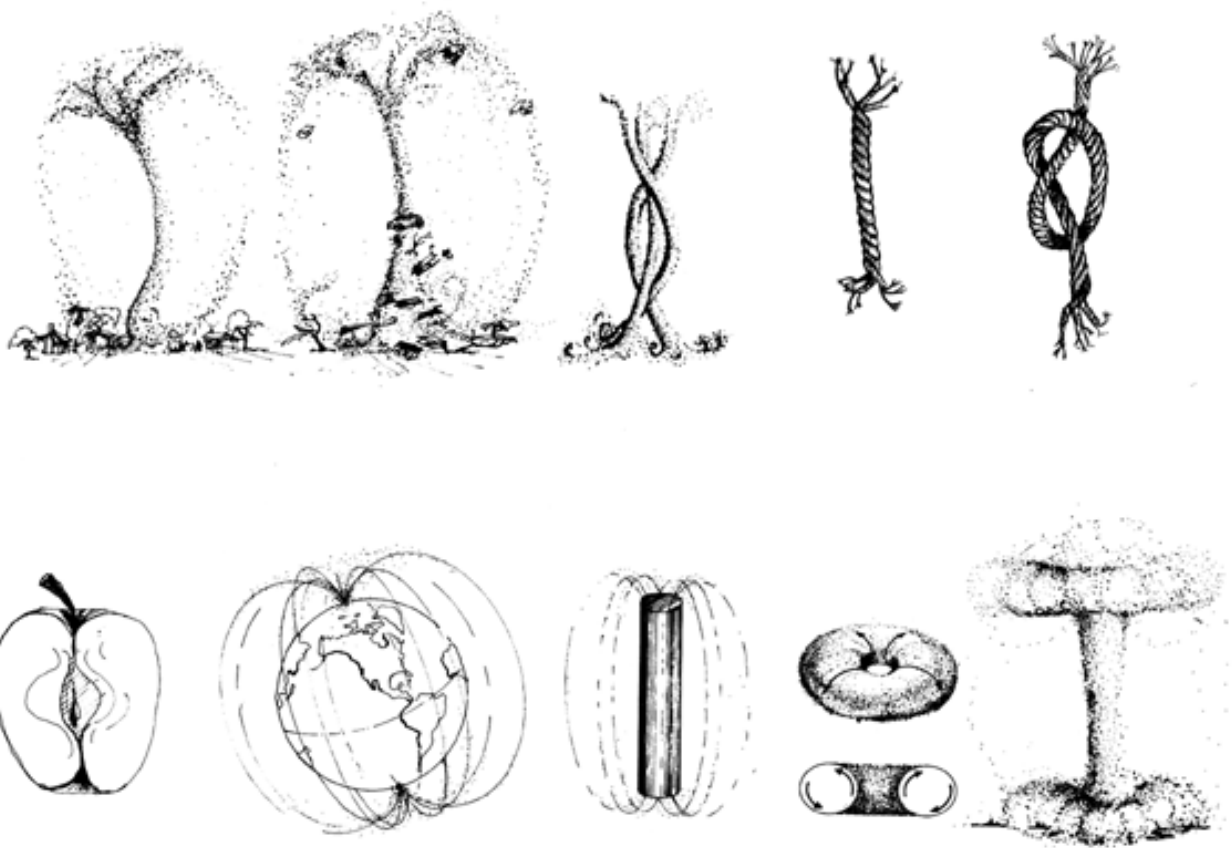


Fig. 505.41 Involution and Evolution.

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[505.50-505.83 Pattern Scenario]

505.51 The science of pattern is mathematical. As the fundamental communications system of all the sciences mathematics is both the most comprehensive and the most abstract of the sciences. Experimentally discovered mathematical relationships permit generalized statements of such laws as are found to be governing all science, and all sciences must use mathematics. Nonexperimentally disclosed mathematical relationships can be imaginatively evolved, however, but they may or may not have identity with physical Universe behavior. It is for instance mathematically feasible to explore a hypothetical Universe theoretically devoid of any one of the family of mathematical operations, such as, for instance, a Universe in which there is only multiplication and no division, or an exclusively two-dimensional Universe.

505.52 Employing only mathematics in the analysis of physically verifiable data (which always includes all the known physically relevant variables) can provide information to humans within minutes regarding cosmic events that in themselves take years to transpire, even though they occur at the speed of light.

505.53 Synergetics conceptualizes in generalized principles, in contradistinction to special-case empirics. We may logically hypothesize either (a) that mathematics is entirely physical, or (b) that the physical is in reality pure abstract principle. You can play the game either way: both are valid, but not simultaneously. There are certainly not two absolutely separate and independently operating Universes: the abstract Universe of the mathematician and the energetic Universe of the physiochemist.

505.60 **Minimum-Limit Case**

505.61 You cannot have a line that is less than a line, or a fix that is less than a fix, or a virgin that is less than a virgin. Nature comes to minimum-limit case with all her points in order to feel very comfortable. But the resolution is not linear or planar: it is omnidirectional; it is hierarchical in ascending or descending hierarchies.

505.62 You grow or decrease. You get better or worse. In parallelism things do not converge. Science is not getting the right answers because scientists do not think divergently and convergently. If you are in parallel, you can never get to any conclusion whatsoever. Waves require hierarchies. (See Sec. [260.20](#).)

505.63 Only *means* are parallel: *means* are the averages of the limits. Dealing in probability calculus scientists can deal only with averages of limits; wherefore they explore and speculate only in terms of parallels. Min-max limits are inherently omnidirectional- inherently divergently expansive toward max-limits and convergently contractive toward min-limits. There are no experimentally demonstrable, absolute-maximum limits. Only the minimum limit is demonstrably absolute—even when it looks like a point.

505.64 All the characteristics of a system are absolute because each of its components is the minimum-limit case of its conceptual category, for all conceptuality-as Euler discovered and proved-consists at minimum of points, areas, and lines.

505.65 An area is a nothingness. A plurality of areas are views of nothingness through separate frames. A point is a somethingness. A line is a relationship between two somethingnesses. An enlarged, apparently single somethingness may prove to be resolvable into a plurality of somethingnesses between which the lines of interrelationship fence off the nothingness into a plurality of separately viewable nothingnesses. Points are unresolvable, untunable somethingnesses occurring in the twilight zone between visible and supravisible experience. (See Secs. [262.02](#) and [264.01](#))

#### 505.70 **Topology of Minimum Awareness**

505.71 *Awareness* seems to be the one minimal word best expressing the experience of life. Awareness is inherently plural, for it consists of the individual system that becomes aware and the first minimum otherness of which it is aware: such otherness may be integrally internal or externally separate of the observing system. We say, "No otherness: no awareness" (Sec. [905.02](#)). A philosopher may question that statement, saying, "No, you are wrong because awareness can be exclusively of self." But we reply by recapitulating the inherent minimum topology of awareness: — minimum self and minimum otherness are both systems, each having both insiderness and outsiderness;

— one part of a system cannot exist without the other;

- an experienceable point is substantial; -all substance has insiderness and outsiderness;
- all substances are divisible into minimum substances;
- each minimum substance is always a whole system; and
- each system always has insiderness and outsiderness and four minimum-system- defining events, all of which events are inherently nonsimultaneous and only overlappingly co-occurring.

505.72 Ergo, the minimum cognition employs the information-sensing, remembering, and recognizing circuitry of the organic substance's minimum self-sensing awareness, which could only be at a minimum *one* as a system of four minimum-event components, being aware of its own integral system's otherness-defining components. Ergo, experientially, no otherness: no awareness. Q.E.D.

505.73 All minimum otherness or all minimum-observer *self* are both plural unity with mutual interawareness. Interawareness means one system aware of another system or the outsiderness of a system aware of its system's insiderness.

505.74 The observer and the observed constitute two points differentiated against an area of nothingness with an inherent interrelationship line of awareness running between the two points. (See Sec. [264.01](#).) Thus there is a minimum set of four awareness aspects of life:

1. the observer;
2. the observed;
3. the line of interrelationship; and
4. the background nothingness against which the somethingness is observed.

#### 505.80 **Background Nothingness**

505.81 When we draw a spherical triangle on the Earth's surface (Fig. [812.03](#)), it demonstrates an aspect of geometry apparently not recognized by Euler. The spherical triangle also demonstrates self and otherness. The spherical triangle is the first awareness: there is an inherent twoness in the triangle's insiderness and outsiderness; and the axis of the two poles constitutes the two points of self and otherness. The *background nothingness* of these two points represents an area not contained by a line. Euler apparently did not realize that there could be an area not contained by a line.

505.82 From Euler we know that the number of locally identified minimum entities called *points* plus the number of separate *areas* equals the number of *lines* plus the number two. In minimum awareness we have two identified entities which, being local points, must have directional fixedness against a background of nothingness. Ergo, in minimum awareness two points plus one area of nothingness have one inherent line of most economical interrelationship between the two points. These two points plus one area equal the number of lines-in this case "one" plus Euler's abstractly accommodative two. (The line of interrelationship is another aspect of the prime vector. See Sec. [540.10](#).)

505.83 The Euler "plus one" abstractly accommodates two in the minimum awareness model:

$$\text{points} + \text{area} = \text{lines} + 2$$

$$2 + 1 = 1 + 2$$

$$3 = 3$$

*Three of two kinds* = three of two other kinds = six of four kinds = the six vector-edge relationships existing between the four different event-point fixes. *Points* are subdifferentiable systems-i.e., microsystems of events too close to be resolved from one another. *Areas* are supradifferentiable systems-i.e., macrosystems of event points too far apart to resolve. The *nothingness* area is unbounded by any visible closed line. Nothingness is the part of the system unencompassed by the observer. (See Sec. [1052.350](#).)

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[Next Section: 506.00](#)

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## 506.00 **Knot**

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506.01 A knot in a spliced rope consisting successively of manila, cotton, wool, or nylon may be progressively slipped along the spliced-together rope with all the latter's material changes of thickness, color, and texture along its length. We agree that the "knot" is not really any of these locally traversed substances. They were just so many colors and tactile experiences whose pattern displacement reported something moving through as a locally recurring pattern configuration. The knot is not the rope; it is a weightless, mathematical, geometric, metaphysically conceptual, pattern integrity tied momentarily into the rope by the knot-conceiving, weightless mind of the human conceiver—knot-former.

506.02 What we call the rope itself turns out to be wave phenomena. The fibers themselves were humanly twisted into a spiral wave phenomenon. We are beginning to discover that there is not too much difference between the tactile superficiality of apprehension and the real frequency phenomena that we cannot see in the intervals between the waves. The actual fact is that the water wave and the manila wave are frequencies nontunable within the electromagnetic frequency range of the human organism's optical faculties, wherefore human cognition of the water waves is provided exclusively by the human brain's afterimage lag and the brain's successive recall apprehending of static picture frames of successively different pattern states as moving pictures.

506.10 I'll bet a monkey can't invent a knot. If they could, they would tie the whole jungle up in knots. What would the behaviorists say? Mind saw the knot; monkey did not. The monkeys hold hands, but they have not yet discovered that the handshake is two circles knotted through one another.

506.11 You cannot have a knot with less than two circles (two finite unities). The mind tells the brain to control the muscles in a knot-tying event scenario as follows: one hand grasps the rope end and describes the first circle. When the first circle is complete, the second hand holds the completed circle as the first hand continues to lead the rope end through the center of the first circle in an orbital plane different from that of the first circle. (If they were both in the same plane, they would generate a coil or a spiral and fail to knot.) The perimeter of the second circle should go through the center of the first circle. One has to capture the other in an interference pattern.

506.12 The rope with the knot in it is a physical memory pattern tracery of where your hands have led its end. The hand-led rope end and its pulled-through rope section form a visibly sustained trajectory of the conceptual patterning employed by mind in negotiating its visual realization by the brain-coordinated sensing of self or others. Like the contrails of jet planes, in the sky, the smoke trails of skywriting airplanes, or the extruded plastic threads of spiders, the roped knot represents a long-lasting memorandum of the abstract, weightless mind's weightless conceptioning in pure principle.

506.13 Each circle has 360 degrees; the two interference circles that comprise the minimum knot always involve 720 degrees of angular change in the hand-led pattern, just as the total angles of the four triangles of a tetrahedron add up to 720 degrees. The hands describe circles nonsimultaneously; the result is a progression. The knot is the same 720-degree angular value of a minimum structural system in Universe, as is the tetrahedron.

506.14 Pulling on the two ends of the knotted rope causes the knot to contract. This is a form of interference wave where the wave comes back on itself, and as a consequence of any tension in it, the knot gets tighter. This is one of the ways in which the energy-mass patterns begin to tighten up. It is self-tightening. This is the essence of "matter" as a consequence of two circles of 720 degrees tending to annihilate or lose one's self. Tetrahedron creates an insideness. Knot attempts to annihilate it. The knot is a tetrahedron or a complex of tetrahedra. Yin-Yang is a picture of a minimum tetrahedron knot interference tying. (See Sec. [505.21](#).)

506.15 At the end of the piece of rope, we make a metaphysical disconnect and a new set of observations is inaugurated, each consisting of finite-quanta integral ingredients such as the time quality of all finite-energy quanta.

506.20 The metabolic flow that passes through a man is not the man. He is an abstract pattern integrity that is sustained through all his physical changes and processing, a knot through which pass the swift strands of concurrent ecological cycles—recycling transformations of solar energy.

506.30 As curves—lines—cannot reenter or "join back into themselves," the circling line can only wrap around or pass over or under another "part" of its continuity self, as the knot-making sailors says it. Because of a line's inability to reenter itself, when circles are followed around and around upon themselves, the result is a coil—which is a mildly asymmetric spiral wave accumulation that may be piled upon its micro-diameter self only as long as intellect wishes to pursue such an experiential investigation.

#### 506.40 **Yin-Yang**

506.41 Each lobe of a baseball is simply a precessed triangle of a tetrahedron. The baseball is yin-yang, not in a plane but in Universe: it is telling us that complementarities interprocess omnidirectionally and not just in a plane, as the planar yin-yang suggests.

506.42 The spherical tetrahedron can be demonstrated by placing a light inside a translucent plastic sphere. The light at the system center casts the shadow lines of the tetrahedron's four vertexes and their six interconnecting edges outwardly and symmetrically onto the plastic sphere to produce the outlines of a spherical tetrahedron. We may then inscribe four circles around each of the four vertexes of the spherical tetrahedron of such a unit radius so that each of the four circles is tangent to each of the three others. We can take a sharp-edged cutting tool and severingly trace around the perimeter of one circle to its point of tangency with the next adjacent circle, and there we can inflect the cutting tool to cut around the next tangent circle to its next point of tangency, where once more we can inflect the cutting tool's severance trace to follow around the next circle to reach the next tangent point, repeating the procedure until we finally return to the point of original cutting. Upon completion of the severance tracing we find we have cut apart the surface of the spherical tetrahedron into two similar, equiarea sections, each of which corresponds to the two similar, dumbbell-profiled, skin sections of a baseball. With these two similar half-sphere surface sections precessingly aimed toward one another in such a manner that the bulge of one section registers symmetrically with the half-circle opening on the other, we find that we can sew the edges of the sections together around a core to produce a baseball.

506.43 When you look at the baseball with the inflection point of its S-pattern stitching, located at the center of the visible hemisphere's circular profile, aimed directly at you, you will see that the baseball's surface pattern is the same inflection pattern as that of the most profound symbol of the orient: yin-yang. Long ago human minds of the orient must have discovered precession, tetrahedra, and symmetry. (See Sec. 1056.12.)

#### 507.00 **Parity**

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507.01 The rubber glove, with its red exterior and green interior, when stripped inside-outingly from off the left hand as red, now fits the right hand as green. First the left hand was conceptual and the right hand was nonconceptual—then the process of stripping off inside-outingly *created* the right hand. And then vice versa as the next strip-off occurs. Strip it off the right hand and there it is left again.

507.02 That is the way our Universe is. There are the visibles and the invisibles of the inside-outing nonsimultaneity. What we call thinkable is always outside out. What we call space is just exactly as real, but it is inside out. There is no such thing as right and left.

507.03 The always and only coexisting convex and concave demonstrates that unity is plural and at minimum two, in which only one is spontaneously accounted as obvious.

507.04 The positive (right) spiral and negative (left) spiral make one tetrahedron:  $1+1=4$ : therefore no parity. But there is parity in the internal complementary macrocosmic tetrahedron of the sum of the angles around all the convex vertexes of the system, and an internal complementary microcosmic tetrahedron of the sum of the angles around all the concave vertexes of the system.

507.05 When physics finds experimentally that a unique energy patterning—erroneously referred to in archaic terms as a particle—is annihilated, that annihilation is only of the inside-outing rubber-glove kind. The positive becomes the negative and the positive only seems to have been annihilated. We begin to realize conceptually the finite, yet nonsensorial, outness continuum integrity that can be converted into sensorial inness by the inside-outing process, but only at the expense of losing afterimage of the previous sense-experienced conceptual fixation.

507.06 The complementary of parity is disparity and not a reflective image.

## 508.00 **Number**

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508.01 Numbers are experiences. You have one experience and another experience, which, when reviewed, are composited. Numbers have unique experiential meaning. The minimum structural systems of Universe, the tetrahedron and the thinkable set, both consist of four points and their six unique interrelatednesses. Even the development of sets derives from experience. Mathematics is generalization, a third-degree generalization that is a generalization of generalizations. But generalization itself is sequitur to experience where intuition and mind discover the synergetic interbehavior that is not implicit in any single item of the empirical data of the past.

508.02 Intuition and mind apprehend that which is comprehensively between, and not of, the parts.

508.03 The mathematician talks of "pure imaginary numbers" on the false assumption that mathematics could celebrate a priori to experience. "Lines" are definitions of experiences—of graven trceries, or of erosively deposited tracks, or of gaseous fallout along a trajectory—and the symbols for number extractions, such as X and Y, are always and only experientially conceived devices.

508.04 All number awareness is discovered through experiences, which are all special cases. Every time you write a number—every time you say, write, or read a number—you see resolvable clusters of light differentiation. And clusters are an experience. Conscious thoughts of numbers, either subjective or objective, are always special-case.

508.10 Before topology, mathematicians erroneously thought that they had attained utter abstraction or utter nonconceptuality—ergo, "pure" nonsensoriality—by employing a series of algebraic symbols substituted for calculus symbols and substituted for again by "empty-set" symbols. They overlooked the fact that even their symbols themselves were conceptual patterns and only recognizable that way. For instance, numbers or phonetic letters consist of physical ingredients and physical-experience recalls, else they would not have become employable by the deluding, experience-immersed "purists. "

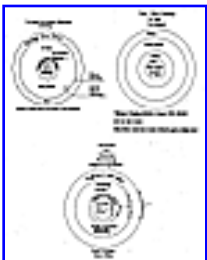
508.20  $(N^2 - N) / 2$  is always a triangular number as, for instance, the number of balls in the rack on a pool table. A telephone connection is a circuit; a circuit is a circle; two people need one circuit and three people need three circles, which make a triangle. Four people need six circuits, and six circuits cluster most economically and symmetrically in a triangle. Five people need 10 private circuits, six people need 15, and seven people need 21, and so on: all are triangular numbers. (See Sec. [227](#), Order Underlying Randomness, and illustration [227.01](#).)

508.30 Successive stackings of the number of relationships of our experiences are a stacking of triangles. The number of balls in the longest row of any triangular cluster will always be the same number as the number of rows of balls in the triangle, each row always having one more than the preceding row. The number of balls in any triangle will always be

$$\frac{(R + 1)^2 - (R + 1)}{2}$$

(where R = the number of rows (or the number of balls in the longest row)). (See Sec. [230](#), Tetrahedral Number.)

### 509.00 Considerable Set

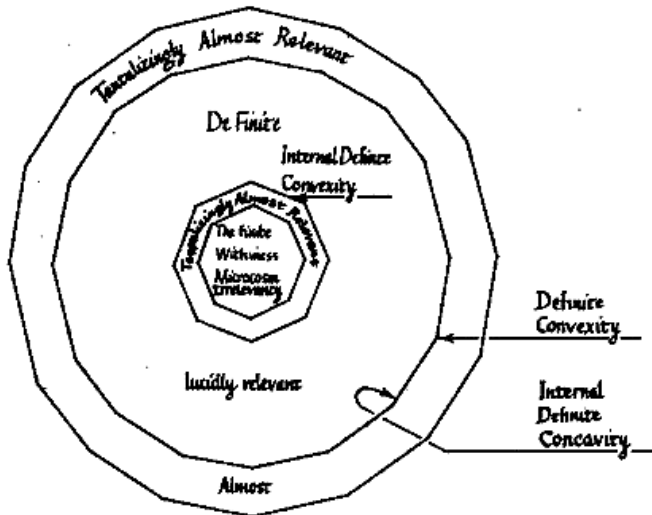


[Fig. 509.01](#)

509.01 The conceptual process is never static. Thinking does not consist of the insertion of invented images into an otherwise empty vacuum-tube chamber called brain. Thinking is the self-disciplined process of preoccupied consideration of special-case sets of feedback answers selected out of the multitude of high-frequency alternating transceiver brain traffic. This traffic consists of omnixperienced and processed answers to present or past questions, formulated either by the conscious or subconscious coordinating initiative of the individual or possibly the individual's overlapping generation of group memory.

509.02 A considerable set is a locally definitive system within Universe that returns upon its considerability in all circumferential directions and therefore has an inherent withoutness and withinness; the latter two differentiable functions inherently subdivide all Universe into the two unique extremes of macro- and micro-frequencies.

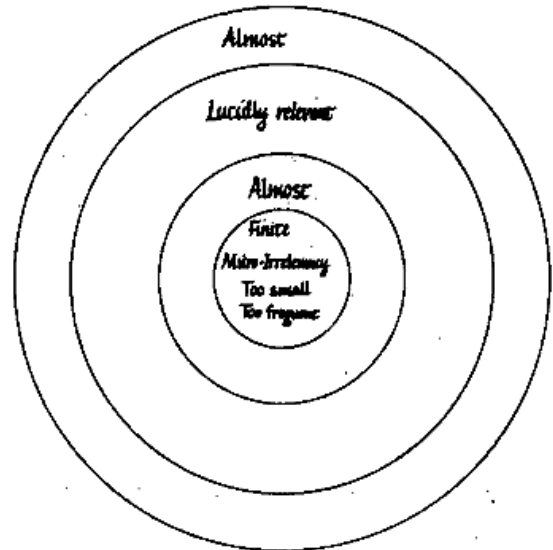
The Finite Outwardness-Macrocosm  
Irrelevance



Definite-Finite minus outwardness and inwardness.

Finite ~ Macro-Irrelevance

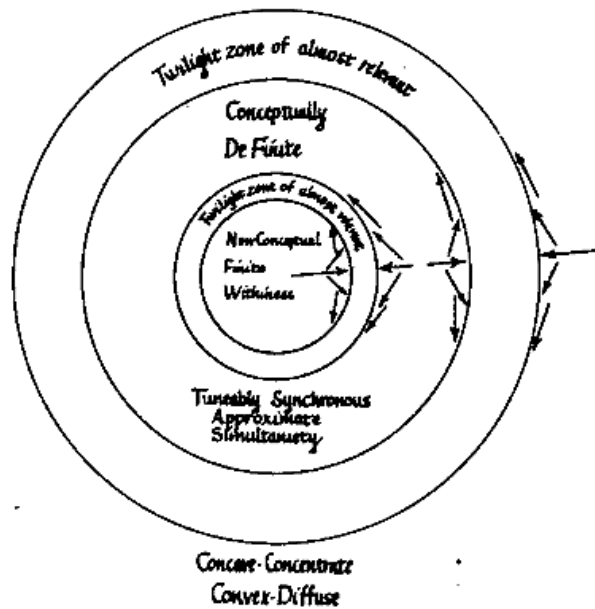
Too Large  
Too Infrequent



Thinking is frequency modulation—tuning out finite irrelevances  
into two main classes.

Micro, Macro which leaves residual defined system as lucidly relevant

Non Conceptual  
Finite  
Withoutness  
Nonsimultaneity  
Nonsynchronously Tunable



Concave-Concentric  
Convex-Diffuse

Fig. 509.01 A, B, C. Patterns of Thought.

509.03 For instance, we find that all irrelevancies fall into two main categories, or *bits*. One set embraces all the events that are irrelevant because they are too large in magnitude and too delayed in rate of reoccurrence to have any effect on the set of relationships we are considering. The other set of irrelevancies embraces all the events that are too small and too frequent to be differentially resolved at the wavelength to which we are tuned, ergo, in any discernible way to alter the interrelationship values of the set of experience relationships we are considering. Having dismissed the two classes of irrelevancies, there remains the *lucidly relevant* set to be studied.

509.04 Because of the varying depths of storage of past experiences, some answers come back swiftly, some slowly. The recollectibility rates are unpredictable. Ergo, the returning-answers traffic is heterogeneous. Many answers come to questions we have forgotten that we asked ourselves. Conceptually systematic tuning of questions and feedback answers, comparatively considered in the brain, results in temporary, tunably valved exclusion of all other incoming signals. Discrete tuning admits consideration of only those recollections that are *clearly relevant* to the omnidirectional rounding out of systematic comprehension of the special-case set of events intuitively selected for momentary focal consideration. Thinking consists, then, of a self-disciplined deferment of conscious consideration of any incoming information traffic other than that which is lucidly relevant to the experience-intuited quest for comprehension of the significance of the vividly emergent pattern under immediate priority of consideration.

509.05 Neither the set of all experiences, nor the set of all words that describe them, nor the set of all the generalized conceptual principles harvested from the total of experiences is either instantly or simultaneously reviewable. "What was that man's name?" Our answering service may take five seconds, five hours, five days, or five generations to reply. Our conscious, orderly reconsideration of our variable-lag experiences discloses subconsciously coordinated regularities of feedback rates governing the recall phenomena.



509.06 What we do when we think is to dismiss momentarily all the *irrelevant* thoughts as we would part the grass to right and left in order to find a path. Thinking is high-frequency interception and very temporary diversion to a local holding pattern outside our consideration of all the irrelevant inbound feedback—just as inbound airplanes are "stacked up" in the sky near airports by the ground control when too many come in at about the same time and may interfere with each discretely safe landing operation. Landing is a slowing operation and an exact timing operation. Having isolated a finite set of experiences—spontaneously grouped for comprehensive consideration—by dismissing the irrelevancies, we may proceed to comprehend or "land" the isolated system by applying the theory of *bits*, which breaks up finite wholes into finite parts.

509.07 We may now say that what we do in thinking, after deliberately excluding the irrelevancies and thereby inadvertently isolating the considered set, is to further subdivide Universe into four parts:

1. All of the parts of Universe that are externally irrelevant because too large and too infrequent;
2. all the events of Universe that are internally irrelevant because too small and too frequent to be resolvable and discretely differentiated out for inclusion in our interrelationship considerations;
3. all of the lucidly relevant remainder of Universe, which constitutes the considered and reconsidered set of experiences as viewed from outside the set; and
4. the lucidly relevant set as viewed from inside the set.

Part 1 is the untuned, macrocosmic, long-wavelength, low-frequency, high-energy set. Part 2 is the untuned, microcosmic, short-wavelength, high-frequency, low-energy set. Parts 3 and 4 are the tuned, plus (+) and minus (-), interface sets.

509.10 The thinking process results in varying degrees of lucidity of the arrayed residue of focal-event patterns uniquely consequent to the disciplined deferment of irrelevancies. Thinking is a putting-aside, rather than a putting-in, discipline. Thinking is FM—frequency modulation—for it results in the tuning out of irrelevancies (static) as a result of definitive resolution of the exclusively tuned-in or accepted feedback messages' pattern differentiability. And as the exploring navigator picks his channel between the look-out-detected rocks, the intellect picks its way between irrelevancies of feedback messages. Static and irrelevancies are the same.

509.11 There are two inherent twilight zones of "tantalizingly almost-relevant recollections" spontaneously fed back in contiguous frequency bands: the macro-twilight and the micro-twilight. They inherently subdivide all Universe into the two unique extremes of macro- and micro-frequencies.

509.20 So I find that *you* and *I* and the *lamppost* and its lamp are basic subdivisions of Universe. You and I and *complex* it are either all of the Universe that is *inside*, all of the Universe that is *outside*, or all the remaining Universe, which comprises a given recognizable system or set. The residual constellation to be reconsidered constitutes a local conceptual system.

509.30 You cannot program the unknowns you are looking for because they are the relationship connections and not the things. The only thing you can program is the dismissal of irrelevancies.

509.31 When we say "we think," our feedback has variable lags that may take overnight or months of time, for all we know. Because we want to understand—that is, to know the interrelationships of clusters of experiences—our first great discovery is dismissing irrelevancies, the macro-micro characteristics. Add: forgotten questions; different rates of feedback; persons' names; random questionings; the challenging set you would like to understand; our friend intuition.

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[Next Section: 510.00](#)

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## 510.00 Star Events

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510.01 A star is an exquisitely concentrated coordination of events that your optical tuning facilities are unable to resolve differentially into separately identifiable events. We may call a star a point. Playing Euler's game, "stars," or "points," are "crossings," or "fixes" as navigators would say it. As so considered, a "star-point-crossing" does not have an outsideness and an insideness. It is the point of superimposed crossing of trajectories or of their interferences. A point fix is a potential embryo consideration, a potential thought, a potential system.

510.02 Thinking is the consideration of different experiences and of inherently separate sets of events, and trying to find out what their relatedness is. Each one is a star. How many stars does it take to develop a geometry of outwardness and inwardness? What is the minimum number of stars needed to divide the Universe into outwardness and inwardness? I find it takes a minimum of four; you can't do it with three. Four very clearly has an outsideness and an insideness. This is what we call the tetrahedron, which has these four stars and six sets of interrelatedness. This comes in very interestingly in mathematics with the generalization that you don't have to worry too much about the shape, but the four stars are the minimum we can have for a thought. If I can at first discover only three stars in a thought challenge, there must be at least a fourth star lurking somewhere in the critical neighborhood. In fact, I discover that the total number of stars that could possibly be related is always subdivisible by four. The mathematics shows this up very clearly as complexes of tetrahedra. Tetrahedron becomes the minimum thinkable set, the minimum reconsiderable set, and it turns out to be the fundamental increment out of which all thoughts are constructed.



510.03 The minimum set that may form a system to divide Universe into macro- and micro-cosmos is a set of four items of consideration. Four nonsimultaneously bursting rockets in a unitarily considerable set of overlapping visibility durations.

[Fig. 510.03](#)

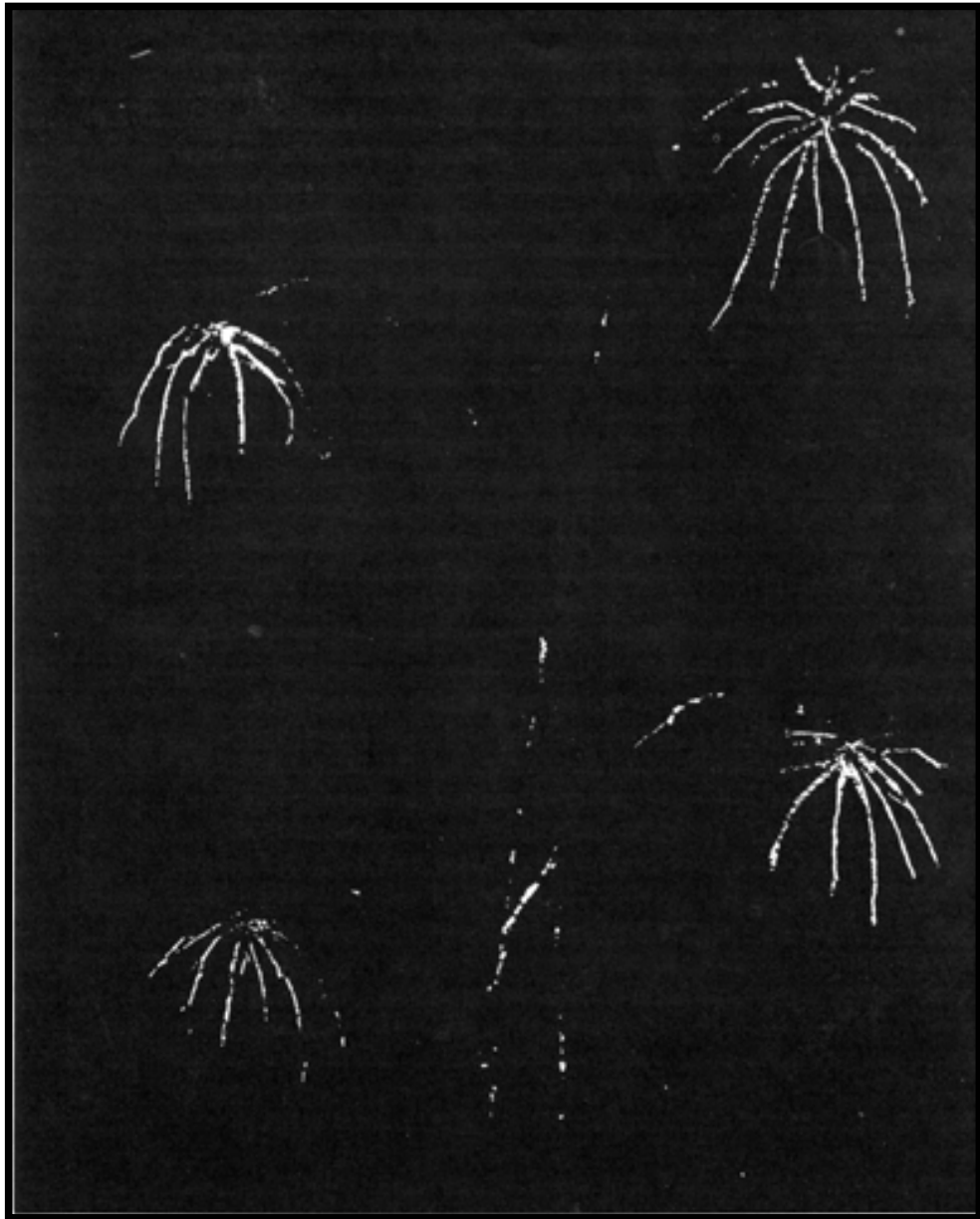


Fig. 510.03 Four Rocket Bursts.

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510.04 The stars of the four rocket bursts constitute the four vertexes of a tetrahedron—the fundamental quantum of Universe's structuring. There is a tetrahedral structuring *interrelationship* between (a) *the day before yesterday*, (b) *yesterday*, (c) *today*, and (d) *tomorrow*. Though we speak of them as "the four balls in the air" —maintained there successively by a juggler using five balls to do his trick—they are not the same balls, and the four are never in the same positions; nonetheless, there are always and only six fundamental interrelationships between "the four balls in the air" —i.e., ab, ac, ad, bc, bd, and cd, although a, b, c, and d are nonsimultaneous events. Universe structures most frequently consist of the physical interrelationship of nonsimultaneous events.

510.05 A star is the focal point of an as yet undifferentiated concentration of events, ergo, considerable or constellar patterning: an exploratory grouping of stars or complex-idea entities that seem to man's limited tunability to stand out together. The word *consideration* comes from *con*, together, and *sidus*, the Latin "star." When we have found all the relationships between the number of items of our consideration, we have what we speak of as "understanding." When we understand, we have all the fundamental connections between the *star events* of our consideration. They then become a constellation. They *stand clearly together*.

510.06 When n stands for the number of stars or items of consideration, the number of connections necessary to understanding is always

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

510.07 Four is the minimum number of stars having an inherent arrangement of withoutness and withinness. The minimum conceptually considerable, generalized-experiences-set affording macro-micro separation of Universe is a set of four local-event foci. Between the four stars that form the vertexes of the tetrahedron, there are six edges that constitute all the possible relationships between those four stars. The four stars have an inherent sixness of interrelationship. The four-foci, six-relationship set is definable as the tetrahedron. This minimum fourness of relevant frequency—ergo, thinkable—"stars" coincides with quantum mechanics' requirement of four unique quanta numbers per each uniquely considerable "particle."

510.08 The regenerative patterns of structural events may be described as constellar because their component events interinterfere tensively in high-frequency, dynamic, self-regenerative patternings which only superficially seem to stand together as "static" structures. Star groupings "fly" in celestial formation, though seeming to hang motionless in the celestial theater. Any event patternings that become locally regenerative are constellar patterns. They are momentarily conceptual.

510.09 Until the present age, people thought that all of their faculties were simultaneously and instantly coordinate and operating at equal velocities. Einstein showed that neither *simultaneous* nor *instant* are valid, i.e., experimentally demonstrable. Observe that when we send up four rockets one-half second apart, their afterimages are approximately simultaneous. So we say that we see four rockets "at the same time." The illusion of simultaneity is one of the most important illusions for us to consider. Musicians may be able to comprehend nonsimultaneity better than do others. Einstein emphasized the importance of attempted spontaneous comprehension of the nonsimultaneity of all the events of Universe—a concept akin to our discovery that in our Universe, none of the lines can ever go simultaneously through the same points (See Sec. [517](#) et seq.). What Einstein is telling us is that there is no conceptual validity to the notion that everything in Universe is actually in simultaneous static array.

510.10 All words in the dictionary do not make one sentence; all the words cannot be simultaneously *considered*, yet each of the words is valid as a tool of communication; and some words combine in a structure of meaning. All the words are memoranda of all of humanity's attempts to communicate to self or to others their understanding of the unique evolvement of their separately viewed experiences. The dictionary is the inventory of unique aspects of the totally composited experiences known as Universe.

## 511.00 **Energy Event**

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511.01 A single event is integrally complex. As angles are conceptual, independent of size, events are conceptual, independent of frequency of occurrence. An "original" or "prime" energy event is conceptual. An energy event is inherently complex. It is a nuclear component, but it is not the nucleus. Nuclei—complexedly composed of prime or original energy events—are themselves "prime" and "original," originality being inherently complex integrals. Energy transactions occur between nuclei as an extramural complex of events—as a "chemical compound."

511.02 All energy-event experimentation discloses omnioptimally economic, behavioral patterning of physical events. Every physical event in nonsimultaneous scenario Universe is characterized by three multidimensionally interlinked vectors that interact precessionally, i.e., at angles other than 180 degrees to one another, as in the multidimensional, helically zig-zagging pattern of lightning.

511.03 There are six positive and six negative degrees of fundamental transformation freedoms, which provide 12 alternate ways in which nature can behave most economically upon each and every energy-event occurrence. You have six vectors or none for every energy event.

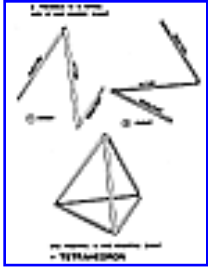
511.04 One set of three-vector groups corresponds to the proton (with its electron and anti-neutrino), and the other set of three-vector groups corresponds to the neutron (with its positron and neutrino). Each of these three vector teams is identified by nuclear physics as

one-half Planck's constant; or

one-half spin; or

one-half quantum.

When we bring together these two sets of three vectors each, they integrate as six vectors and coincidentally also make one tetrahedron (of six vector edges). The tetrahedron is the veritably conceptualizable unit of one energy quantum.



511.10 The open-ended tripartite spiral can be considered as one energy event consisting of an action, reaction, and resultant. Two such tripartite-vectored "spirals," one negative and one positive, combine to form the tetrahedron. (See illustration [108.01](#).) The tripartite vector set looks like an "erected cobra" Z, that is, with two of its interlinked vector lines on the ground and one erected. One erected Z cobra erects its third vector member clockwise, and the other Z cobra erects its third vector in a counter-clockwise direction in respect to its base. (See Sec.[620](#).)

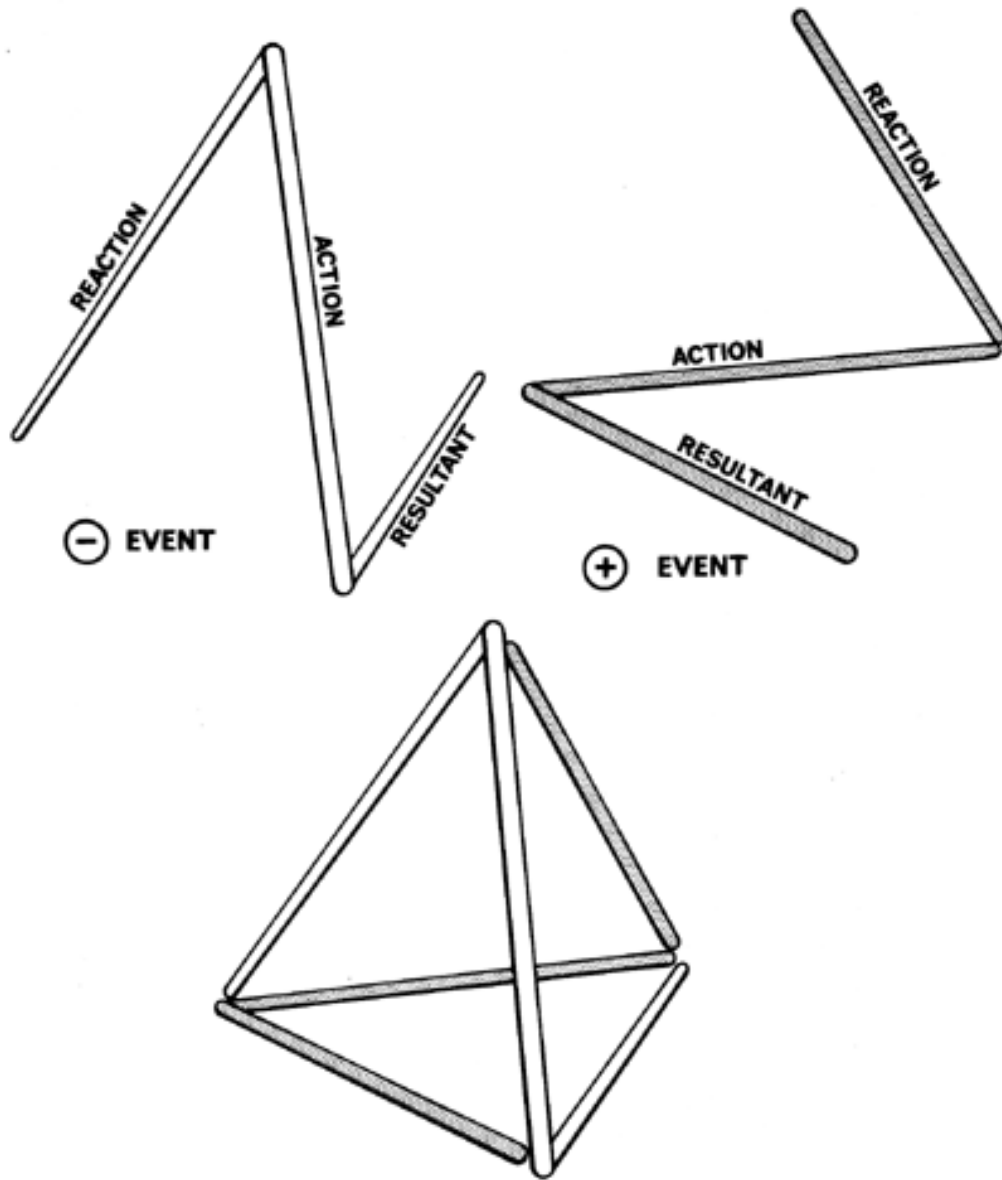
511.11 We find that the triangular Z cobra, is not operating in a plane because there is no such thing as a plane. Therefore, one of the legs sticks up a bit. We have a positive Z cobra and a negative Z cobra, and one cannot nest in the other. They will never be congruent with one another, but they can complement one another to become the tetrahedron. An event is a triangle. A triangle is an event. Two of them together make the tetrahedron.

511.12 Each of the three-vector, action, reaction, and resultant, minimum event Z cobras has two open ends and two internal angles. The two Z cobras have together four ends and four internal angles. We will call the open ends *male* and the internal angles *female*. We can marry the two Z cobra, half quantum events in an always consistent, orderly manner, by always having a male end interconnected with an internal female angle. When all four such marriage ceremonies have been consummated, we have produced one tetrahedron, i.e., one quantum, i.e., one prime minimum structural system of Universe. When the end of one energy action comes over the middle of another energy vector, there is a precessional effect, a tensional effect. One energy event gets angularly precessed, the next energy event goes by the center of another mass, and each one of them interaffects the other. It is a basketry interweaving, where each one precesses the other angularly so that they hold together very much as a cotton ball.

511.13 The energy event of an action, a reaction, and a resultant is inherently precessional.



**A TRIANGLE IS A SPIRAL  
AND IS ONE ENERGY EVENT**



**ONE POSITIVE + ONE NEGATIVE EVENT  
= TETRAHEDRON**

Fig. 511.10 Two Triangular Energy Events Make Tetrahedron: The open-ended triangular spiral can be considered one "energy event" consisting of an action, reaction and resultant. Two such events (one positive and one negative) combine to form the tetrahedron.



[Fig. 511.20](#)

511.20 An energy event is illustrated by a diagram of a man jumping from one boat to another. At the top of the picture, a man standing in one boat jumps. He does not glide horizontally: he jumps.<sup>1</sup> That is, he goes outwardly from the center of Earth, and that is a vector. That is an energy action in itself. He jumps. He is the action. The action was not just horizontal, it was also vertical. It was mildly vertical in that he went outwardly. As he jumps, the boat goes into reaction and shoots off the other way. A moment later, he lands, and the second boat moves in a complex that is both horizontal and vertical. There is a reaction and a result, so there really is a four-foldedness going on. It may appear as threefolded because the man does not jump very high. We should consider it as a tetrahedron of very low altitude.

(Footnote 1: In this way, we begin to discover that force diagrams in engineering result from over-simplification.

511.21 At the outset, the boats are more or less parallel to one another. As the man jumps from the stern of the boat, it turns and whirls around, so that the reaction is following the resultant. They are not going in opposite directions. The reaction and resultant run into each other. Notice that it begins to look like a triangle, but with a vertical component, so it ends up as our friend, tetrahedron.

511.22 Engineers have been proud of pointing out that the difference between engineers and lay society is that engineers know that every action has its reaction and that lay society thinks only of the actions. Before the speed of light was measured, light seemed, to all humanity, to be instantaneous. Since we now know experientially that neither light nor any other phenomenon is instantaneous, we may conclude that an action and the vectors that it creates are neither simultaneously occurring nor instantaneous. Because vectors have discrete length, whose dimension represents the energy mass multiplied by its velocity, every action vector has two terminals—a "beginning" and an "ending" at the end of its noninstantaneous action. The beginnings and the endings are nonsimultaneously occurrent. Therefore, the "ending" terminal of an action's vector occurs later than its "beginning." Therefore, every action must have a reaction vector at its "beginning" terminal and a resultant vector at its "ending" terminal. The reaction vectors and the resultant vectors are never angled at 180 degrees to the action vectors. They are always angled precessionally at other than 180 degrees.

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## 512.00 **Locality**

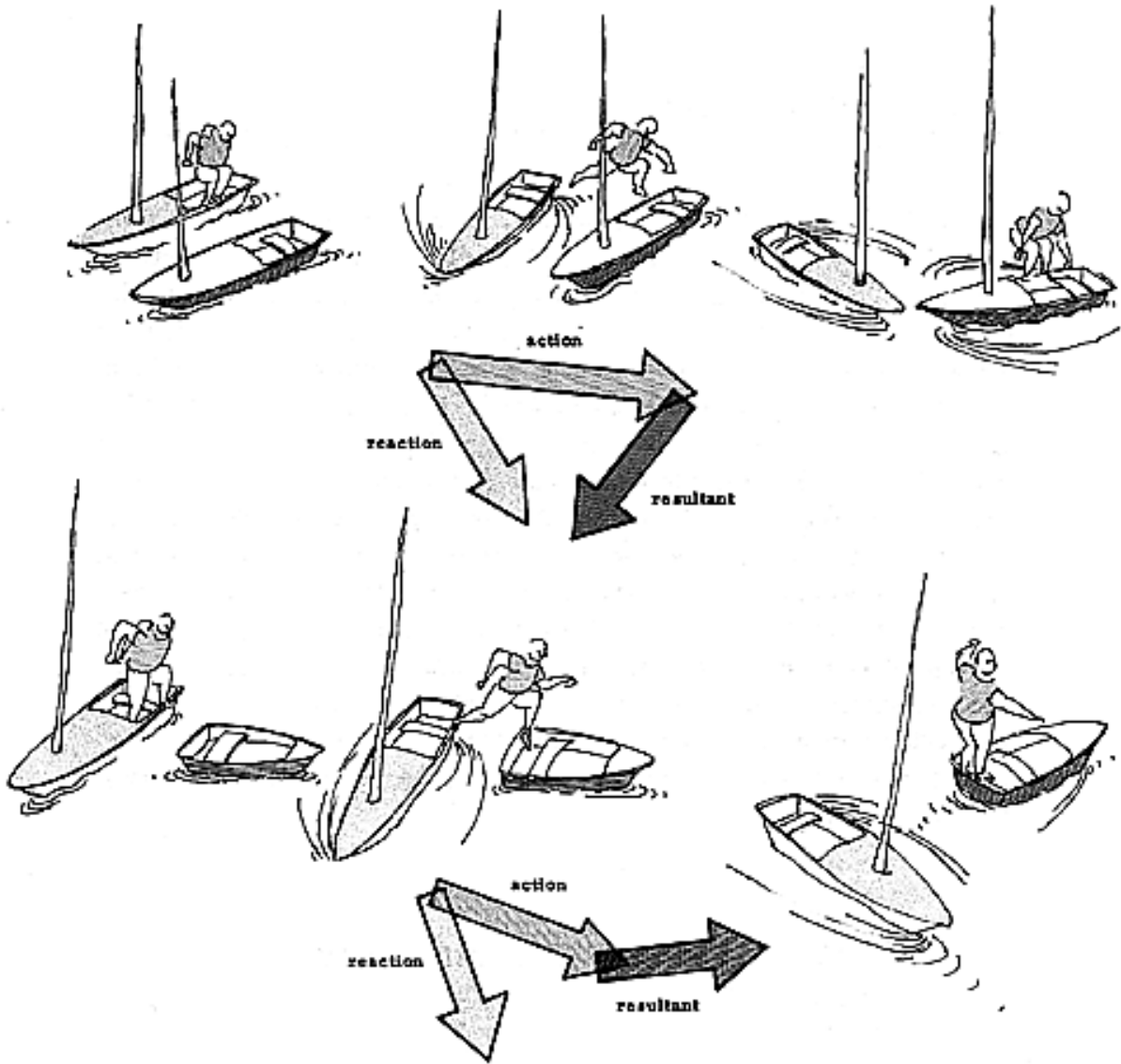


Fig. 511.20 One Energy Event: Action, Reaction, and Resultant: One energy as demonstrated by the man jumping from the boat. His action demonstrates the action, reaction, and resultant of the open-ended triangular spiral.

512.01 Mechanically and chemically, a steerable rocket embraces a complex of internal and external events. Both airplanes and steerable rockets are complexes of internal and external energy-event transactions and omni-interacting, resultant "motions" in Universe transcendental to Earth motions, where the observer-articulator is extraterrestrially positioned. Since the Earth is moving as a dependent motion-complex in respect to the Sun's and other planets' motions, and since the Sun is engaged in a plurality of internal and external motions in respect to the galactic system, and since the galactic system is a complex of motions in respect to other galaxies and supergalaxies, and so on, and since the whole set of motion events are nonsimultaneous and of uniquely variant durations, and since the intereffects of the events vary vastly in respect to eons of time, it is obvious that any thinkably meaningful conceptual coordination of event interrelationships in the meager lifetime limits of humans is inherently limited to a relatively local set within Universe and within a time sense, and the relationships may be measured only in respect to the angle and frequency magnitude characteristics of any one subsystem of the totality.

### 513.00 **Vectorial Orientation and Observation**

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513.01 The angles of orientation and the dimensional fixes of vectorial energy-event manifestations are always conceptually oriented and positioned in respect to the optionally selected axis of conceptual observation.

513.02 Fixes consist of both angular and dimensional observations.

513.03 To be *experiential*, we must have an observer and the observed.

513.04 To be *experimental*, we must have the *articulator*, the *articulated*, and the *observer*.

513.05 The vectorial angulation of both the experientially observed and the experimentally articulated is always referential to the axis of conceptual observation of the observer or the articulator, respectively. These always and only coexisting functions of experience and experiments embrace the fundamental parameters of operational science.

513.06 "My life" is the progressive harvestings of the information unpredictably accruing in the attempt to be both adequate and accurate. The harvest is stored in the brain bank. Life consists of alternate observing and articulating interspersed with variable- recall rates of "retrieved observations" and variable rates of their reconsideration to the degrees of "understandability."

513.07 Resonantly propagated evolution oscillatingly induces tetrahedral quanta—both metaphysical and physical—formulated vectorially between four "star- event" phases

1. observation,
2. consideration,
3. understanding, and
4. articulation,

or

1. recall;
2. reconsideration;
3. understanding;
4. articulation.

513.08 **Articulation:** The articulations are ever reenacted, each time hoping to reduce the tolerance magnitude of residual inaccuracy of either observation or articulation.

#### 514.00 **Axis of Reference**

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514.01 The axis of reference is the axis of conceptual observation. The axis of observer reference frequently occurs spontaneously: as the line between the nose and the navel.

514.02 The direction of a vector is an angular one in respect to an omnidirectional coordinate system having a specific central point and a specific set of external points at specific angles and distances from one another and from the central point.

514.03 Our definition of an opening is that it is framed by trajectories. Every trajectory in a system has at least two crossings, but these crossings are as viewed, because the lines could be at different levels from other points of observation.

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[Next Section: 515.00](#)

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## 515.00 Frequency

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### 515.01 Definition

515.011 Because there are no experimentally known "continuums," we cannot concede validity to the concept of continuous "surfaces" or of continuous "solids." The dimensional characteristics we used to refer to as "areas" and "volumes," which are always the *second-* and *third-*power values of linear increments, we can now identify experimentally, arithmetically, and geometrically only as quantum units that aggregate as points, both in system-embracing areal aggregates and within systems as volume-occupant aggregates. The areal and volumetric quanta of separately islanded "points" are always accountable numerically as the second and third powers of the *frequency of modular subdivision of the system's radial or circumferential vectors*.

515.02 The frequency of any system is determined by the isotropic, omniintertriangulated, omnidirectionally considerate, vectorially moduled, subdivision enumeration of the system's radial and geodesically chorded circumferential closure's totally relevant involvement limits taken in respect to the system's independent, event-regenerating center. Because of the required omnitriangulation and isotropicity, systems are inherently moduled only by equiangular-equilateral triangles, and their generative center is that of the vector equilibrium wherefore the radial and circumferentially chorded time-size, i.e., frequency-wavelength modules subdivisions, by which alone system frequency may be determined, are always identical.

### 515.10 Angles

515.101 Because angles are parts of only one cycle, they are inherently subcyclic. Because size must be predicated Einsteinianly upon local-experience time cycles, relative size is measured in cyclic units. Therefore, angles, which are less than one cycle, are inherently less than one unit of size. Angles are inherently "subsize" consideration. Because angles are subcyclic, they are "subsize." Therefore, we are permitted to think independently of size in respect to triangles, which consist of three separate angles.

515.11 We may think independently of size in respect to tetrahedra, which consist of 12 separate angles. Triangles and tetrahedra and all varieties of polyhedra are thinkable independently of size. The cyclic-module measurement of the time of experiencing or generating the length of the edge of any triangulated special-case system can represent the basic "standard" of relative size-comparisoning to other object experiences. Each cyclic "sizing" increment is one unit of frequency and each cyclic increment inherently constitutes one unit of experienced physical energy.

515.12 When man employs nature's basic designing tools, he needs only generalized angles and special-case frequencies to describe any and all omnidirectional patterning experience subjectively conceived or objectively realized.

515.13 For how many cycles of relative-experience timing shall we go in each angular direction before we change the angle of direction of any unique system-describing operation?<sup>2</sup>

(Footnote 2: Now that we understand this much, we may understand how man, consisting of a vast yet always inherently orderly complex of wave angles and line frequencies, might be scanningly transmitted from any here to there by radio.)

515.14 Angular fractionation is absolute. Triangles can be equiangular—one-fourth of a cycle or one-fiftieth of one cycle of unity—but they cannot be equilateral. Angles are constant and independent of size. Size is always special-case experience. Angles are generalized. Only eternal constants can be generalized. We do not know the length of the edges. Edges can be any length permitted by time. The length of the edges is frequency, while the angle is subfrequency.

#### 515.15 **Complementary Angles**

515.151 The initial angle and its cyclically complementary angle are defined by the relative proportions of one whole circle into which the whole circle is divided by any two different radii of the circle.



515.152 The greater the even number of equal intervals into which the circumference of the circle is divided, the more accurately may the proportioning of the circle's central- angle-divisioning be described. If the circle is divided into 360 degrees and if the initial angle considered is 60 degrees, then its complementary angle is 300 degrees. If the initial angle is 90 degrees, its complementary is 270 degrees. If the initial angle is 180 degrees, its complementary is also 180 degrees. This ambiguity, if not thoughtfully considered, can bring about fatal "wrong-way" errors of direction-taking in navigational calculations. What looks like a local fragment of a "straight" line constitutes a complementary pair of 180-degree angles generated around the center-point of the line.

515.153 An assumedly straight line both of whose ends are hypothetically considered to be leading in opposite directions to infinity also may have an arbitrarily selected dividing point located (locally conceptually) upon it from which the oppositely extending lines emanate-or upon which point the opposite lines converge to form a 180-degree angle. Both of the oppositely-and-outwardly-bound lines of extension from the 180-degree angular convergence point are inferentially interminable. Ergo, as hypothetically assumed to be "straight" lines, they are paradoxically half-finite and half-infinite. This is a paradox consequent to humanity's misassumption of the existence of the phenomenon of "straight" lines, an error that occurred in turn only as a consequence of the inadequate experience of people at the time they adopted the fallacious assumption. Such misconceptions are the logical consequence of humans having always been born naked, helpless, and ignorant, though superbly equipped cerebrally, utterly dependent upon only trial-and-error-based exploration and survival stratagems.

515.20 **Energy**

515.21 The physical Universe is an aggregate of frequencies. Each chemical element is uniquely identifiable in the electromagnetic spectrum by its own unique set of separately unique frequencies. None of the chemical-element sets or individual frequencies is the same as those of any of the other chemical elements' frequencies. The different frequencies of one element's set produce unique cyclic-frequency interactions whose resonances are similar to musical chords. The electromagnetic spectrum of physical Universe embraces the full spectrum range of as yet discovered and identified radiation frequencies of all the first 92 self-regenerative, as well as the only split-second enduring elements beyond the 92 self-regeneratives thus far discovered by experimental physics. The macro/micro-cosmic electromagnetic spectrum chart discloses a cosmic orchestration that ranges from those of the microcosmic to the very complex macrocosmic-embracing whole celestial Universe nebulae. The human senses are able to tune in no more than one- millionth of the total known frequency range limits of the presently known electromagnetic spectrum. Whether expressed in foot-pounds per minute or kilowatt-hours, the total physical work done by all the muscles of all humans in all the two and one-half million years of known presence of humans aboard our planet Earth, amounts to less than the energy released in one second of time by one hurricane; one hurricane's released energy equals the total energy of the combined atomic bombs thus far produced and stockpiled by the Russians and the U.S.A. In contradistinction to this minuscule energy involvement of all history's human muscle, the invisible, weightless, but cosmically magnificent minds of humans have thus far discovered, quantized, and catalogued the relative abundance of each and all of the 92 regenerative chemical elements occurring on all the visible stars of known Universe. Thus emerges human awareness of the physical-energy-mastering potential of the metaphysical mind's extraordinary information-sorting and -analyzing capability.

515.30 Frequency is plural unity. Frequency is a multicyclic fractionation of unity. A minimum of two cycles is essential to frequency fractionation. Frequency means a discrete plurality of cycles within a given greater cyclic increment.

515.31 In closest packing of spheres, frequency is the number of spaces between the balls, not the number of balls. In closest packing, frequency is equal to radius.

515.32 Electromagnetic frequencies of systems are sometimes complex but always constitute the prime rational integer characteristic of physical systems. (See Secs. [223.41](#) and [400.50](#).)

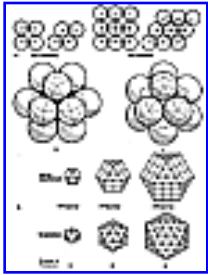
515.33 Wave magnitude and frequency are experimentally interlocked as cofunctions, and both are experimentally gear-locked with energy quanta.

## 516.00 Frequency Modulation

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516.01 There are only two possible covariables operative in all design in Universe: they are the modifications of angle and of frequency.

516.02 Frequency means a discrete plurality of cycles within a greater cyclic increment. An angle is an angle independent of the length of its sides. An angle is inherently a subdivision of a single cycle and is conceptually independent of linear, areal, and volumetric size considerations. A triangle *is* a triangle independent of size. A tetrahedron *is* a tetrahedron independent of size.



[Fig. 516.03](#)

516.03 By designedly synchronized frequency of reoccurrence of their constituent event patternings, a machine gun's bullets may be projected through a given point in the rotational patterning of an airplane's propeller blades. Such purposeful synchronization of a succession of alternate occupations at a point, first by a bullet and then by a discretely angled propeller blade, and repeat, is called angle and frequency modulation; together, they avoid interferences. All physical phenomena, from the largest to the smallest, are describable as frequencies of discrete angular reoccurrence of intimately contiguous but physically discontinuous events. All physical phenomena are subject to either use or nonuse of angular- and frequency-modulating interference capabilities.

## 517.00 Interference

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517.01 Two different energy events articulated as invisibly modulated, spiraled, vectorial lines each represent their respective masses multiplied by their velocities, and each has a unique angular direction in respect to the observer's axis. They cannot pass through the same point at the same time. When one energy event is passing through a given point and another impinges upon it, there is an *interference*.

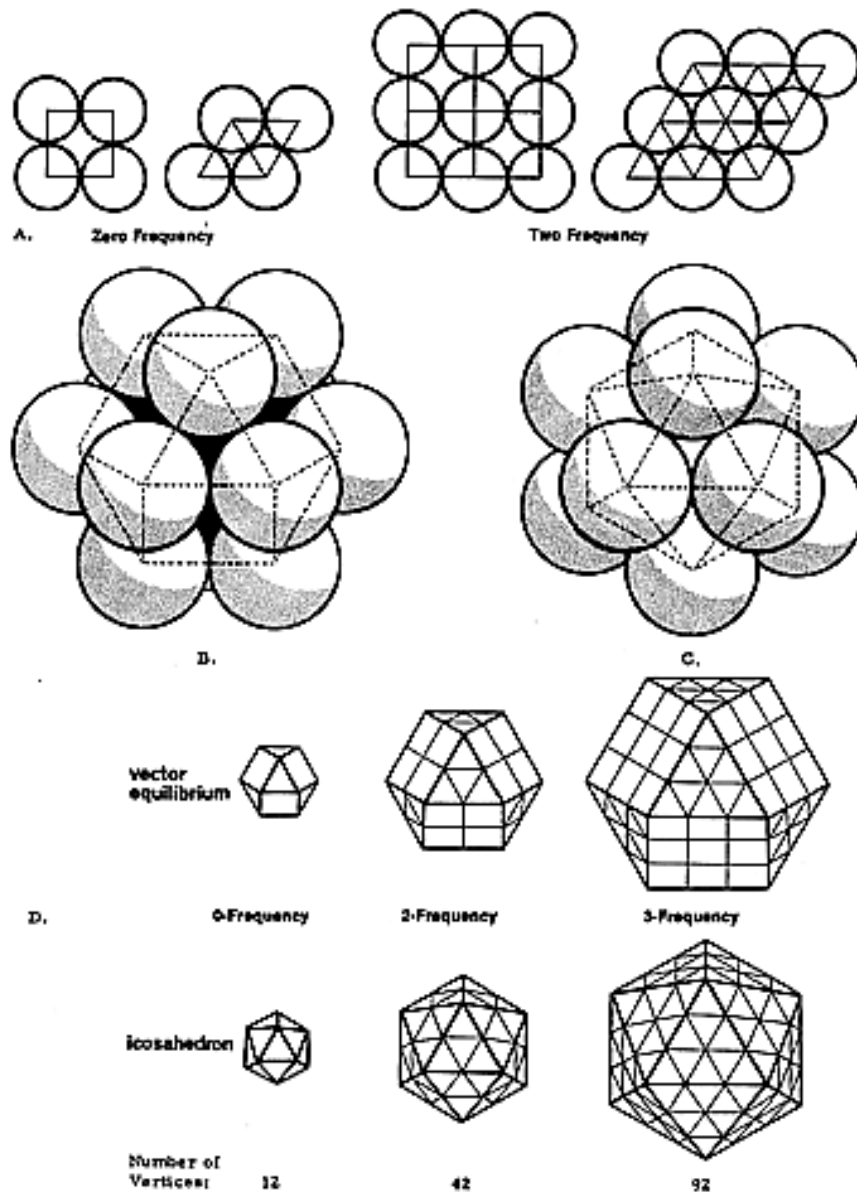


Fig. 516.03 Frequency: A square of any frequency is topologically equivalent to two adjacent triangles of corresponding frequency, i.e. a square has the same number of vertexes as two adjacent triangles (A). When the central sphere is removed from the vector equilibrium (B), it contracts symmetrically to a more compact arrangement (C), which is the icosahedron. The vector equilibrium has eight triangular faces and six square faces. The six square faces shift to become 12 triangular faces:  $12+8=20$  triangular faces of the icosahedron. Outer shells of the vector equilibrium and icosahedron of the same frequency will always have the same number of vertexes or spheres (D). Therefore the equation  $10F^2 + 2$  applies to both figures.

517.02 Speaking operationally, lines are products of the energy interactions of two or more separate systems. The local environment is a system. A line is always formed by an alteration of the local environment by another system. "Lines" are the patterns of consequences of one system altering another system either by *adding to* it or *taking away* from it. The event leaves some kind of tracery—either additively, as with a vapor trail or a chalk mark, or reductively, as with a chiseled groove or a pin scratch, as a crack opened between two parts of a formerly unit body, or as a coring through an apple.

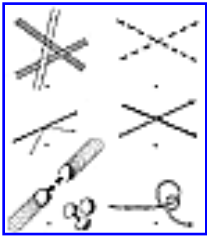
517.03 We find experimentally that two lines cannot go through the same point at the same time. One can cross over or be superimposed upon another. Both Euclidian and non-Euclidian geometries misassume that a plurality of lines can go through the same point at the same time. But we find experimentally that two or more lines cannot physically go through the same point at the same time.

517.04 When a physicist bombards a group of atoms in a cloud chamber with a neutron, he gets an interference. When the neutron runs into a nuclear component: (1) it separates the latter into smaller components; (2) they bounce acutely apart (reflection); (3) they bounce obliquely (refraction); (4) they combine, mass attractively. The unique angles in which they separate or bounce off identify both known or unknown atomic-nucleus components.

517.05 There is a unique and limited set of angle and magnitude consequences of interfering events. These resultants may always be depicted as vectors in the inward-and- outward, omnidirectional, multifrequency-ranging, circumferential-or-radial relativistic system patternings, which altogether constitute the comprehensively combined metaphysical and physical "reality" that is reported into and is processed by our brain and is reconsidered by our thoughts as referenced conceptually to various optimally selected observational axes and time-module durations.

517.06 When there is an interference of two energy events of similar magnitude, there is a coequal pattern of interference resultants, as when two knitting needles slide tangentially by one another. But when one converging body of an interfering pair is much larger than the other, the little one "seems" to do all the resultant moving as viewed by an observer small enough to see the small converger's motion—as, for instance, human beings see a tennis ball hit the big ball Earth and see only the tennis ball bounce away, the Earth ball being too big to be seen as a ball by the viewer and the relative bounce-off deflection of Earth's orbit from the tennis ball point of impact being too small for detection. As the magnitudes of energy vectors are products of the mass multiplied by the velocity, the velocity may be high and the mass small, or vice versa, and the vectors remain the same length or magnitude. A little body moving at sufficient velocity could have the same effect upon another body with which it interferes as could a big body moving at a slower rate. With these vectorial variables in mind, we see that there are three fundamental preconditions of the interference vectors: where one is larger than the other; one is the same; or one is smaller in energy magnitude than the other.

#### 517.10 Six Interference Resultants



[Fig. 517.10](#)

517.101 There are six fundamentally unique patterns of the resultants of interferences. The first is a tangential avoidance, like knitting needles slipping by one another. The second is modulated noninterference, as in frequency modulation. The third is reflection, which results from a relatively direct impact and a rebound at an acute angle. The fourth, which is refraction, results from a glancing impact and an obtuse angle of deflection. The fifth is a smash-up, which results in several parts of one or the other interfering bodies going away from one another in a plurality of angular directions (as in an explosion). The sixth is a going-the-same-way, "critical-proximity," attraction link-up such as that established between the coordinated orbiting of Earth and Moon around the Sun.

#### 517.11 Summary of Interference Phenomena

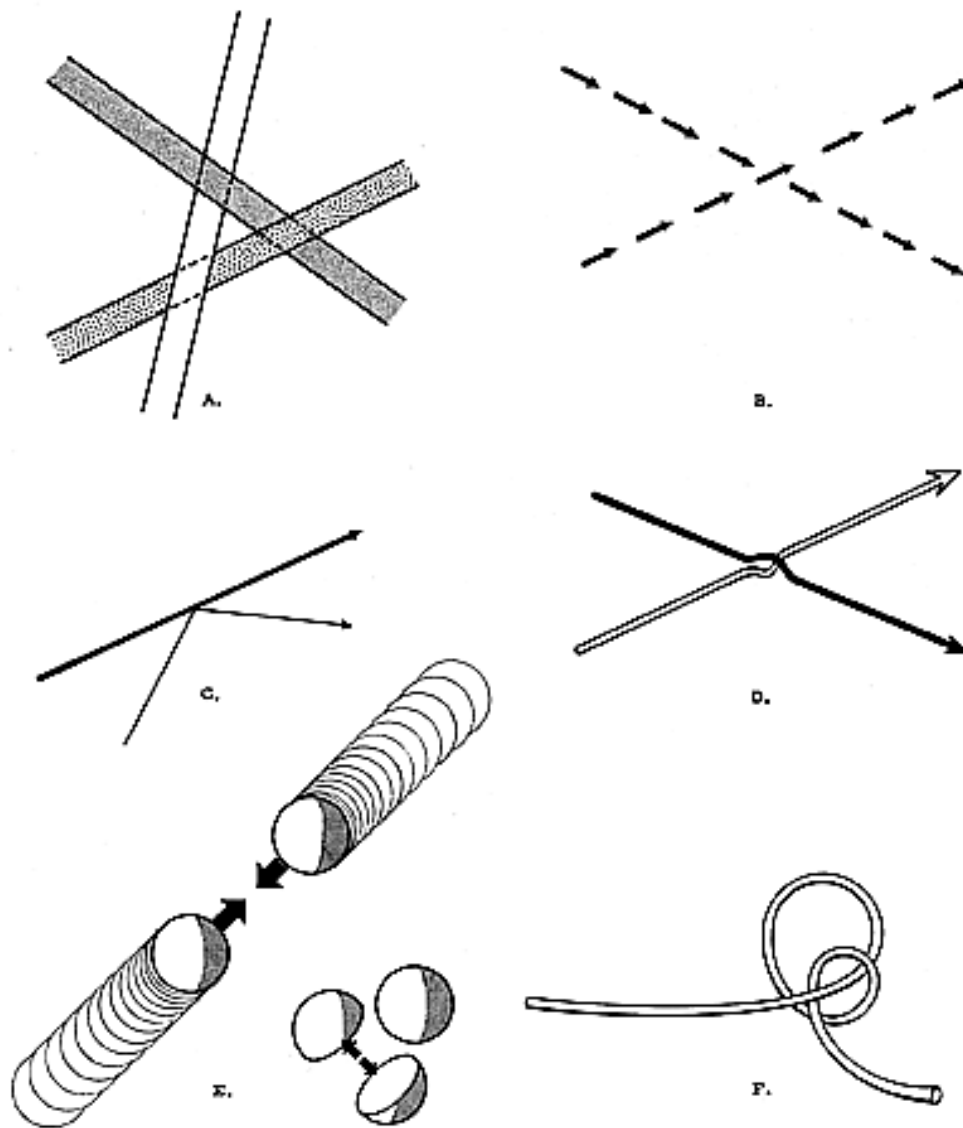


Fig. 517.10 Interference Phenomena: Lines Cannot Go Through the same Point at the Same Time: Interference phenomena: No two actions can go through the same point at the same time. The consequences of this can be pictured as follows:

- A. Tangential avoidance (like knitting needles).
- B. Modulated noninterference.
- C. Reflection.
- D. Refraction.
- E. Smash-up.
- F. The minimum knot or critical proximity.

517.12

- a. Tangential avoidance
- b. Modulated noninterference (Frequency Modulation)
- c. Reflection
- d. Refraction
- e. Smash-up (Explosion)
- f. Critical Proximity (The Minimum Knot)

517.13 All three of these vectorial conditions and all six of these resultants are manifest in cloud chambers, in which the physicist can view with his naked eye the photographed resultants of angular directions and energy-magnitude lengths of the interference patternings that occur when, for instance, they bombard a group of atoms with an accelerated neutron that moves at such velocity as probably to interfere with one or another of billions times billions of atoms present in the elemental "gas" aggregation. From these cloud-chamber interference patterns, physicists are able to calculate much information regarding the interfering components. The cloud chamber makes it obvious that two lines, which are always experimentally proven to be energy vectors, cannot pass through the same point at the same time.

### 517.20 **Tetrahedron of Interferences**

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517.201 A machine gun is shooting through a swiftly revolving airplane propeller. It is automatedly timed to shoot between every blade, or every second blade, or every third blade—with a sonic "wow" every time it goes between the propeller blades. We are synchronizing purposefully. Unautomated by human mind and brain's anticipatory designing, bullets would produce a random sequence of patterns as they hit the propeller blades; some would at first bounce off precessionally, while others would knock off sections of the propeller blades.



517.21 Let us assume two machine guns firing from two different positions, one of them due north of a point in space and the other due west of the same point. One is aimed south and the other is aimed east, which means they are both firing through a common point in space. They are synchronized so that their bullets will not interfere with one another. The bullets all weigh the same. If they were nonsynchronized, they would frequently meet and be precessionally deflected.

517.22 Now place three machine guns at the three corners of an equilateral triangle. From the center of area (sometimes miscalled the center of gravity) of the equilateral triangle, one of the three corners lies in a bearing of  $0^\circ$  (i.e.,  $360^\circ$ ) in a northerly direction; the second bears at  $120^\circ$ ; the third at  $240^\circ$  from the triangle's center. We then aim all three machine guns toward the center of the triangle and elevate their aim to  $35^\circ 16'$ . We synchronize their firing periods to coincide. We thus introduce an interference at the center of gravity of a regular tetrahedron whose triangular base corners are occupied by the three guns. Precession will take place, with the result that all three bullets precess into a vertical trajectory as a triangular formation team through the apex of the regular tetrahedron whose base corners are identified by the three guns.

517.23 Every action has an equal and opposing reaction. So now let us assume that instead of machine guns firing in one direction only, we have three bazookas in which both action and reaction are employed in two directions. The double-ended openness of the bazooka sees the rocket missile projected in one direction while a blast of air is articulated in an opposing conical zone of directions. The cone's *inertia* provides the shove-off for the projectile by the explosion. Inertia is dynamic—as sensed in the orbital course integrity of the enormous mass of Earth going around the Sun at 60,000 m.p.h. so that the little man on board it, who is also going around the Sun at 60,000 m.p.h., and is also walking around Earth at four m.p.h. and as he steps around Earth's surface he pushes Earth in the opposite direction to his walking, but so negligibly that the little man does not conceive of his Earth as movable and so has invented the concept of completely inert, or "at rest." Our deceptive fixity of celestial position as a standing still in Universe is fortified by the absolute silence of travel in vacuo around the Sun.

517.24 Now we take two bazookas (not three!) firing in different parallel planes and not at the same level. One is aimed north-south in respect to the North Star and the Southern Cross. The other bazooka is in a parallel plane but remote; it is aiming east-west. They are fired, and at each of their two terminals, we get four precessional effects of the reactions and resultants occurring at 55 degrees in respect to their respective parallel planes. The result will be six vectors interacting to form the tetrahedron, a *tetrahedron of interferences*.

## 518.00 Critical Proximity

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518.01 Though lines (subvisibly spiraling and quantitatively pulsative) cannot go through the same point at the same time, they can sometimes get nearer or farther from one another. They can get into what we call "critical proximity." Critical proximity is the distance between interattracted masses—when one body starts or stops "falling into" the other and instead goes into orbit around its greater neighbor, i.e., where it stops yielding at 180 degrees and starts yielding to the other at 90 degrees. (See Sec. [1009](#).)

518.02 Critical proximity would be, for instance, the relative interpositioning of the distances of the Moon-Earth team's Sun co-orbiting wherein there is a complex mass- attraction hookup. When at critical proximity the 180-degree mass attraction takes over and one starts falling into the other—with the attraction fourfolded every time the distance between them is halved—they establish a mass-attraction, relative-proximity "contact" bond and interoperate thereafter as a "universal joint"—or a locally autonomous motion freedoms' joint. Either body is free to carry on individual, local, angular-relationship- changing motions and transformations by itself, such as revolving and precessing. But without additional energy from elsewhere being applied to their interrelationship, they cannot escape their critical proximity to one another as they co-orbit together around the Sun—with which they are in common critical proximity.

518.03 Critical proximity occurs at the precessional moment at which there is a 90- degree angular transition of interrelationship of the two bodies from a 180- degree falling- back-in to a 90-degree orbiting direction, *or vice versa*. (See Sec. [1009.63](#).)

518.04 The transition of physical phenomena from being an apparent unit entity to being an apparent complex, or constellation of a plurality of entities, is that of the individual components reaching the critical proximity precessional condition and "peeling off " into individual orbits from their previous condition of falling back into one another under nonangularly differentiable entity conditions. This is the difference between an apparent "stone" and its crushed-apart "dust" parts.

518.05 Critical proximity explains mass-attraction coherence. It accounts for all the atoms either falling into one another or precessing into local orbits. This accounts for the whole Universe as we observe it, the collections of things and matter and noncontiguous space intervals. The coming-apart phase of critical proximity is radiation. The coming- together and holding-together phase is emphasized in our ken as gravity.

518.06 Critical proximity is a threshold, the absolute vector equilibrium threshold; if it persists, we call it "matter."

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[Next Section: 519.00](#)

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## 519.00 Point

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519.01 What we really mean by a point is an unresolved definition of an activity. A point by itself does not enclose. There are no indivisible points.

519.02 Without insiderness, there is no outsiderness; and without either insiderness or outsiderness, there is only a locus fix. Ergo, "points" are inherently nondemonstrable, and the phenomena accommodated by the packaged word *point* will always prove to be a focal center of differentiating events. A locus fix constitutes conceptual genesis that may be realized in time. Any conceptual event in Universe must have insiderness and outsiderness. This is a fundamentally self-organizing principle.

519.03 Points are complex but only as yet nondifferentiably resolvable by superficial inspection. A star is something you cannot resolve. We call it a point, playing Euler's game of crossings. One locus fix does not have an insiderness and an outsiderness. It takes four to define insiderness and outsiderness. It is called a point only because you cannot resolve it. Two remotely crossing trajectories have no insiderness or outsiderness, but do produce optically observable crossings, or locus fixes, that are positionally alterable in respect to a plurality of observation points. A point's definitively unresolved event relationships inherently embrace potential definitions of a complex of local events. When concentrically and convergently resolved, the "point" proves to be the "center" —the zero moment of transition from going inwardly and going outwardly.

519.10 Physical points are energy-event aggregations. When they converge beyond the critical fall-in proximity threshold, they orbit coordinatedly, as a Universe-precessed aggregate, as loose pebbles on our Earth orbit the Sun in unison, and as chips ride around on men's shoulders. A "point" often means "locus of inflection" when we go beyond the threshold of critical proximity and the *inness* proclivity prevails, in contradistinction to the differentiable other fallen-in aggregates orbiting precessionally in only mass-attractively cohered remoteness outwardly beyond the critical-proximity threshold.

519.20 If light or any other experiential phenomenon were instantaneous, it would be less than a point.

519.21 A point on a sphere is never an infinitesimal tangency with a plane.

519.22 The domains of vertexes are spheres.

519.30 For every event-fixed locus in Universe, there are six uniquely and exclusively operative vectors. (See Sec. [537](#), Twelve Universal Degrees of Freedom.)

## 520.00 **Wavilinearity: Fixes**

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520.01 Linear does not mean straight. Lines are energy-event tracteries, mappings, trajectories. Physics has found no straight lines: only waves consisting of frequencies of directional inflections in respect to duration of experience.

520.02 Calculus treats discretely and predictively with frequency change rates and discrete directions of angles of change of the omniscurvilinear event quanta's successively occurring positionings: *fixes*.

520.03 Fixes consist of both angular and frequency (size) observations. Coincidental angle and dimension observations provide fixes.

### 520.10 **Spiralinity**

520.101 Regenerative precession imposes wavilinearity on vectors and tensors. Wavilinearity is spiralinear.

520.11 All actions are spiral because they cannot go through themselves and because there is time. The remote aspect of a spiral is a wave because there are no planes.

520.12 As with coil springs, in tensors and vectors of equal magnitude, the spiralinity of the vector is shorter in overall spatial extent than is the spiralinity of the tensor. Compressed lines or rods tend to arcs of diminishing radius; tensed lines or rods tend to arcs of increasing radius.

## 521.00 **Vectors: Trajectories**

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521.01 A vector manifests a unique energy event—either potential or realized—expressed discretely in terms of direction, mass, velocity, and distance. A vector is a partial generalization, being either metaphysically theoretical or physically realized, and in either sense an abstraction of a special case, as are numbers both abstract (empty sets) or special-case (filled sets).

521.02 A vector always has unique direction relative to other events. It is discrete because it has a beginning and an end. Its length represents energy magnitude, the produce of its velocity and its mass. The direction is angular in respect to the axis of reference of the observer or in respect to an omnidirectional coordinate system.

521.03 Vectors are wavelinear lines of very high frequency regeneration of events whose high frequencies and whose short wavelengths only superficially appear to be "straight." Since neither light nor any other experiential phenomena are instantaneous. They are "linear." If they were instantaneous, they would be less than a point. The terminal of an action's vector occurs "later. "

521.04 Vectors are spearlike lines representing the integrated velocities, directions, and masses of the total aggregate of nonredundant forces operating complexedly within a given energy event as it transpires within a generalized environment of other experiences whose angular orientations and interdistance relationships are known.

521.05 Vectors always and only coexist with two other vectors, whether or not expressed; i.e., every event has its nonsimultaneous action, reaction, and resultant. (See Sec. [511](#), Energy Event.) But every event has a cosmic complementary; ergo, every vector's action, reaction, and resultant have their cosmic tripartite complementaries.

521.06 A vector has two vertexes with angles around each of its vertexial ends equal to 0 degrees. Every vector is reversible, having its negative alternate. For every point in Universe, there are six uniquely and exclusively operative vectors. (See Sec. 537, Twelve Universal Degrees of Freedom.)

521.07 Every event is six-vectored. There are six vectors or none.

521.08 Vectors are size. The size of a vector is its overall wavelinear length.

521.09 A vector is one-twelfth of relevant system potential.

521.10 **Tensors**

521.101 Vectors and tensors constitute all elementary dimension. A vector represents an expelling force and a tensor an impelling force.

### 521.20 Lines

521.201 Pure mathematics' axiomatic concepts of straight lines are completely invalid. Lines are vector *trajectories*.

521.21 The word *line* was nondefinable: infinite. It is the axis of intertangency of unity as plural and minimum two. Awareness begins with two. This is where epistemology comes in. The "line" becomes the axis of spin. Even two balls can exhibit both axial and circumferential degrees of freedom. (See Sec. [517.01](#), Sec. [537.22](#), and Sec. [240](#), Synergetics Corollaries, Subsec. [06](#), [13](#), [14](#), [15](#), [20](#), [21](#), [22](#), [24](#), [25](#), [26](#), [27](#), [29](#), [30](#), [31](#), [35](#), [36](#).)

521.22 A line is a directional experience. A line is specific like *in*, while *out* is anydirectional. Lines are always curvilinearly realized because of universal resonance, spinning, and orbiting.

521.23 A point is not a relationship. A line is the simplest relationship. Lines are relativity. A line is the first order of relativity: the basic sixness of minimum system and the cosmically constant sixness of relationship identifies lines as the relativity in the formula

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

### 521.30 Omnidirectional Force Vectors



521.30 Galileo's parallelogram of forces is inadequate to account for resultants other than in the special-case, one-plane, billiard-table situation. Force vectors must express the omnidirectional interaction of forces, with lengths proportional to their mass times the velocity, and indicating that there are unique directions in Universe.

[Fig. 521.30](#)

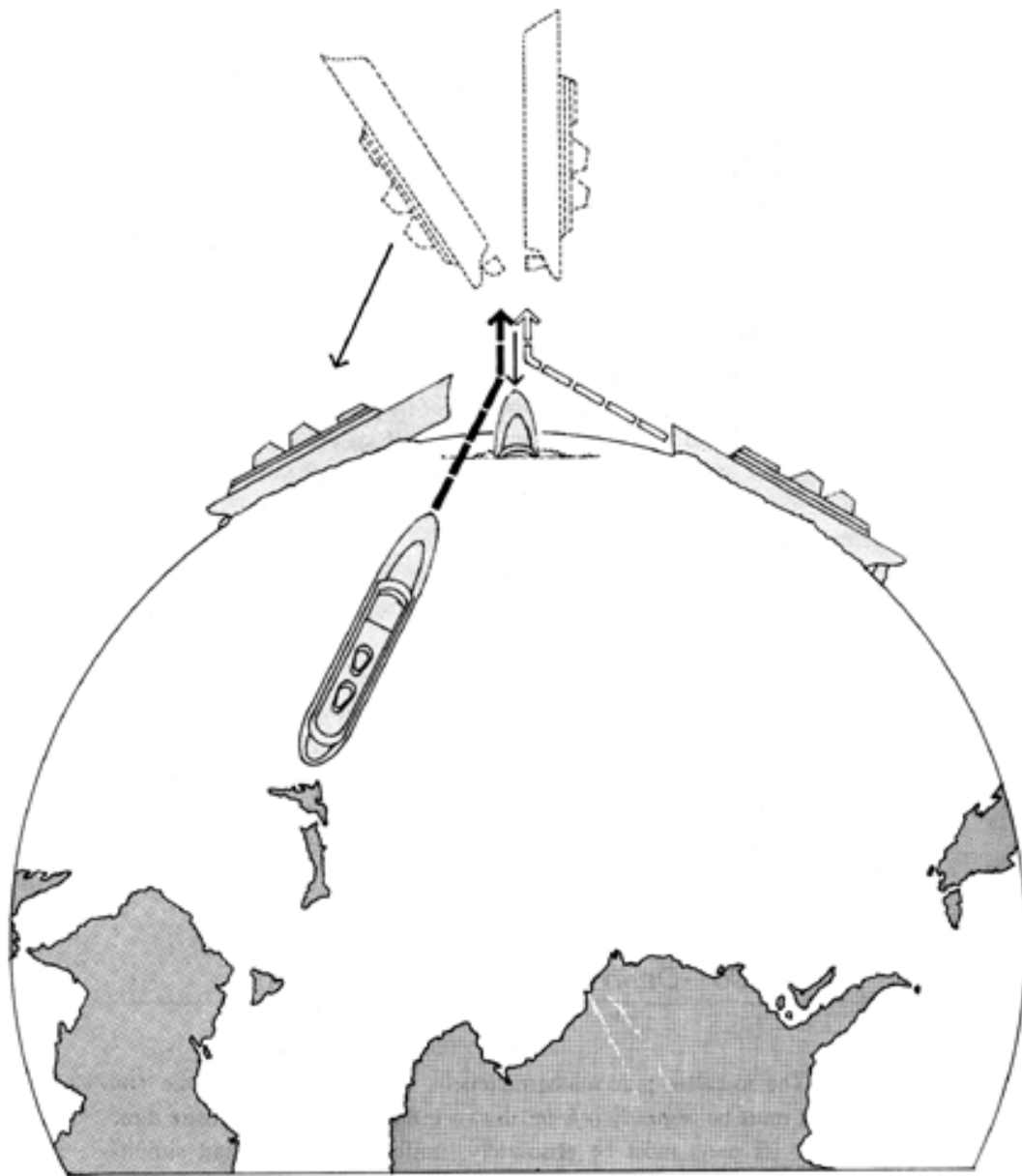


Fig. 521.30 Omnidirectional Lines of Forces: Ships colliding on the globe after sudden acceleration reveal the inadequacy of parallelogram force diagrams for explaining the omnidirectional interaction of forces.



521.31 When we vector the course of one ship on a collision course with a second ship, the resultant of forces in Galileo's diagram would have them waltzing off together some 12 miles to the north-northeast. But all sane men can see such behavior is just what ships do not display after a collision. One of the two ships colliding on the wavy surface of spherical Earth may go a few hundred feet in the direction of Galileo's resultant of forces, but not 12 miles. But the other one probably goes in toward the center of Earth—which isn't in the diagram at all.

521.32 When ships run into each other, they actually first rise outwardly from Earth's center because in acceleration both were trying to leave Earth. (If they could accelerate faster, like rockets, they would leave Earth.) In reality, there are four forces operating. Two rise outwardly against gravity, accelerating conically together before they subside, when one or both go to the bottom. In addition to the vector for each ship, there is gravity plus the resultant. We are operating omnidimensionally, and this is what the minimum set of forces is. The pattern of force lines looks very much like a music stand: three vectorial legs spread out with a fourth vertical vector. (See Secs. [621.20](#) and [1012.37](#).)

## 522.00 **Deliberately Nonstraight Line**

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522.01 The so-called pure mathematician's straight line must be the "impossible"; it must be *instantly infinite* in two infinitely remote opposite directions. All of its parts must be absolutely, uniformly nothing and simultaneously manifest as discretely, and infinitely divisible, increments. It may not be generated progressively or drawn physically, in time, as an experimentally produced action trajectory of one system modifying another. Microscopic inspection of the impressed, graven, deposited, or left-behind trails of all physical Universe's action trajectories always discloses a complex of gross, noninfinite, nonstraight, non-equal-magnitude irregularities. Progressively closer inspections of experimentally attempted demonstrations by pure mathematicians of their allegedly "straight" lines disclose increasingly volumetric aberration and angular digressions from straightness.

522.02 "Straight lines" may be axiomatically invoked but are nonrealizable in pure imagination: *image-ination* involves reconsidered and hypothetically rearranging the "furniture" of remembered experience as retrieved from the brain bank. Straight lines are axiomatically self-contradictory and selfcanceling hypothetical ventures. Physics has found only waves, no straight lines. Physics finds the whole physical Universe to be uniquely differentiated and locally defined as "waves."

522.03 The deliberately nonstraight line of synergetics employs the mathematicians' own invention for dealing with great dilemmas: the strategy of *reductio ad absurdum*. Having moments of great frustration, the mathematician learned to forsake looking for local logic; he learned to go in the opposite direction and deliberately to choose the most absurd. And then, by progressively eliminating the degrees of absurdity, he could work back to the not too absurd. In hunting terms, we call this *quarrying* his objective. Thus he is able at least to learn where his quarry is within a small area.

522.04 To develop methodically a very much less crooked line than that of conventional geometry, we start to produce our deliberately nonstraight line by taking a simple piece of obviously twisted rope. We will use Dacron, which is nonstretchable (nylon will stretch, and manila is very offensively stretchable). We then take the two ends of our rope and splice them into each other to form a loop. This immediately contradicts the definition of a straight line, which is that it never returns upon itself. We can take the two parts of the rope loop that are approximately parallel to one another and hold these two parts in our hands. We may call this pairing. Holding one hand on one of the pairs, we can slide the rope on the other hand, continually pairing it away from the point of first pairing. As we massage the two parts along, our hand finally gets to where the rope comes into a very sharp little loop and turns to come back on itself. We can hold it very tight at this point and put a little ribbon on the bend, the arch where it bends itself back. Sliding our hands the other way, holding and sliding, holding and sliding, massaging the rope together, we come to the other looping point and carefully put a ribbon marker in the bend of the arch. Having carefully made a rope that returns upon itself, we have now divided unity into two approximately equal halves.

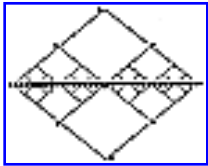
522.05 Heisenberg makes it experientially clear that we cannot be absolutely exact. The act of measuring alters that which is measured. But with care we can be confident that we have two experientially satisfactory halves of the total rope circuit existing between our two ribbon markers. Proceeding further, we can bring the ribbon-marked, half-points together, thus to divide the rope into four equal parts of unity. We can separately halve each of those quarter-lengths of the rope's closed-circuit unity to produce one-eighth unity length, while avoiding compounding of error. Each time we halve a local fraction, we halve any residual error. We can evenly subdivide our deliberately nonstraight line into as many small fractions as may be desirable.

522.06 We now ask four friends each to take hold of a half- or a quarter-point in the rope, and then ask them to walk away from each other until the rope unity is taut. We ask them to lower their four-sided geometrical figure to the floor and ask another friend to drive nails into the floor inside the four tightly stretched corners of the rope. A diamond rope pattern is thus produced with its corners marked A, B, C, and D. We are provided with plenty of proofs about equilateral parallelograms; we know that if the sides are equal in length, we can assume them to be approximately parallel because the wall we have nailed them to is an approximate plane. It may be pretty rough as the mathematicians talk about planes, but it is nonetheless a satisfactory plane for our purposes.

522.07 We next put in more nails in the floor at the ribbon-marked eighth points. C is the right-hand corner of the diamond, and D is the top of the diamond. We can call the bottom half of the diamond a V, and we can call the top half of the diamond a lambda. Putting nails at the one-eighth points means that halfway down from A to B there is a nail and halfway from B upward to C there is a nail. Halfway from C upward to D we put a nail at the eighth point. Then halfway down from D back to A again we put another nail at the eighth point. We then take the rope off D and place it over those one-eighth nails. The rope now changes from a *lambda* pattern into an "M" form. Because it is an equilateral parallelogram, we know that the new middle loop must be at the center of the diamond. We place a nail at this center of the diamond and mark it O. We next go from C, which is at the extreme right-hand corner of the diamond, down to take the rope off B. Taking the rope off the V (which used to be ABC), we convert the V to a W—with the bottom points of the W at the one-eighth-point nails. We then move the rope off B and up to the center of the diamond also. This gives us two diamonds, two little diamonds strung end-to-end together at the center of the big diamond. Their extreme ends are at A and C. Because we know that these are all

equilateral parallelograms, we know that the length of the new letter M is the same as the length of the new letter W. We can now give these new one-eighth points the designations E, F, G, and H. So it now reads AHOGC and AEOFC. And we have two beautiful diamonds.

522.08 From now on, all we have to do is convert each of these diamonds in the same manner into two smaller ones. We convert the two diamonds into four. And then the four into eight. And the eight into 16. But the chain of diamonds always remains A—C in overall length. Both the altitudes and lengths of the diamonds are continually halving; thus what we are doing is simply increasing the frequency of the modular subdivision of the original unity of the rope. As the frequency of the wavelike subdivisions is multiplied, the deliberately nonstraight line approaches contractively toward straight behaviors. The rope remains exactly the same length, but its two parts are getting closer and closer to one another. The plane of the floor is really an illusion. As we get to a very high frequency of diamonds, we realize that instead of doing it the way we did, we could simply have twisted the original rope so that it would be a series of spirals of the same number as that of the chain of diamonds. We look at the profile of the rope and realize that all we are seeing is twice as many twists every time—at every progression. This gives us a very intimate concept of what actually happens in wave phenomena.



[Fig. 522.09](#)

522.09 The old-fashioned physicist used to put one nail in the wall, fasten a rope to it, and stand back and throw a whip into the rope. The whip goes to the nail on the wall and then comes back to his hand and stops. That is the prime characteristic of waves. They always make a complete cycle. That is why, for instance, gears are always whole circles. A gear is a fundamental wave phenomenon. Electromagnetic waves always close back upon themselves. Deliberately nonstraight lines are round-trip circuits.

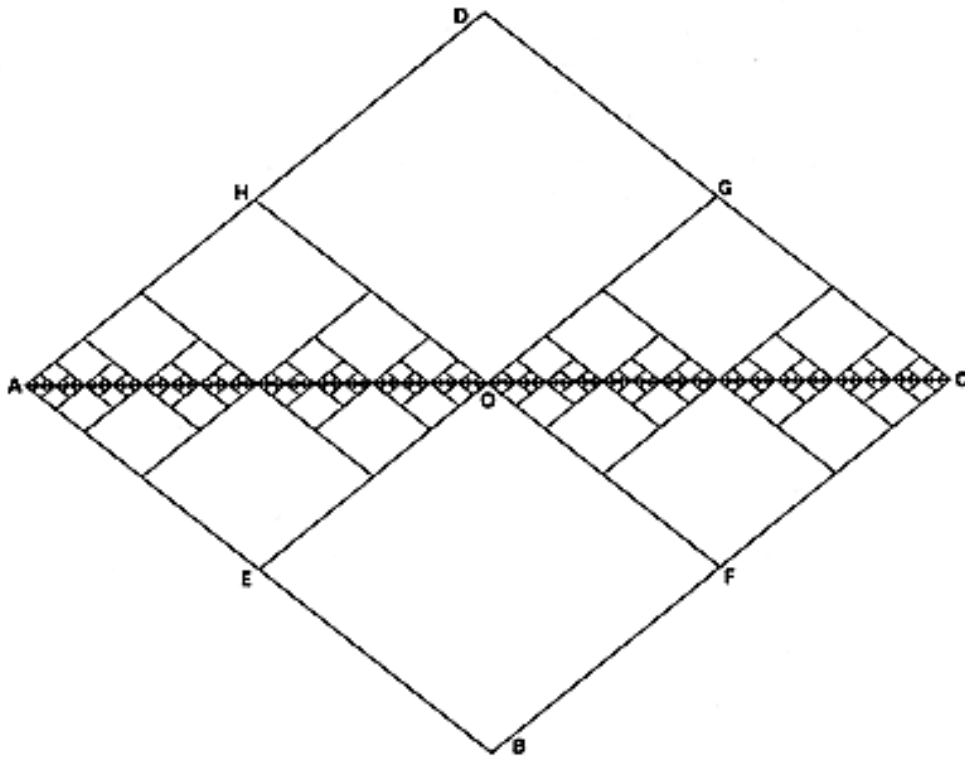


Fig. 522.09 The Deliberately Nonstraight Line: Quasi-"straight" lines: ABCDA = unit wave; AEOFCGOHA = ABCDA. As we double the frequency and halve the wavelength of positive and negative waves, we approach relative straightness: proof that two deliberately nonstraight lines between points A and C approach relative straightness to more effective degree than attainable by an assumed straight construction.

522.10 Our deliberately nonstraight-line model provides us whatever frequency of modular subdivision we want in unity, which is the cycle. This is what we mean by frequency of modular subdivision, whether unity is a sphere or a circle. What is going on in our rope, the way we have handled it, we make it into unity as a cycle. We see these waves going in a round-trip trajectory pattern from A to the extreme point C and back again to A. The overall distance traveled by any of the routes remains the same. So what we see on the floor or in the diamond chain diagram is a true model of basic wave phenomena. As we double the frequency and halve the wavelength of positive and negative waves, we swiftly arrive at a visibly far less crooked condition and approach relative straightness. We can see quite clearly that we do not have to increase the subdividing of those diamonds many times before they tend to look like a straight line as far as your eye and my eye can see. This concept agrees elegantly with fundamental wave theory as predicated on electromagnetic experimentation.

522.11 For instance, on an engineer's scale you and I can see 50 divisions of an inch. We can see 1/50th of an inch, but 1/100th of an inch goes gray and blurred. When we get to where an inch of the deliberately nonstraight line has more than 100 subdivisions, it looks like an absolutely straight line. When we get into the kinds of frequencies that characterize light waves, we get into very, very high numbers, and we can understand that what we call a line of sight has become so thin that it is invisible altogether. So we can understand that when the mathematician asked for a line of sight, which felt so good to him, he was asking for something that is really very beautifully imaginary. It was always a deliberately nonstraight line.

522.20 All experiments show that with ever closer inspections, the mathematicians' "straight" lines become obviously ever less straight. On the other hand, the quasi-straight line, which is demonstrated here as the deliberately nonstraight line, does get progressively straighter. Tending toward a greater straightness than that which is physically demonstrable, the deliberately nonstraight line thus serves all the finite geometries heretofore employed schematically by the mathematicians' alleged but unprovable straight lines, i.e., to demonstrate proof of the Euclidian and non-Euclidian geometrical propositions.

522.21 "Lines of sight" taken with transits are truer than string lines or penciled lines. Sight approaches "straight" behaviors. Lines of sight are high-frequency energy-wave interactions. Because the truest lines of sight are energy-wave quanta, they are always finite. The mathematician might say, "Oh, I mean a much straighter line than you can draw, I mean as straight and intangible as a line of sight." Then you remind the mathematician that when you have your transit's telescope focused on the "kissing point," as Earth's horizon becomes tangent to Sun's disc at daylight's end, you must remember that it takes eight minutes for the light to reach us from the Sun. Wherefore, the Sun has not been there for eight minutes, and you must admit that you are "seeing" the Sun around and beyond the horizon, which proves that your "line of sight" is curved, not straight. Due to the lag in the speed of light, Sun has not been there in a direct line of sight for eight minutes, so you are looking around the horizon through a curved "pipe" of light. This is what Einstein referred to as curved space.

522.22 To provide a more accurate identity of the only apparently straight-line phenomenon that the pure mathematician had erroneously thought of as "the shortest distance between two points," Einstein reinvoked the elliptical geometry of the mathematician Riemann and instituted the present concept of geodesic lines, which we may describe experimentally as "the most economic relationships between two event foci."

522.23 To comprehend and apprehend experimentally such "most economic relationships," all that you need do is to attempt to hit a flying object with a bullet fired by you from a gun. If you fire at the flying object where it is at the moment you fire, you will not hit it. You must fire at where you figure it is going to be at a later moment when it would most probably collide with your bullet. Gravity will start curving your bullet toward Earth as soon as it leaves your gun. The amount of curvature may be imperceptible to you, but it is easily detected by using a camera and a tracer firing charge. The air is always in motion, and your bullet will corkscrew ever so mildly between you and the flying object. This corkscrewing of the geodesic line, which is the most economical time-distance-effort relationship between the gun, the firer, and the flying object he hits, is dramatically shown in night photography of dogfights of World-War-II airplanes firing machine-gun tracer bullets at one another, with one being hit while the photographs are taken by a third plane flying in close vicinity of the dogfight.

522.30 **Reduction by Bits**

522.301 What the mathematicians thought was a straight line is not a straight line; it is an ultravisible, high-frequency, linearly articulated, spiral-wave event. The binary- mathematics methodology of progressive halving, or cybernetic "bitting," not only explains linear-wave phenomena but also identifies Pythagoras's halving of the string of a musical instrument to gain an exact musical octave—or his "thirthing" of the musical string to produce the musical fifths of progression of flat and sharp keys.

522.31 The computer programmed to employ the cybernetic bits of binary mathematics progressively subdivides until one of its peak or valley parts gets into congruence with the size and position of the unit we seek. The identification process is accounted for in the terms of how many bits it takes to locate the answer, i.e., to "tune in."

522.32 Starting with whole Universe, we quickly reach any local system within the totality by differentiating it out temporarily from the whole for intimate consideration. We do so by the process of *reduction by bits*.

522.33 All irrelevancies fall into two main categories, or bits. Bits break up finite wholes into finite parts.

522.34 Once you state what your realistic optimum recognition of totality consists of, then you find how many bits or subdivision stages it will take to isolate any items within that totality. It is like the childhood game of Twenty Questions: You start by saying, "Is it physical or metaphysical?" Next: "Is it animate or inanimate?" (One *bit*.) "Is it big or little?" (Two *bits*.) "Is it hot or cold?" (Three *bits*.) It takes only a few bits to find out what you want. When we use bit subdivision to ferret out the components of our problems, we do exactly what the computer is designed to do. The computer's mechanism consists of simple go-no go, of yes and no circuit valves, or binary mathematics valves. We keep "halving" the halves of Universe until we refine out the desired *bit*. In four halvings, you have eliminated 94 percent of irrelevant Universe. In seven halvings, you have removed 99.2 percent of irrelevant Universe. Operating as fast as multithousands of halvings per second, the computer seems to produce instantaneous answers.

522.35 Thus we learn that our naturally spontaneous faculties for acquiring comprehensive education make it easy to instruct the computer and thus to obtain its swift answers. Best of all, when we get the answers, we have comprehensive awareness of the relative significance, utility, and beauty of the answers in respect to our general universal evolution conceptioning.



522.36 Our method of demonstrating the nature of the special-case experiences out of which the pure mathematicians' imaginary generalized case of his pure straight line was evolved, also contains within it the complete gears-interlocking of quantum-wave mechanics and vectorial geometry, which are coordinately contained in synergetics with computer binary "bitting."

### 523.00 **Vertexes: Crossings**

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523.01 Euler showed that where we have two lines—any kind of lines, crooked or not so crooked—where the lines cross is distinctly different from where the lines do not cross. The pattern of two or more lines crossing one another is also completely distinguishable from any single line by itself. We call this crossing or convergence of lines a *vertex*. This is absolute pattern uniqueness.

523.02 Crossings are superimposed lines. They do not go through each other. They are just a *fix*—what physicists call points.

523.03 In a structural system, the number of vertexes is always divisible by four and the number of triangle edges is always divisible by six. Edges and vertexes do not come out as the same number systems, but you can describe the world both ways and not be redundant.

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[Next Section: 524.00](#)

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## 524.00 Novent

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524.01 We experience events and no-events. Ergo, we invent *novent*. Novents characterize the finite but nonsensorial remote masses' interattraction, i.e., the gravitational continuum.

524.02 Seeming "space" is the absence of energy events. The word space as a noun misleadingly implies properties that are altogether lacking.

524.03 All of our experiences are periodically terminated: the termination characterizes both the physical and the metaphysical aspects of our observing faculties and the observed phenomena. There are no experimentally known continuums. Physics has found no "solids." We have only *awake* or *asleep*—*experience* or *nonexperience*—occurrence durations and nonoccurrence intervals; either discrete and unique packages of energy or thought, on the one hand, or of nonenergy or nought, on the other hand. Each and all of these are as uniquely differentiable, and as separable, from one another as are the individual stars of the Milky Way.

524.04 The nonevent continuum is the novent. The novent continuum permeates the finitely populated withinness and comprises the finite novent withoutness. Novent is the finite but nonsensorial continuum. (See Sec. [905.20](#).)

### 524.10 In and Out

524.101 There are no specific directions or localities in Universe that may be opposingly designated as *up* or *down*. In their place, we must use the words *out* and *in*. We move *in* toward various individual energy-event concentrations, or we move *out* from them. But the words *in* and *out* are not mirror-image opposites. *In* is a specific direction toward any one local individual system of Universe. *Out* is not a direction; *out* is nondirectional because it is anydirectional.

524.11 You are always *in* Universe. You cannot *get* out of Universe. All the word *out* means is that you are not inside a system. You can only get *out* of systems.

524.12 *In* designates individual experience foci. Foci are *in*, because focusable, but always, as entropy shows, temporary. Relationships exist between the *ins* because they are definable. *Out* is common to all; *out* is timeless; *out* is not really packaged.

524.13 *In* is discrete; *out* is general. The *ins* are discontinuous; the *outs* are continuous. *Out* is nothingness, i.e., nonexperience. Only the nonexperience nothingness constitutes continuum.

524.14 *In* is temporal; *out* is eternal. *Ins* are knowable; *outs* are unknowable. *In* is individually, uniquely identifiable; *out*, though total, inherently integral, and finite, is nonidentifiable. *In* is individually, uniquely directional; *out* is any, all, and no direction. *Out* is all directions; even when temporarily inward toward center, it passes beyond the center to eventual outness.

#### 524.20 **Areas: Faces**

524.21 It is experimentally demonstrable that an apparent "plane" is a "surface" area of some structural system. There are no experimentally demonstrable continuums. All that has been found is discontinuity, as in star constellations or atomic nuclear arrays. Areas are discontinuous by constructional definition. Areas, as system "faces," are inherently empty of actions or events, and therefore are not "surfaces."

#### 524.30 **Openings**

524.31 There are no surfaces. Therefore, there are no areas. So Euler's topological aspects have to be altered to read: "Lines" = *trajectories*; "vertexes" = *crossings*; and "areas" = *openings*, i.e., where there are no trajectories or crossings.

524.32 When three or more "lines," "vectors," or *trajectories* each cross two others, we have an *opening*. Our definition of an opening is that it is surrounded, i.e., framed, by trajectories.

524.33 Every trajectory in a system will have to have at least two crossings. These are always *as viewed*, because the lines could be at different levels from other points of observation.

### 525.00 **Solids: Matter**

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525.01 If subvisibly modulated spiraling wave lines cannot go through the same point at the same time, there can be no continuous, perfectly level planes. Planes are not experimentally demonstrable. Solids are not experimentally demonstrable. Physical experiment has never discovered any phenomena other than discontinuous discrete-energy events, each uniquely identifiable amongst the gamut of frequencies of cyclic discontinuity of all the physical phenomena, as comprehensively and overlappingly arrayed in the vast frequency ranges of the electromagnetic spectrum. The electromagnetic spectrum "reality" has been found experimentally to embrace all known physical phenomena: visible, subvisible, or ultraviolet thus far detected as present in Universe. There are no solids. The synergetic behavior of structures satisfactorily explains as discontinuous that which we have in the past superficially misidentified as "solid."

525.02 For a microscopic example of our spontaneous and superficial misapprehending and miscomprehending environmental events, we must concede that both theoretically and experimentally we have now learned and "know" that there are no "solids," no continuous surfaces, only Milky Way-like aggregations of remotely interdistanced atomic events. Nonetheless, society keeps right on seeing, dealing, and superficially celebrating in respect to "things" called "solids" or "matter."

525.03 Take the simple word *solid*. We have physics of the "solid state," a very late phase of physics very improperly called "solid." Even in solid state, the voids between the atoms are as voids of interstellar space. The nucleus itself is as empty as space itself. But the concept "solid" was a comfortable kind of concept, not easy to jettison.

#### 525.10 **Frequency and Interval**

525.11 Mass is a statement of relative event frequency per volume. For example, there may be something too massive for me to put my finger through because it has too high an event frequency.

### 526.00 **Space**

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526.01 There is no universal space or static space in Universe. The word space is conceptually meaningless except in reference to intervals between high-frequency events momentarily "constellar" in specific local systems. There is no shape of Universe. There is only omnidirectional, nonconceptual "out" and the specifically directioned, conceptual "in." We have time relationships but not static-space relationships.

526.02 Time and space are simply functions of velocity. You can examine the time increment or the space increment separately, but they are never independent of one another.

526.03 Space is the absence of events, metaphysically. Space is the absence of energy events, physically.

526.04 The atmosphere's molecules over any place on Earth's surface are forever shifting position. The air over the Himalayas is enveloping California a week later. The stars now *overhead* are *underfoot* twelve hours later. The stars themselves are swiftly moving in respect to one another. Many of them have not been where you see them for millions of years; many burnt out long ago. The Sun's light takes eight minutes to reach us. We have relationships—but not space.

526.05 You cannot get out of Universe. You are always in Universe. (See Sec. [320](#), Scenario Universe. See Sec. [524](#), Novent.)

## 526.10 Systematic Inclusion and Exclusion of Space

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[526.10-526.35 Space Scenario]

526.101 Space is the antithesis of solid. Both are misnomers. *Solid* (or *mass*) refers to locals of too high an event frequency for our physical members to penetrate or conceivably tune in. *Space* refers to locals of an event frequency per volume too low for our apprehending equipment to tune in.

526.11 Space is systemic inadvertency. Space is all the observer's untuned-in information.

526.12 Space is the inescapable awareness of unaccounted otherness: the otherness is unconsidered but always and only co-occurrent with system considerations.

526.13 Space is finite as a complementary of finite Scenario Universe. As a co-occurrent, complementary function of finite but non-unitarily-conceptual and non-unitarily-tune-in-able Scenario Universe, space is finite. Space does not have *definable* properties. Only systems have definable characteristics.

526.14 The cognitive awareness of space derives from definition of system characteristics whose topological interrelationships inherently and oherently divide Universe into insideness microcosmic space and outsideness macrocosmic space. Systems have 32 topological characteristics (enumerated at Sec. [1044](#)).

526.15 Systems capture. Systems exclude. Systems capture all the special case, twilight-zone, only-grossly-tuned-in but as-yet-differentially-undefinable, outwardly neighboring "otherness" systems as well as all the inward, untunable, nonsystem space. Systems exclude the twilight zone of only-partially-tuned-out, no-longer-differentially- definable, outwardly neighboring otherness systems as well as all the outward, untunable, nonsystem space. Systems capture all the infratunable, concentric tween-waves that are too-high-frequency for experience-intuited-expectancy space nothingness and exclude all the ultratunable, concentric tween-waves that are too-lowfrequency for experience- intuited-expectancy space nothingness.

526.16 "Solids" are the frequencies that are too high for differential tune-in-ability. Space is the integral of all the frequencies that are too low for tune-in-ability.

526.17 Included spaces and excluded spaces are both concentric. Tuning = dismissal of irrelevancies. Those too large and of too low frequency are dismissed omnidirectionally. Those too small and of too high frequency are dismissed inwardly. The tuning phenomenon is either inward or omnidirectional .

526.18 Insideness is the captured nothingness. Insideness becomes the conceptually embraced, system-defined space. Outsideness is the conceptual-system-defined, outwardly uncaptured nothingness. Without systems there can be no space awareness. (Compare Sec.[1053.824](#).) Systems are awareness concepts. Space is nonconceptual awareness.

526.19 Space is a finite but nondefinable complementary relationship function of the definability of singular or plural system characteristics and their interrelationships. System is all the relevant thought, all the think-about-ableness. Space is all the unthink-about-able irrelevancy.

526.191 Space is the aggregate of all the vector equilibrium nulls of all magnitudes and frequencies of all isotropic vector matrixes always potentially articulatable in all directions from any point of origin.

#### 526.20 **Visual Aspects of Space**

526.21 Where there is no radiation, there is no light. If it had always been "night," I doubt that people would have invented the word *space*. At night you have no sense of otherness—no sense of space complementation of system-defining limits. Space is a "visual" word, touch being an ultra-highfrequency "visualization."

526.22 Space is concentric and multisystem partitionable. Space is never linear. It takes four events to define three intervals. The special case events appear to be linear only because they are always successively experienced. Potential periodicity—special case, time-size—is initially cognizable when recurring after the same interval as that recalled as existing between the first and second similar systemic events experienced, but only upon the third recurrence of the similar systemic experience event do we have four similar systemic events to define three similar intervals—ergo, to confirm the periodicity that could only be intuitively anticipated after the third similar event experience had marked a second similar between-events interval.

526.23 It takes a minimum of four similar-system-experiencing event recurrences to produce three similar between-event intervals and differentially excite a recollected pattern cognition that confirms the periodicity—a periodicity that was only intuitively and speculatively anticipated at the time of the third similar-system experiencing. The confirmatory fourth event and its third similarly intervalled recurrence cognition in turn introduce the inherently minimum sixness of convergent interrelationships of any four subdifferentiable points of tunably identifiable system experiences-which four, together, always define the four corners of a larger system. (Compare Secs. [265.08-13](#) 265.08-13, [501.24](#), [987.073](#), and [1033.601](#).)

526.24 Our eyesight is stroboscopic at 60 cycles per second. Because of the lags in apprehension we are not aware of the "between-takes" intervals. We do not sensingly realize that the nothingness is concentrically permeating the concentrically waved recurrent somethingnesses.

526.25 The phenomenon death is as yet ultratunable system experience. We have no way of knowing whether any single, dual, or triple recurring experience events are to be followed by a fourth, as-yet-unexperienced, similar event which, if and when it occurs, may constitute a system-tuning-in, live realization of the omnioccurring, infratunable, tunable, and ultratunable systems' concentric intervalling. Death is intervalling. Life and death are always and only co-occurrent, life being concentrically successive tuning-ins and death being the as yet nontuned-in. (See Secs. [262.10](#) 262.10 and [531.10](#).)

526.26 *Out* is any-directional. You go in to go out because *out* is not only any direction but is all directions—electromagnetically speaking it is "tuned-out." (See Sec. [905.21](#).) *In* is what we are thinking about now. *In* is the momentary reality into which we are *tuned*. All the rest is for the moment *tuned-out* but equally real as the information or experience is progressively *tuned-in*.

526.27 Physics finds that Universe has no solid things surrounded by, and interspersed with, space. Life is an inventory of tuning-ins and tuning-outs of experience. Birth is the first tuning in; death may not be the last.

### 526.30 **Systematic Communication of Space**

526.31 Space is the invisible complementation of the cognitive system. Like the rubber glove, cognition is left hand; space is inside-out right hand, and vice versa.

526.32 Space is the unconsidered complement of the conceptually considered episode and its only neighboringly overlapped episodes of Scenario Universe. Space is the untuned-in complement of considerability and conceptuality.

tuned & untuned  
in & out

526.33 Special case is always tune-in-able. Special case is imaginable by brain. Conceptuality is a function of mind. Conceptuality is a priori independent of special case frequency tunability. Conceptuality is generalized, and the space complementation of generalized conceptuality is generalized. Space is generalization. Death is the omnidirectional otherness of as-yet physically realized Scenario Universe. Death is the as- yet unborn set of all the unconsidered special cases of all the as-yet undiscovered—ergo, as-yet-unconsidered—generalized principles.



526.34 Conceptuality and its complementary space generalizations do not account or embrace the a priori mystery, the integrity of eternally regenerative Scenario Universe. All the inherent, concentric, systemic conceptuality, its internal spatial intervals, and its external spatial embracement are altogether both subordinate and supraordinate to the nonconsiderability of such a priori mystery as . . . How come Universe?

526.35 Systems divide all of Universe. Thought divides all of Universe. Thought is inherently systemic—whose inherency always has its oherency of space. Only systems can communicate space. Space is systems-defined-and-deferred awareness of potentially tunable otherness.

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[Next Section: 527.00](#)

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## 527.00 Dimension

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527.01 There is no dimension without time.

527.02 Dimension is experiential; it is of time; ergo, must be physical; ergo, must be energetic. Vector and tensor matrixes embrace all the elementary data governing the size dimensioning of the frequency and angle interactions in respect to an axis of reference and a cyclic norm.

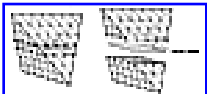
527.03 Dimensions may be expressed only in magnitudes of time, energy, frequency concentrations, and angular modulations. What we call "length" is a "duration" of experience and is always measured in time.

527.04 The energetic juxtaposition of compression (radiation) and tension (gravity) provides dimension—the basis of "self" awareness or "other" awareness—of awareness of life itself.

527.05 Dimension may be universally and infinitely altered without altering the symmetrical relationship of the whole system.

527.06 All dimensions are simultaneously considerable.

527.07 All dimensions are definitively and intercoordinatably manifest in the isotropic vector matrix. (See Sec. [960](#).)



[Fig. 527.08](#)

527.08 **Convergence and Divergence:** We do not arrive at dimensionality by virtue of perpendicular or parallel assembly. Dimensionality in synergetics provides for assembly only by convergence and divergence. This accounts for the spontaneous and continued frustration of conventional mathematical accounting when confronted with the problem of assembling a nonpolarized, omnisymmetrical object by joining two identical halves of the multifrequenced, closest-sphere-packed tetrahedra, each of which has five similar facets—two of which are equiangled triangles, two of which are trapezoids, and the fifth is a nonequiedged parallelogram. Matching of any of these facets produces asymmetrical, polarized objects. One of the nonequiedged parallelograms must be precessionally rotated to cross the other at 90 degrees, where it will be seen that the converging-diverging patterns of the two halves are symmetrically realized. (See Secs. [260.50](#) and [417](#) and Fig. [527.08](#))

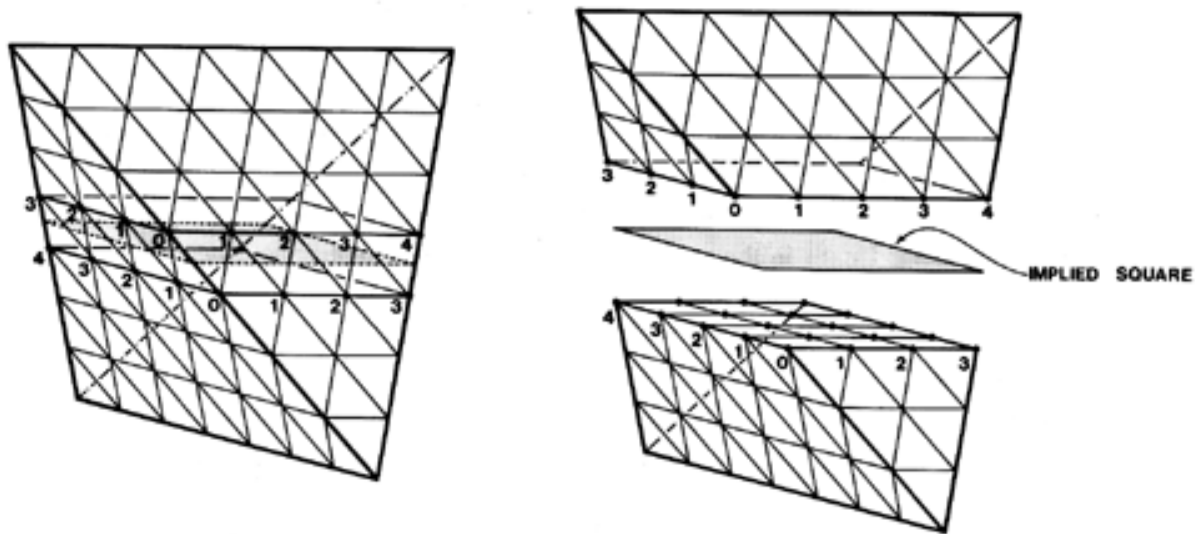


Fig. 527.08 Assembly by Convergence and Divergence: A regular tetrahedron may be divided into two identical halves by an implied square section. The two halves may be separated and reassembled by precessional rotation. This is an illustration of rotational symmetry. (See Fig. [417.01](#) and Loeb Contribution L.) For other examples of the evolution of "Chef's Cap" polyhedra, see Figs. [100.103](#) and [987.23B](#).



[Fig. 527.09](#)

**527.09 Series vs Parallel Circuitry:** The difference between gravitation and radiation is analogous to the difference between parallel wiring and series wiring in electricity. Series wiring is like the wire-strung lights on an old-fashioned Christmas tree: If one light goes out, the whole string goes out. In parallel wiring, when one light goes out, the other lights remain operative. This is a demonstration of integration and disintegration. *Series* wiring is a disintegrative system, an open system. *Parallel* wiring is an integrative system, a closed system. It is not the "parallelism" that matters but the fact that the circuit is closed. The word *parallel* came into use only because of the diagram first used to demonstrate the principle as well as the fact that the closed-circuit wire is conveniently doubled back upon itself and bound into one "lead" for house-wiring purposes. The fact that the vectors are drawn in parallel is only a convenience for the construction industry. The same-length vectors-ergo, the same energy magnitude involvement-used correctly, can provide either function. Here we have the convergent integration and divergent disintegration language of synergetics identified in the language of electricity. (See Secs. [260.20](#), [541.05](#), [647](#), Fig [527.09](#), and Loeb Contribution, N.)

### 527.10 Three Unique Dimensional Abundances

527.11 Polar points, nonpolar points, areas, and lines have uniquely different cosmic abundances. In addition to every system's two polar points, there are three uniquely coexistent topological characteristics. For every one nonpolar point there are always two areas and three lines, and there are always an even number of each:

× 1                      × 2                      × 3

Nonpolar points -- Areas -- Lines

### 527.20 Nonpolar Points

527.21 Polar points are two dimensional: plus and minus, opposites.

527.22 Nonpolar points, or localities, are four-dimensional—there is the inside-out (i.e., concave and convex) dimension and three symmetrically interacting, great-circle- ways-around—producing spherical octation, with eight tetrahedra having three internal (central) angles and three external spherical surface triangles' angles each.

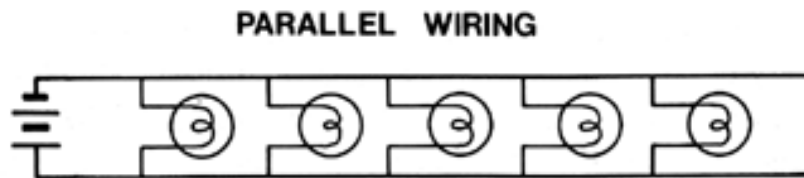
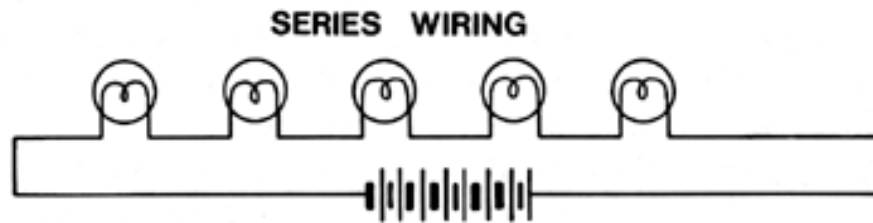


Fig. 527.09 Convergent Integration and Divergent Disintegration in the Language of Electricity: "Series" wiring is disintegrative, an open system. "Parallel" wiring is integrative, a closed system.

527.23 The spherical octahedron's three inside-out, symmetrically unique diameters and the three unique external chords produce two unique sets of three nonparallel lines each, but with one set coordinating at 60 degrees and the other set coordinating at 90 degrees.

527.24 The nonpolar points are not fixable or structurally stabilized until occurring at the crossings of a three-way-great-circled-triangular-spherical-surface grid, generated symmetrically in respect to the polar axis of the system.

527.25 **Nonpolar Points:** All systems have poles—ergo, spin axes—ergo, they are polarizably identifiable. Nonpolarized simply means that the spin axis is unrecognized under the conditions considered. There is no such thing as a nonpolarized point, because if you tuned in the subvisible system—appearing only as a directionally positioned microsomething-to visible comprehension, you would find that as a system it has poles and that it has a potential of seven alternately employable poles (see Sec. [1040](#)). So we may call a "point" a focal center—i.e., a "noise" with a direction—but it is inherently an as-yet undistinguished system, with all of the latter's characteristics (see Sec. [264.01](#)).

527.26 There is inherent polarity in all observation, which always introduces the additive twoness:

Nonpolarized = unrecognized

Focal event = infratunable system

527.30 **Areas**

527.31 The octahedron's planar system is four-dimensionally referenced, being parallel to the four symmetrically interacting planes of the tetrahedron, vector equilibrium, and isotropic vector matrix. *Planar* and *nonpolar-vertex four-dimensionality* accommodates and imposes the four positive, four negative, and neutral (nineness) of the operational interwave behavior of number.

527.40 **Lines**

527.41 *Linear*, as manifest in the tetrahedron, the simplest structural system of Universe, is six-dimensional, providing for the six degrees of universal freedom and the operational six-wave phenomenon of number.

527.50 **Fiveness: Five-Dimensionality**

527.51 We know that the sphere points on the outer shell of the vector equilibrium and the icosahedron (between which states the pulsative propagation of electromagnetic waves oscillates) isolate the icosahedron and the vector equilibrium, but the number of points remains the same:  $10F^2 + 2$ .

527.52  $10F^2$ —which *ten*, being divisible by the concave-convex twoness, brings in the prime number *five* to the hierarchy of low-order prime numbers characterizing synergetics. The polar twoness is the additive twoness. The twoness in the ten is the basic multiplicative twoness; it is the concave-convex unity-is-twoness inherent in the nuclear sphere and in the number of outer spheres in the vector-equilibrium-icosahedron's regenerative system, which always equates as  $10F^2 + 2$ .

527.53 The fundamental fiveness is introduced with the *initial* (frequency is  $1/2$ , i.e., in equilibrium, that is, poised between  $1/2$  positive and  $1/2$  negative) vector equilibrium interiorly defining the nuclear sphere where the vector equilibrium's volume = 2.5 (i.e., 2) and the two-frequency's eightfold volumetric increase is 20.

527.54 Five-dimensionality is realized by the pulsation of the positive-negative VE—Icosa—VE—as 2.5—five. (Where VE stands for vector equilibrium and Icosa stands for icosahedron. Compare the interaction of the 31 great circles of the icosahedron and the 25 great circles of the vector equilibrium. See Sec. [1042](#).)

#### 527.60 **Dimensionality and Constant Relative Abundance**

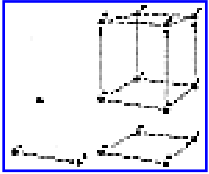
527.61 The rhombic dodecahedron six is entirely outside, but twelvefoldedly tangential to, the initial sphere. The cube, part inside and part outside the sphere, is three. The octahedron, mostly outside but partly inside the nuclear sphere, is four. Vector equilibrium is 2.5 and is entirely inside the sphere, with its 12 external vertexes congruent with the surface of the nuclear sphere at the same 12 points of tangency inside the sphere as the 12 points of the same initial sphere at which the rhombic dodecahedron is externally tangential; and the initial vector equilibrium's central vertexes are congruent with the volumetric center of the initial, i.e., nuclear sphere.

527.62 It was our synergetics' discovery and strategy of taking the two poles out of Euler's formula that permitted disclosure of the omnirational, constant relative abundance of Vs, Fs, and Es, and the disclosure of the initial additive twoness and multiplicative twoness, whereby the unique prime-number relationships of the prime hierarchy of omnisymmetric polyhedra occurred, showing tetra= 1; octa=2; cube=3; VE or Icosa=5.

## 527.70 Primitive Dimensionality

527.701 In synergetics *primitive* means systemic conceptuality independent of size. (Compare Sec. [1033.60](#).)

527.702 Geometers and "schooled" people speak of length, breadth, and height as constituting a hierarchy of three independent dimensional states—"one-dimensional," "two-dimensional," and "three-dimensional"—which can be conjoined like building blocks. But length, breadth, and height simply do not exist independently of one another nor independently of all the inherent characteristics of all systems and of all systems' inherent complex of interrelationships with Scenario Universe.



[Fig. 527.703](#)

527.703 The educational authorities in the art and science of "plane" and "solid" geometry disregard the *environmental otherness*: They assume an infinitely extendible imaginary plane upon which they mark apart two infradimensional imaginary points A and B between which they can draw an imaginary shortest straight line whose "length" AB constitutes their academic mathematicians' first-dimensional state. They then mark apart on the same infinite imaginary plane third and fourth points C and D, which are then linearly interconnected by another "straight" line CD in the same imaginary plane with, parallel to, and at an AB distance from, line AB, with a third line CA drawn in the same plane perpendicular to line AB at A, and a fourth line DB in the same imaginary plane drawn perpendicular to line AB at B, whereby either of the lines CA or DB constitutes the "breadth," which is the educators' second-dimensional state. They then erect four AB—long lines perpendicular to the first imaginary plane at points A', B', C' and D', respectively. They then draw the imaginary straight lines A'B', B'C', C'D', and D'A'. With all this so-called construction—which would collapse in the presence of gravitational reality—they have now attained their third-dimensional state of "height" above their two-dimensional square plane base. This assumedly produces three-dimensional reality, which by virtue of their constructional strategy suggests to them that reality is only cubically measurable or comprehensible.

527.704 There is also trouble with the word *fundamental*. It means foundational when there are no foundations . . . no two-dimensional planar base. The Earth and other objects are co-orbiting the Sun at 60,000 miles per hour and are gravitationally tethered to one another. The word *foundation* implies an impossible standing-still-somewhere in Universe . . . on a solid and square or planar base.



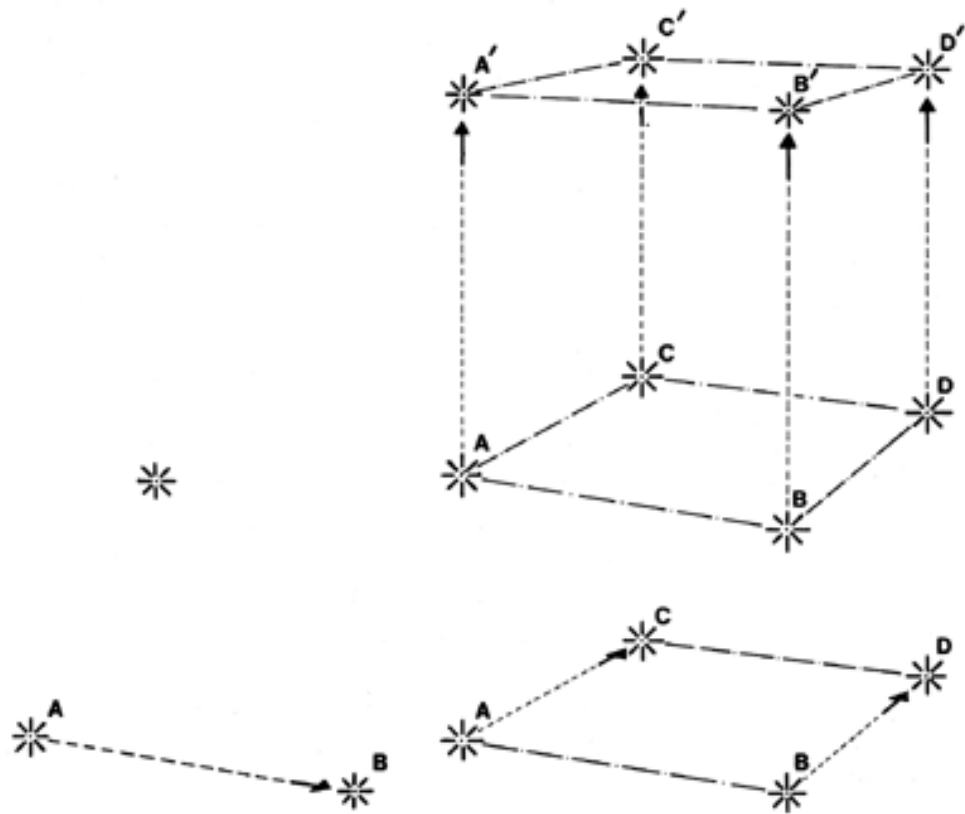


Fig 527.703 Imaginary Three Dimensionality: Parallel and perpendicular construction strategies of "plane" and "solid" geometry assume that reality can be measured only in cubes.

527.705 We may use the word *primitive* only to describe the initial selfstarting conditions of awareness and think-about-ability of the minimum essential components of any evolutionary system's divergent or convergent considerability. Thus the primitive conceptual angle as one myopically viewed corner of the 12 corners of the minimum system has greater meaning than the expression *fundamental particle* employed by the high-frequency research physicists. The statements of this paragraph are strictly within the concerns of epistemography.

527.706 Infinity is only a consequence of subdividing finity. Because synergetics has conceptuality independent of size, it permits—indeed, requires—systemic conceptuality before the subdividing commences. There is no a priori size. There is no experimentally demonstrable systemic one-dimensional line extending to infinity. Size commences only with subdivision, with frequency. Subdivision may be considered as potentially limitless, provided infinite time. But time is always a special case limited characteristic of special case time-size systems. Time is not generalizable. Generalized principles are all eternal. Eternal is not a whole lot of time. Eternal is independent of and devoid of time. Infinity is micro rather than macro—hence the difficulty of research physicists in their search for the one last "building block" or fundamental particle.

527.707 The minimum family of inherent systemic omnicosmic interrelationships is inherently primitive and eternal. Primitive dimensionality is expressible only in terms of the interproportionality of the components of whole minimum systems—ergo, in priefrequency primitive tetravolume proportionality and the latter's primitive topological characteristics. There can be no partial systems. Systems can be divided multiply only into whole systems.

527.708 There is a cosmic hierarchy of primitively symmetric systemic states of intertransformability or interassociabilities of prime polyhedra. (See Sec. [982.62](#).)

### 527.71 **Substance Is Systemic**

527.711 People think of a point as the most primitive thing with which to initiate geometrical conceptioning. A point is a microevent of minutiae too meager, they say, to be dignified with dimensionality: Ergo, they assume a point to be only an "imaginary fix." But speaking in the experiential language of science, whatever is optically point-to-able is a substance, and every substance has insideness and outsideness—ergo, is systemic: Ergo, all point-to-ables can never be less than the minimum system: the tetrahedron. Points always amplify optically to be identifiable as systemic polyhedra.

527.712 All conceptual consideration is inherently four-dimensional. Thus the primitive is a priori four-dimensional, being always comprised of the four planes of reference of the tetrahedron. There can never be any less than four primitive dimensions. Any one of the stars or point-to-able "points" is a system-ultratunable, tunable, or infratunable but inherently four-dimensional.

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## 528.00 **Size**

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528.01 Conceptuality operates independent of size. Whether referring to the size of an object in respect to other objects or the sizes of any one object's subdivisions, size emerges exclusively as a cyclic-frequency concept, uniquely differentiating out each special-case experience.

528.02 Size is a measure of three kinds of energetic experience: a measure of relative magnitude of separate linear, areal, and volumetric rates of change, and each one has a differently rated change velocity. Size and size alone can come to zero.

528.03 Size and time are synonymous. Frequency and size are the same phenomenon.

528.04 Size is the concept of one experience's relationship to another experience defined in terms of cyclic repetition of any one experimentally demonstrable, self-terminating, or single-cycle experience. A triangle or a tetrahedron or a sphere is a triangle or a tetrahedron or a sphere conceptually independent of size. An angle is an angle independent of the length of its edges. All of Plato's solids may have the same length edges because their differences are entirely angular. An angle is inherently a subdivision of a single cycle. Therefore, an angle is subsize.

528.05 Size begins with one specific cycle's completion. As the linear size of an object is doubled, surface is fourfolded and volume is eightfolded; ergo, areas increase at a velocity of the second power, and volumes increase at a velocity of the third power. Ergo, size-variation relationships are deceptive and not superficially predictable by any one experience.

528.06 Size and intensity are relative sensorial comparing functions of the special- case experience by brain, not by mind. Mind is concerned only with principles that hold true independent of size yet govern all relative size relationships.

## 529.00 **Time**

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529.01 Time is experience. Time can be *expressed* only in relative magnitude ratios of relevant experiences. Time can be *defined* only in terms of the relative frequency of reoccurrence of relative angular changes of the observer's environment, the relative frequency-of-occurrence rate being referenced to any constantly recycling behavior of any chosen subsystem of Universe.<sup>3</sup> All experiential realizations are conceptually definable in degrees of angulation change and in relative frequency-of-occurrence rates in respect to the observer's optionally chosen axis of conceptuality and to his specifically identified time-recycling rate.

(Footnote 3: E.g., a clock.)

529.02 Distance is measured in time. Time increments are calculated in respect to a variety of cyclic regularities manifest in our environmental experiences. Experimentally demonstrable cyclic regularities, such as the frequencies of the reoccurrence of radiation emissions of various atomic isotopes, become the fundamental time-increment references of relative size measurement of elemental phenomena.

529.03 Newton said that time was a very specific phenomenon, assuming that there was a specific and finite time that permeated Universe and that everything observable in Universe was occurring at the same time. It was Einstein who discerned that time might be relative to the individual observer. A majority of academic people and the vast majority of nonscientists are still thinking in terms of the classical Newtonian scientific conceptioning of "instant Universe." While light's speed of approximately 700 million miles per hour is very fast in relation to automobiles, it is very slow in relation to the "no time at all" of society's obsolete instant-Universe thinking. It was part of the classical scientist's concept of instant Universe that Universe is a system in which all parts affect one another *simultaneously* in varying degrees. Contemporary science as yet assumes that all local systems in physical Universe are instantly and simultaneously affecting one another in widely ranging degrees of influence. (And the degrees of influence are governed by relative proximity.) Whereas radiation, i.e., entropy, casts shadows and gravity, syntropy, does not; and whereas the tensional integrity of Universe and all its substructurings is continuous and omniembracing—while compression is islanded and discontinuous—it may also be that while light and radiation has a velocity, gravity is timeless and eternally instant. (See Secs. [231.01](#), [251.05](#), [541](#) and [1052](#).)

529.04 All the time phenomena of the physicists are expressed in linear data coordinates, but all cyclic actions are spirals because there are no straight lines and also because lines cannot "go through" or "return into" themselves. There can be no experientially demonstrable circles as continuous lines "returning into" themselves. Lines cannot return into themselves. Therefore matter is a cyclic self-interfering *knotting*; whereas radiation's waves are non-self-interfering *spirals*.

matter		knots
-----	=	-----
radiation		coils

Which reads: matter is to radiation as knots of rope are to coils of rope. Because there are no planes, a wave is a spiral. A spiral articulated in a direction perpendicular to our observation presents an illusory, wavelinear, planar profile.

529.05 Generalized principles are often called constants by the semantics of scientific specialization, whose viewpoint is myopic. Constancy is a time concept. Time is relative and cyclically terminal. Time is energetic, physical, and ever finitely evolving—which is the opposite of "constant."

529.06 Minimal consciousness evokes a nonsimultaneous sequence, ergo *time*. Time is not the fourth dimension and should not be so identified. Time is only a relative observation, a set of local sequences of experience afterimage formulation lags of the brain. Time is not a function of space. We can discuss time as if there were no time. It exists in weightless, metaphysical conceptuality. There is a metaphysical timeless time, just as there is a difference between physical tetrahedron and metaphysically conceptual but weightless, substanceless tetrahedron. Instantaneity would eliminate otherness, time, and self-and-other-awareness. Instantaneity and eternity are both timeless: they are the same.

529.07 The concept of being alive may be inherent only in the eternal principle of differentiability, and of a theoretical number system, and of complexes of different numbers. Seeming consciousness and life may well be inherent only in mind-conceivable theories of differentiations. To perceive of "truth" involves the concept of "nontruth," ergo, of differentiation. An intellectual integrity of Universe evokes its own theoretical evolvement of a Universe of ever-multiplying problems and pure-principles solutions and regeneration of multiplying problem-solving. (See Secs. [217.03](#) and [1005.50](#).)

529.08 The measuring act always involves time increments of our totally available time of life and may be conceived of only in respect to local events in nonsimultaneous Universe, there being no overall *largest* size to be referred to. Einstein was able to show that every individual's every-time employed yardstick of time (that is, the cyclic increment of imaginary reference) is always unique and different from every other's, a difference that amplifies greatly as we enter into astronomical observing by individual instruments, whose progressively designed reduction of tolerated error is always unique and only calculable relative to each experience.

529.09 It is a consequence of the phenomenon time and a consequence of the phenomena we call afterimage, or thinking, or reconsideration, which has inherent lags in the time rates of recallability of the various special-cases and types of experiences. So the very consequence of awareness is to impose the phenomenon time upon eternal, timeless Universe.

529.10 It is one of the strange facts of experience that when we try to think into the future, our thoughts jump backward. It may well be that nature has some fundamental metaphysical law by which opening up what we call the future also opens up the past in equal degree. The metaphysical law corresponds to the physical law of engineering that "every action has an equal and opposite reaction." (See Sec. [1031.16](#).)

529.11 The future is not linear. Time is wavelinear. Experience is expansive, omnidirectionally including and refining the future. It probably consists of omnidirectional wave propagations. We seem to be talking about a greater range of known cycling. It is both a subjective "now" and an objective "now"; a forward-looking now and a backward-looking now which combine synergetically as one complete "now." Because every action has both a reaction and a resultant, every now must have both a fading past and a dawning future.

#### 529.20 **No-Time-at-All**

529.201 Intellect is top speed, which is instantaneous, being vastly faster than the speed of light and all radiation. Radiation's 700 million miles an hour is very slow in comparison to 700 million miles a minute and infinitely slower than 700 million miles in no-time-at-all—which is the rate at which intellect operates, being able to jump instantly to consideration of stars that are operating millions of years ago and thousands of light- years away.

529.21 The top speed of radiation is simply the minimum operational lag before making the cosmic leap to the eternal no-speed, where the instantaneity spontaneous to a child's conceptioning is normal and eternal. Not that it is ever lost. None of the differentiation of the generalized principles is lost. Many principles as yet undiscovered are nonetheless operative. Understanding is exquisitely total. Understanding includes a large increment of intuition to account for the as-yet-undiscovered but nonetheless operative generalized principles. (See Sec. [1056.03](#).)

529.22 Motion is not relative to *standing still*. Motion is relative to eternity, which is no-time-at-all. No-time-at-all is inherent in the generalized principles which, to be valid, must have no exceptions and be eternal, thus eternally true. The beginning of awareness, of intellect, is otherness. The whole complex of different and nonintercontradictory, all- interaccommodative, generalized principles is eternal. Complexity is eternal. The principle of mass interattraction of complex otherness is eternal and relates all the eternal complexity to our eternal system interfunctionings.

529.23 Newton's norm, as disclosed in his first phrase of his first law of motion, was "at rest." Newton's stars were "fixed." The planets and the moons of the planets, as well as comets, were in motion because hurled into motion by explosion from "fixed" stars.

529.24 Einstein's philosophy did not hold the speed of radiation unfettered in vacuo to be "very fast." It assumed this speed to be normal, and all other lesser speeds manifest in physical Universe to be occasioned by local interferences, shunting independent phenomena into local circuit repatternings.

### 529.30 **Eternal Instantaneity**

529.301 We have a new norm. The phenomenon lag is simply due to the limited mechanism of the brain; we have to wait for the afterimage to be realized.



529.31 The norm of Einstein is absolute speed instead of "at rest" . . . what we called instantaneous in our innocence of yesterday. We get to lesser and lesser lags, and we then approach eternal instantaneity—no lag at all. We have now learned, however, from our generalizations of the great complexity of the interactions of principles, that as we are disembarassed of our local exclusively physical chemistry, our local information- sensing devices, what will be realized is an eternal and instantaneous awareness of all the potentials that ever existed. All the great metaphysical integrity of the individual, which is potential in the complex of interactions of the generalized principles, will always and only coexist eternally. I am saying that the arrival rate of intellect vs. the top-speed of radiation manifests the minimum lag short of no lag at all, i.e., "eternal."

529.32 Intuition derives from the approximate instantaneity of intellect, which is much faster than any physical phenomenon like the brain lags. Intuition is the absolute- velocity insistence of the intellect upon the laggingly reflexed brain to call its attention to significance of various special-case, brain-registered, experience relationships. Intuition is intellect coming instantly in at highest speed into dominance over lower-speed, lagging brain reflexing.

529.33 Eternity is simply highest speeds: not "at rest," because it gets there in no-time-at-all: Complete intellection + Otherness + No-time-at-all.

529.34 Differentiation of functions is inherently eternal and implicit to the plurality of generalized principles, which are everywhere nonredundant, redundancy being a temporal consequence of brain-lagged dullness of comprehension and ignorance.

#### 529.40 **Now Hourglass**

The macro-microcosm of minimum frequency of omnidirectional self-interference restraints, whose greatest degrees of outward expansion occur when the last of the least-frequent, self-interfering cycles is completed (and cycles, being geodesic great circles, must always interfere with one another twice in each wave-and-frequency cycle, which twiceness imposes eternally regenerative cosmic resonance with inherent quanta-, wave-, frequency-, time, interference-, mass-, and effort-aspects), in exquisite speed-of-light, 700-million-miles-per-hour, self-interfering radiation patterns energetically self-tying into concentric knots of relative mass in a mathematically idealized variety of

symmetrical-asymmetrical atomic  
assemblages, whose local sub-  
visibly resolvable micro-  
orbiting induces the su-  
perficially deceptive,  
motionless thingness  
of mini-micro-  
microcosm of  
NOW  
which progres-  
sive, experience-  
won, knowledge mul-  
tiplies by progressive, intel-  
lectually contrived, instrumen-  
tally implemented, exploratory subdi-  
viding into microscopically ever-greater  
speeds of transformation through insect-phase  
magnitudes dividing into the micro-organisms  
phase, and then dividing progressively into molecular  
and atomic phases; then phasing into radioactivity at 700-  
million-miles-per-hour, expanding once more into the micro-  
eternity of no-time into the macrocosm and repeat, ad infinitum....

### 530.00 **Nonsimultaneity**

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530.01 Thought discovers that we divide Universe into an "outwardness and inwardness," so thinking is the first subdivision of Universe, because Universe, we discovered, was finite. Thinking is a nonsimultaneously recallable aggregate of inherently finite experiences and finite experience furniture—such as photons of light. One of the most important observations about our thought is the discovery that experiences are nonsimultaneous. Nonsimultaneity is a fundamental characteristic, and if experiences are nonsimultaneous, you cannot have simultaneous reconsideration.

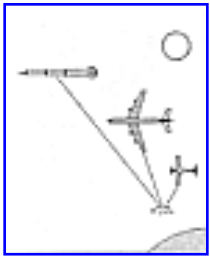
530.02 All the words of all the vocabularies could be said to represent all the formalized attempts of men to communicate all their experiences. So we could set out to examine all the dictionaries of the world. We can pick up any one dictionary and discover that it is a nice finite package. We can open one page, but we cannot look at all the words at once. If we cannot look at all the words even on one page, we certainly cannot look at all the words of a whole dictionary at once. It does not make the dictionary infinite because we cannot look at all the words at once or think about all the words at once. The inability to think about everything at once does not mean that experience or consideration of experience is infinite. It is perplexing that one of the most persistent contemplations of human beings has been predicated on a static concept of Universe, the kind of Universe that went out with classical Newtonian mechanics. We cannot think of Universe as a fixed, static picture, which we try to do when people ask where the outwardness of Universe ends. Humans try to get a finite unit package. We have a monological propensity for the *thing*, the *key*, the *building block* of Universe. What we discover here is that it is not possible to think about all Universe at once. It is nonsimultaneously conceptual. This in no way mitigates against its finiteness and thinkableness.

530.03 The parents tell the child he cannot have both the Sun and the Moon in the picture at the same time. The child says that you can. The child has the ability to coordinate nonsimultaneity. The parents have lost the ability to coordinate nonsimultaneity. One of our great limitations is our tendency to look only at the static picture, the one confrontation. We want one-picture answers; we want key pictures. But we are now discovering that they are not available.

530.04 We can think about all the experiences progressively and successively. And we can coordinate our thoughts about our experiences. Our very ability to think is such a propensity for the coordination of the reconsiderations of relationships. We do not have to be simultaneous to be interconnected. We can telephone across the international date line from Sunday back to Saturday.

530.05 We have had a tendency in our thinking to say that what is finite is statically conceptual as a one-unit glimpse, so we have been seemingly frustrated in trying to understand Universe, which is an omnidirectional experience, and so we feel there ought to be an outwardness of this sphere. That is a static concept. We are not dealing with such a sphere at all, because we have all these nonsimultaneous reports, and all we have is the interconnectedness of the nonsimultaneity. One of Einstein's most intellectual discoveries was this nonsimultaneity, which he apparently could have come upon by virtue of his experience in examining the thoughts of inventors and their patent claims regarding timekeeping devices, watches, and clocks.

530.06 The speed-of-light measurements plus Planck's quantum mechanics and Einstein's relativity showed that Universe is an aggregate of nonsimultaneous events. Their experiments showed that as each of the nonsimultaneous events lost their energy, they lost it to newly occurring events. Thus energy always became 100 percent accounted for.



[Fig. 530.07](#)

530.07 All Universe is in continual transformation. The geology of our Spaceship Earth makes it very clear how very severe have been the great transformations of history. The movement of topsoils around the surface of the Earth is very new, geologically speaking. As Einstein interpreted the speed-of-light information and the observation of the Brownian movement of the constant motion in water, he then posited a Universe in which we knew that light takes eight minutes to get to us from Sun and two and a half years to get to us from the nearest star; astronomical information shows that some of the stars we are looking at are live shows coming in from 100 years ago, others from 1,000 years ago, while the light from some of the stars we are looking at started on its way over a million years ago. With that kind of information, Einstein had to say physical Universe is quite obviously an aggregate of nonsimultaneous and only partially overlapping transformation events.

530.10 **Nonsimultaneity of Scenario Universe**

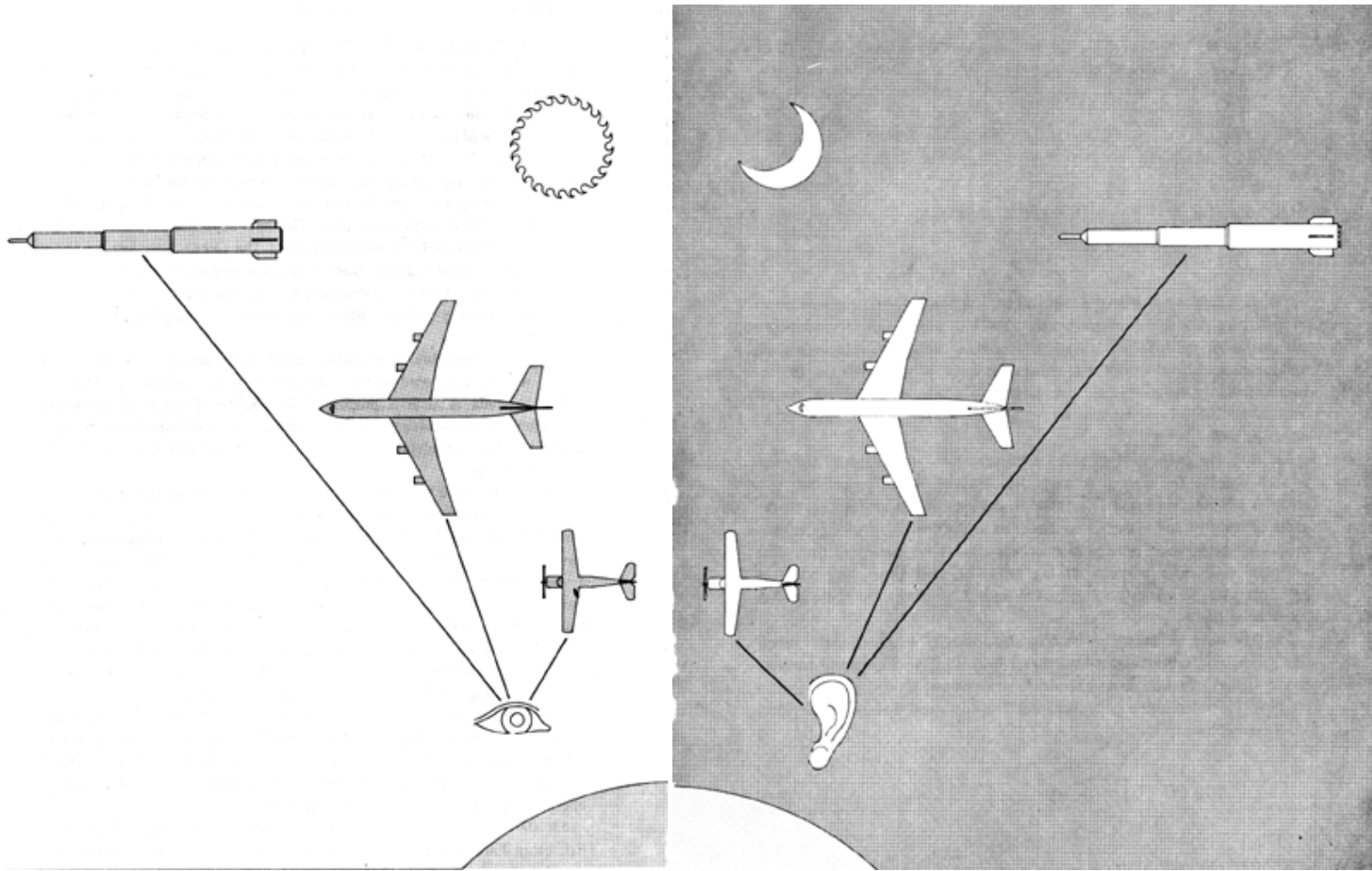


Fig. 530.07 Simultaneous and Instant Are Nondemonstrable: Simultaneous and instant cannot be experimentally demonstrated.

530.11 Any point can tune in any other point in Universe (Sec. [960.08](#)). Between any two points in Universe there is a tetrahedral connection (see Sec. [961.30](#)). Thus systematic connection of two points results in the interconnecting of four points. But none of the four event points of the tetrahedron are simultaneous. They are all overlappingly co-occurrent, each with different beginnings and endings. All of the atoms are independently introduced and terminated; many are in gear—that is, synchronously tuned—but many are also way out of gear, untuned, or "noisy."

530.12 Nouns can co-occur at the same time, but verbs cannot. Events can never be omnicongruently simultaneous, which would mean having all the component four events' beginnings and endings always simultaneous. Events occur. Occur is a time word. The overlappingness of Scenario Universe (see Sec. [320](#)) makes events appear simultaneous when they are not. Events are only overlappingly co-occurrent but never omnisimultaneous.

530.13 All the four unique electromagnetic frequencies of the 92 chemical elements are uniquely different, yet many are intersynchronizable in overlapping occurring alloys, whose unique sets of interattractive interrelationships produce the synergetically unique behaviors of those specific alloys.

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## 531.00 Life

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531.01 Life is the eternal present in the temporal. Life is the *now* event with reaction *past* and resultant *future*. Each individual life is a special-case articulation of the infinite variety of "scenarios" to be realized within the multidegrees of freedom and vast range of frequencies of actions that are accommodated by the generalized laws governing Universe. With death, the individual probably loses nothing but gains the insight and knowledge of all others as well.

531.02 The average of all plus (+) and minus (-) weights of Universe is zero weight. The normal is weightless, eternal. What we call life is a complex of multidimensional oscillations and palpitations among various degrees of positive and negative asymmetries, whose multivariant lags in conceptioning bring about what *seems* to be temporal substance and time. The complex *woof* of a plurality of lag rates—of afterimages and recalls—produces pure, weightless, metaphysical images, produces the awareness we speak of as life.

531.03 Lags are intervals—nothing. Instantaneity would eliminate otherness, time, and self-and-other-awareness. Instantaneity and eternity are both timeless: they are the same. Eternity contains time; time does not contain eternity. The relationship is irreversible. The contained time of eternity provides eternal awareness.

531.04 Organisms: Atoms are inanimate systems. Physically we consist entirely of atoms. When we die, all the atoms are there. Whatever life was, it was not the inanimate atom systems that persist after death. At the virus level of professional concern the scientists say you can identify all the physical substances present as inanimate crystals. Biological science initiated the investigations that successively discovered cells, genes, chromosomes, and other biological design controls. Needing to check their design control theories, they employed the swift succession of generations of the fruit fly and then discovered the even swifter succession of the generations of the tobacco mosaic virus. This brought the scientists into a very new realm of virology where they found nuclear physicists, biologists, and chemists all involved. Though the virologists have discovered DNA-RNA bioprogramming controls, they have found only inanimate atomic constituents. Because their whole series of events started with biology, they have as yet—unthinkingly and mistakenly—retained the "animate" relationship. Biology began with the whole seemingly living organisms consisting of protoplasm and

viruses, but they misidentified the viral substances as physically "animate," when life is not physical. The error lies in the fact that humanity long ago misassumed that the organism employed by life is the life itself instead of merely the vehicle—as if the telephone was the communication itself instead of merely the instrument.

531.05 The now overspecialized scientists seem to have forsaken epistemological significances; they seem to have lost their gift for philosophical thinking. So the focus on the animate aspect of physical things has been continued by the church. Many religious organizations establish their power by maintaining that life is the physical apparatus it employs and by basing their ideals on "living" physical images. If life were the physical, we really could make synthetic men, laboratory animals, and artificial intelligence; we never will. We can make brainy robots, but we cannot make thinking, loving life.

531.06 Science is arriving at a phase of required new comprehension in which we will be discovering that all of the physical cases experimentally discovered are only special cases of the generalized principles of generalized systems—i.e., the vector equilibrium.

#### 531.10 **Life and Death**

531.11 Life's employed apparatus is microconstituted by the unique frequency identifications of the chemical elements and their compounded atoms, as well as the humanly tune-in-able "color" frequencies of the comprehensive electromagnetic spectrum's concentrically interpositioned occurrences—usually published in a chart of positions along any one radius of the comprehensive concentric system. Death's reality is constituted by all the vector equilibrium null intervals between and beyond—inwardly and outwardly—the comprehensive electromagnetic frequencies. (See Secs. [262.10](#) and [526.25](#))

### 532.00 **Symmetry**

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#### 532.01 **Definition**



532.02 It has been customarily said by the public journals, assumedly bespeaking public opinion, that "the scientists wrest order out of chaos." But the scientists who have made the great discoveries have been trying their best to tell the public that, as scientists, they have never found chaos to be anything other than the superficial confusion of innately a priori human ignorance at birth—an ignorance that is often burdened by the biases of others to remain gropingly unenlightened throughout its life. What the scientists have always found by physical experiment was an a priori orderliness of nature, or Universe always operating at an elegance level that made the discovering scientists' own working hypotheses seem crude by comparison. The discovered reality made the scientists' exploratory work seem relatively disorderly.

### 532.10 **Oscillation of Symmetry and Asymmetry**

532.11 We may say that nature proceeds from the obviously orderly and symmetrical to the nonobviously (but always) orderly transformation phases known as asymmetries, which, having gone through their maximum or peak positive-phase asymmetry, only *seem* (to the uninformed brain) to be disorderly; they always return transformatively thereafter through an orderly progression of decreasing asymmetry to a fleeting passing through the condition of *obvious* symmetry or equilibrium popularly recognized as "order," thereafter deviating asymmetrically to the negative phase of balancing limits of oscillation.

532.12 This transformative progression in dynamically and oscillatively produced orderliness is dealt with incisively by the calculus and is the fundamental pulsating principle governing omnidirectional electromagnetic-wave propagation.

532.13 There is no true "noise" or "static." There are only as yet undifferentiated and uncomprehended frequency and magnitude orders. Chaos and ignorance are both conditions of the brain's only-sense-harvested and stored information as yet unenlightenedly reviewed and comprehendingly processed by the order-seeking and - finding mind.

532.14 Asymmetry is the reason that Heisenberg's measurement is always indeterminate. Asymmetry is physical. Symmetry is metaphysical.

532.15 All most-economic-pattern systems, asymmetric as well as symmetric, are resolvable into symmetric components in synergetic accounting.

532.16 Our seeability is so inherently local that we rarely see anything but the asymmetries. Sociologists have trouble because they are o'erwhelmed by the high frequency of asymmetries (rather than the only synergetically discoverable principles).

532.17 Oscillation of Symmetry and Asymmetry: Symmetry is only generalized. In cosmic-event averaging symmetry is ever implicit in the preponderantly-almost-symmetrical, spontaneous symmetry-referenceability of all asymmetry. Symmetry is systemic. Symmetry has nothing to do with the scenario series; it has nothing to do with local, special case realizations. You can find balances in series—positive and negative energies—but absolute symmetry is characteristic only of generalized systems. (See Secs. [223.05](#) and [260.33](#).)

532.18 Crystallography is always special-case and is always confronted with near-symmetric asymmetry; ergo, crystallography must recognize and reference its special case aspects to generalized symmetry. Generalized symmetric conceptuality is only manifest as the vector equilibrium and its involvement domain. The regular—regular means absolutely uniangular—tetrahedron is absolute and generalized, thus never physically realized. All physical reality is special case. This is why Universe has a capital U.

### 532.20 **Dynamic Symmetry**

532.21 Within every equilateral triangle, we can inscribe a three-bladed propeller, its tips protruded into the three corners. The propeller blades are approximately pear-shaped, and each of the blades is the same shape as the others. The pear-shaped propeller blade is locally asymmetrical. We call this revolvable omnibalanced asymmetry *dynamic symmetry*.

532.22 We then have three pear-shaped blades at 120 symmetrical degrees from one another. They act as three perpendicular bisectors of an equilateral triangle, crossing each other at the triangle's center of area and dividing the total triangle into six right triangles, of which three are positive and three are negative. So there are six fundamentals of the triangle that make possible dynamic symmetry. (One part may look like a scalene, but it doesn't matter because it is always in balance.) Each corner is balanced by its positive and negative—like four streetcorners. This is called dynamic balance. Literally, all machinery is dynamically balanced in this manner.

532.23 Let me take one propeller blade by itself. I am going to split it longitudinally and get an S curve, one in which the rates are changing and no power of the curve is the same. So it is asymmetrical by itself: it is repeated six times: positive, negative, positive, negative . . . and the six blades come round in dynamic symmetry. The energy forces involved are in beautiful absolute balance. We have energetic balance.

### 532.30 **Symmetrical and Omnisymmetrical**

532.31 The difference between symmetrical and omnisymmetrical is that in symmetrical we have no local asymmetries as we do in any one of the propeller blades taken by themselves. *Symmetrical* means having no local asymmetries, whereas in contradistinction, *omnisymmetrical* and *dynamic symmetry* both permit local or momentary asymmetries, or both.

532.32 Universe is omnisymmetrical as well as dynamically symmetrical in its evolutionarily transformative regeneration of scenario Universe.

### 532.40 **Three Basic Omnisymmetrical Systems**

532.41 There are only three possible cases of fundamental omnisymmetrical, omnitriangulated, least-effort structural systems in nature: the tetrahedron, with three triangles at each vertex; the octahedron, with four triangles at each vertex; and the icosahedron, with five triangles at each vertex. (See illus. [610.20](#) and Secs. [724](#), [1010.20](#), [1011.30](#) and [1031.13](#).)

## 533.00 **Precession**

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533.01 The effects of all components of Universe in motion upon any other component in motion is precession, and inasmuch as all the component patterns of Universe seem to be motion patterns, in whatever degree they affect one another, they are interaffecting one another precessionally, and they are bringing about angular resultants other than the 180 degree-nesses. Precess means that two or more bodies move in an interrelationship pattern of other than 180 degrees.

533.02 Precession is the effect of any moving system upon any other moving system; the closer the proximity, the more powerful the effect. Mass attraction is inherent in precession. Mass attraction is to precession as a single note is to music. We do not pay much attention to precession because we think only of our own integral motions instead of those of Universe, though we are precessing Universe every time we take a step.

533.03 All the intergravitation effects are precessional angular modulations. Precessional effects are always angular and always something other than 180 degrees; they are very likely to be 90 degrees or 60 degrees.

533.04 Precession is regenerative, and that is why you have the wave. When the stone drops in the water, it impinges on the molecules and their atoms; everything is set in motion, and immediately there is a resultant at 90 degrees. The resultant is the wave; the 90 degreeeness begets another 90 degreeeness, this 90 degreeeness begets another 90 degreeeness, and so on until you have a series of 90 degreeeness interrelationships, i.e., an omnilocally-orbiting system, as with all the electrons of all the atoms, and all the stars of the galaxies.

533.05 The elliptic orbiting of the Sun's planets as well as the Solar System's motion relative to the other star groups of the galactic nebulae are all and only accounted for by precession.

533.06 Precession is describable vectorially in terms of physically realized design expressed differentially as relative modification of angle, velocity, and mass in respect to an axis. (See Sec. [130](#), Precession and Entropy.)

533.07 **Intereffects:** All bodies of Universe interaffect all other bodies in varying degrees; and all the intergravitational effects are precessionally angular modulation, and all the interradiation effects are frequency modulations.

533.08 Precession is the intereffect of individually operating cosmic systems upon one another. Since Universe is an aggregate of individually operative systems, all of the intersystem effects of Universe are precessional, and the 180-degree imposed forces usually result in redirectional resultants of 90 degrees. Gravity's 180-degree circumferential, omniembracement effect results in a 90-degree inwardly effected pressure that gains rapidly in intensity as the initially sixfold leverage advantage of the circumferentially tensed embracement gains exponentially in locally induced pressure as the radial distance outwardly from the sphere's center is decreased.

533.09 The Sun's direct 180-degree interattraction pull upon Earth begets precessionally the latter's 90-degree orbiting around the Sun. And Earth's circumferential orbiting direction begets Earth's own 90-degree of axial rotation.

533.10 Precessional 180-degree efforts beget 90-degree effects such as the Sun's radiation impoundment on Earth by the photosynthesis of agriculture (around the land) and photosynthesis of algae (around the waters of Earth), which regeneration occurs as precessionally impounded life-sustaining foods. The 180-degree Sun radiation effect precesses Earth's atmosphere in 90-degree circumferential direction as wind power, which wind power in turn precesses the windmills into 90-degree rotating.

533.11 All the metaphysical generalizations of physical principles produce indirect physical acceleration effects that are precessional.

533.12 Leverage, Sun power, wind power, tidal power, paddles, oars, windlasses, fire, metallurgy, cooking, slings, gears, electromagnetic generators, and metabolics are all 180-degree efforts that result in 90-degree precessional intereffects.

### **533.20 Precession and Degrees of Freedom**

533.21 Despite the angularly modified resultant complexities of omnidirectionally operative precessional forces upon ever-varyingly interpositioned cosmic bodies, Universe may be manifesting to us that there is always and only operative an omniintegrated cosmic coordination of cosmic independents' actions and reactions, wherein with radial broadcasting of energy there is an exponentially increasing diffusion as well as disturbance-diminishing resultant energy effectiveness, producing widely varying angular aberrations of the precession, wherein nonetheless there is always an initial individual-to-individual operative attractiveness whereby

180-degree begets 90-degree  
and

90-degree begets 180-degree,

all of whose angularly aberrated complexity of resultant directional effects always pulsate in respect to a neutral or static 60-degree, which (only statically) imposes an everywhere-else 60-degree of resultants, which in turn induces the coexistence of the isotropic vector matrix.

533.22 The 56 axes of cosmic symmetry (see Sec. [1042.05](#)) interprocess successively to regenerate the centripetal-centrifugal inwardness, outwardness, and aroundnesses of other inwardnesses, outwardnesses, and aroundnesses as the omnipulsative cycling and omniinterresonated eternally regenerative Universe, always accommodated by the six positive and six negative alternately and maximally equieconomical degrees of freedom characterizing each and every event cycle of each and every unique frequency-quantum magnitude of the electromagnetic spectrum range.

## 534.00 **Doppler Effect**

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### 534.01 **Definition**

534.011 There is the phenomenon known as the Doppler effect, of which humans took much note in the early days of the steam locomotive. The high tone of the locomotive's whistle as it approached changed to an increasingly low pitch as the locomotive went by. This is because the sound waves of perturbed air coming toward us at about 700 miles per hour from the approaching locomotive were crowded together, piled up, by the locomotive's own independent speed of about 60 miles per hour. Similarly, the waves were thinned out by the locomotive's speeding away.

534.02 The Doppler effect also may be operating in our historical-event-cognition system in such a manner that the relative frequency and wavelengths of approaching historical events are compacted and receding ones are thinned out. It could be that by traveling mentally backward in history as far as we have any information, humans could—like drawing a bowstring—impel our thoughts effectively into the future.

534.03 The Doppler effect, or wave-reception frequency modulation caused by the relative motions of the observer and the observed, are concentric wave systems that compound as fourth- and fifth-power accelerations. In the summary of synergetic corollaries (Sec. [240.44](#)), fifth- and sixth-powering are identified as products of multiplication by frequency doublings and treblings, etc., in radiational or gravitational wave systems.

534.04 The Doppler effect is usually conceived of as an approximately "linear" experience. "You," the observer, stand beside a railway track (which is a "linear" model); a swift train approaches with whistle valve held open (at a constant-frequency pitch as heard "on board" by the engineer "blowing" the whistle). The whistle sound comes to you at the atmospheric sound-wave speed of approximately 700 linear miles per hour, but the train is speeding toward you at an additional 60 linear miles per hour. The train's motion reduces the interval between the successive wave emissions, which in effect decreases the wavelength, which gives it "higher" pitch as heard at your remote and "approached" hearing position. After the train goes by, the train runs away from each successive wave emission, thus increasing the interval between wave "crests" and therefore lengthening the wave-reception intervals, which apparently "lowers" the pitch as *you* hear it, but not as others elsewhere may hear it. This is pure observational hearing relativity. But the real picture of the Doppler effect is not linear; it is omnidirectional.

534.05 The Doppler effect may also be explained in omnidirectional, experience-patterning conceptionality, which is more informative than the familiar linear conceptioning of the railroad train and "you" at the crossing. Suppose "you" were flying in an air transport that exploded; because of the sudden change in pressure differential between your innards and your out'ards at high altitude, you personally have just been "exploded" into many separate parts, which are receding from one another at high velocity. A series of secondary explosions follows elsewhere from exploding "you" and at various locales in the center of the galaxy of exploding debris, as one item after another of the late airplane's explosive cargo is reached by progressive local-conflagration-heat concentrations. The sound waves of the successive explosions speed after your receding parts, amongst which are your two ear diaphragms, as yet "stringily" interconnected with your exploding brain cells, which "hear" the explosion's sound waves first at low pitch. But as your parts explode from one another at a decelerating rate because of air friction, etc., the waves of remote-explosion sounds "shorten" and pitches go "up." Now consider many separate, nonsimultaneous, secondary explosions of your various exploding parts, all of varying intensities of energetic content and in varying degrees of remoteness, and realize that the decelerations and accelerations of Doppler effects will render some of the explosive reverberations infra and some ultra to your tuning-range limits of hearing, so that the sum total of *heard* events provides very different total conceptioning as heard from various points in the whole galaxy of exploding events, whose separate components would tend to new grouping concentrations.

534.06 Because the humanly "heard" events are geared directly to the atmospheric waves with an average speed of 700 miles per hour, and the humanly "seen" events operate a million times faster and are geared to electromagnetic fields operating independent of and beyond the atmospheric biosphere of Earth, the visual and hearable information is macrocosmically so far out of synchronization that the stroboscopic effect, which can make the wheels of automobiles sometimes appear to be going backward in amateur moving pictures, can cause society to misinterpret the direction and speed of vital events—some may be seen as going in the opposite direction from the realities of universal evolution.

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## 535.00 Halo Concept

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535.01 The phenomenon "infinity" of the calculus is inherently finite (see Sec. [224.11](#)). Universe is nonsimultaneous but finite, because all experiences *begin* and *end*, and being terminal, are finite; ergo, Universe as the sum of finites is finite.

535.02 Nonsimultaneous Universe is finite but conceptually undefinable; local systems are definable. We discover that Universe is finite and a local system is *definite*; every definite local system has inherent, always and only co-occurring twoness of polar axis spinnability and twoness of concave-convex complementary disparity of energy interaction behavior,<sup>4</sup> plus two invisible tetrahedra (or two unities), altogether adding together as equal finitely fourfold symmetry Universe. The difference between Universe and any local system is always two invisible tetrahedra. Every local system may be subdivided into whole tetrahedra.

(Footnote 4: Concave concentrates radiation; convex diffuses radiation.)

535.03 Finite minus de-finite means four tetrahedra minus two tetrahedra. Finite Universe equals eight cyclic unities. Every tetrahedron equals two, having inside-outingness oscillatory transformability unavailable to any structural system other than the tetrahedron.

535.04 Halo conceptioning discloses the minute yet finitely discrete inaccuracy of the fundamental assumption upon which calculus was built; to wit, that for an infinitesimal moment a line is congruent with the circle to which it is tangent and that a plane is congruent with the sphere to which it is tangent. Calculus had assumed 360 degrees around *every* point on a sphere. The sum of a sphere's angles was said to be infinite. The halo concept and its angularly generated topology proves that there are always 720 degrees, or two times unity of 360 degrees, *less* than the calculus' assumption of 360 degrees times every point in every "spherical" system. This 720 degrees equals the sum of the angles of a tetrahedron. We can state that the number of vertexes of any system (including a "sphere," which must, geodesically, in universal-energy conservation, be a polyhedron of n vertexes) minus two times 360 degrees equals the sum of the angles around all the vertexes of the system. Two times 360 degrees, which was the amount subtracted, equals 720 degrees, which is the angular description of the tetrahedron. We have to take angular "tucks" in the nonconceptual finity (the

calculus infinity). The "tucks" add up to 720 degrees, i.e., one tetrahedron. The difference between conceptual de-finity and nonconceptual finity is one nonconceptual, finite tetrahedron.

535.05 In the general theory of variables, it has been recognized that the set of all the variables may be divided into two classes: (1) the class of all the inclusive variables within a given system, the *interior relevants*, and (2) the class of all those operative exclusive of the system, the *exterior relevants*. It has been further recognized that the variables outside the system may affect the system from outside. In varying degrees, specific levels of subclasses of these "background" or outside variables are identified as *parameters*. But the "background" concept is fallaciously inadequate; dealing with insiderness and outsiderness for "background" is limited to the two-dimensional or flat- projection concept, which inherently lacks insiderness—ergo, cannot also have outsiderness, which always and only coexists with insiderness. Ergo, all two-dimensional copings with systems are inherently inadequate and prophetically vitiated.

535.06 Our omnioriented halo concept converts the *parameter* consideration to symmetrically conceptual four-dimensionality and discloses a set of parameters *inside* as well as *outside* the zone of lucidly considered system stars. And the parameters are, at minimum, fourfold:

1. the concave twilight zone of inward relevancy;
2. the convex twilight zone of outward relevancy;
3. the *stark*, nonconceptual irrelevancy inward; and
4. the stark, nonconceptual irrelevancy outward.

Parameter 1 is a visible tetrahedron. Parameter 2 is a visible tetrahedron.

Parameter 3 is an invisible tetrahedron. Parameter 4 is an invisible tetrahedron.

535.07 The *considered* relevancy within the zone of lucidity consists of one tetrahedron or more. For each "considered tetrahedron," there are three complementary always and only co-occurring parametric tetrahedra. We discover that our omnihalo epistemological accounting consists entirely of rational tetrahedral quantation.

535.08 By the omnidirection, star-studded halo reasoning, the development of a conceptual tetrahedron automatically changes a negative yet invisible tetrahedron into the nonsimultaneous, *nonconceptual, finite* Universe, comprehensive to the local de-finite conceptual system.

535.09 The halo concept is that of an omnidirectional, complex, highfrequency, Doppler-effected, hypothetical zone experience in an omnidirectional, universal maelstrom of nonsimultaneous near and far explosions and their interaccelerating and refractive wave-frequency patternings and complex, precessionally-induced, local orbitings. The omni-interactions impinge on your nervous system in all manner of frequencies, some so "high" as to appear as "solid" things, some so slow as seeming to be "absolute voids."

### 535.10 **Spherical Structures**

535.11 Because spherical sensations are produced by polyhedral arrays of interferences identified as points approximately equidistant from a point at the approximate center, and because the mass-attractive or -repulsive relationships of all points with all others are most economically shown by chords and not arcs, the spherical array of points is all interconnected triangularly by the family of generalized principles being operative as Universe, which produces very-high-frequency, omnitriangulated geodesic structures, which are an aggregate of chords triangularly interconnecting all the nearestly-surrounding points whose vertexly-converging angles always add up to less than  $360^\circ$ .

### 535.20 **Building**

535.21 A building can be thought of as a clock, i.e., as a feedback circuitry wherein local pushings and pullings are structurally regenerative and ever-self-restabilizing. The spirally overlapping critical path of progressive accomplishments that led to humans reaching the Moon and returning safely to Earth involved not a linear months-and-years progression but an around-the-Sun-by-Earth orbiting and an around-the-Earth-by-Moon orbiting progression of accomplished events wherein humans progressively established one feedback circuitry system overlapping another, and another, more than a million times, as the year of Earth-Moon orbiting of 365 axially-rotated-in-orbit days drew to orbital close at a galactic merry-go-round repositioning in the cosmic theater that finds the planet Earth and its 92-million-miles-away Sun six billion miles away from where their Earth-Sun year began. And all of these celestially complex "goings-on" had to be competently comprehended and attended in order for humans to ferry both outward and returning between the complexedly moving Earth and the ever-more-complexedly orbiting, spinning, and galaxying Sun-Earth-Moon team.

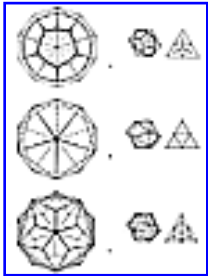
535.22 Thus with each year the spiraled critical-path "rope" of omniinterrelated, locally overlapping, circuitry-feedback closures integrated synergetically to produce the finally realized Earth-Moon inter-round-tripping of humans as the whole show co-orbited the Sun. The entire complex operation resulted in an ever-expanding spontaneous involvement of Earthians in an ever-increasing range of local Universe affairs. (See Sec. [1130.20](#).)

## 536.00 Interference Domains of Structural Systems

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536.01 As distinct from other mathematics, synergetics provides *domains of interferences* and *domains of crossings*. In the isotropic vector matrix, the domains of vertexes are spheres, and the domains of spheres are rhombic dodecahedra. These are all the symmetries around points. Where every vertex is the domain of a sphere we have closest-rhombic-dodecahedral-packing.

536.02 The coordinate system employed by nature uses 60 degrees instead of 90 degrees, and no lines go through points. There are 60-degree convergences even though the lines do not go through a point. The lines get into critical proximities, then twist-pass one another and there are domains of the convergences.



536.03 In a polyhedral system, critical-proximity-interference domains are defined by interconnecting the adjacent centers of area of all the separate superficial faces, i.e., "external areas" or "openings," surrounding the vertex, or "crossing." The surface domain of a surface vertex is a complex of its surrounding triangles: a hexagon, pentagon, or other triangulated polygon. (See Sec. [1006.20](#).)

[Fig. 536.03](#)

## 536.10 Domains of Volumes

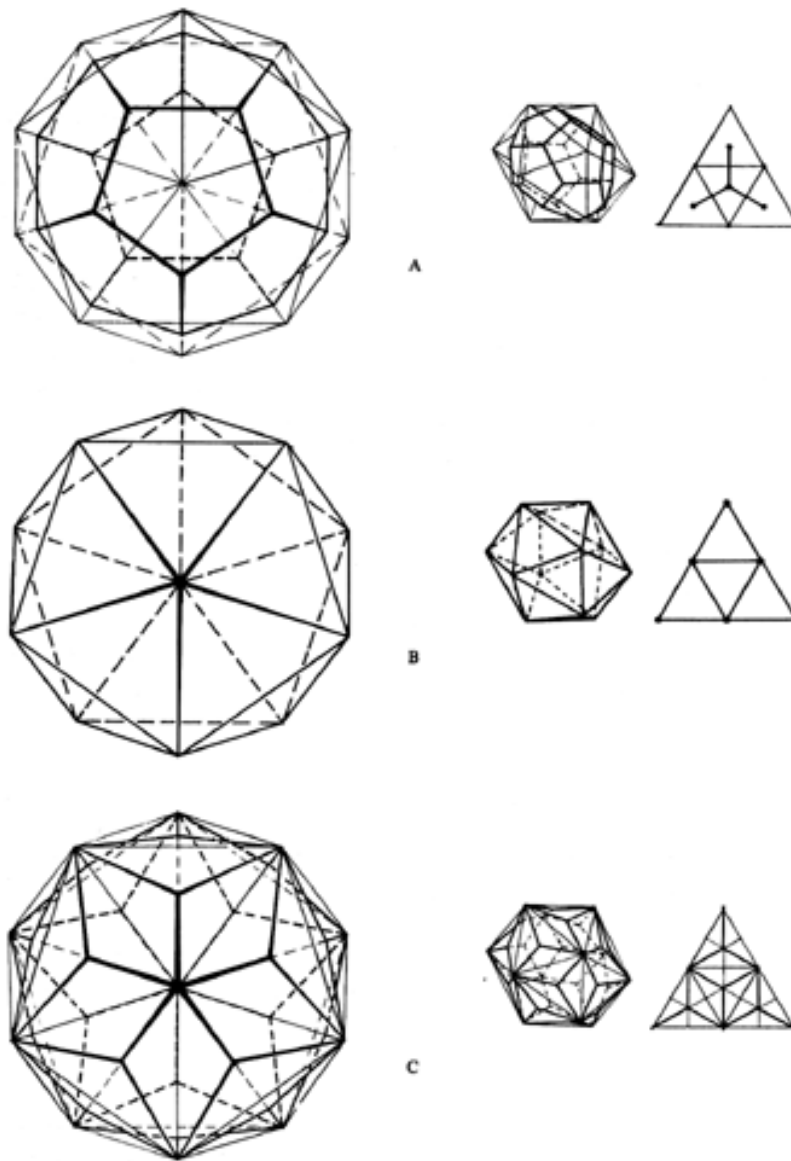


Fig. 536.03 Domains of Vertexes, Faces, and Edges of Systems:

- A. The domain of the vertex of a system: the domain of each vertex of the icosahedron is a pentagon whose edges connect the centers of gravity of five icosahedron face triangles. The resulting figure is the pentagonal dodecahedron.
- B. The domain of the face of a system: The domain of each face of the icosahedron is the triangular face itself.
- C. The domain of the edge of a system: The domain of each edge of the icosahedron is a diamond formed by connecting the vertexes of two adjacent icosahedron face triangles with their centers of gravity.

536.11 There are domains of the tetrahedron interfaced (triple-bonded) with domains of the octahedron. The domains of both are rationally subdivided into either A or B Modules. There is the center of volume (or gravity) of the tetrahedron and the center of volume (or gravity) of the octahedron, and the volumetric relationship around those centers of gravity is subdivisible rationally by A and B Quanta Modules<sup>5</sup> in neat integer whole numbers. I can then speak of these domains quantitatively without consideration of now obsolete (superficial) face surfaces, i.e., polyhedra. Even though the cork is not in the bottle, I can speak quantitatively about the contents of the bottle. This is because it is a domain even though the edge-surrounded opening is uncorked. So we have no trouble topologically considering tensegrity mensuration. It is all open work, but its topological domains are clearly defined in terms of the centers of the systems involved having unique, centrally angled *insideness* and surface-angle-defined *outsideness*.

(Footnote 5: See Sec. [920](#).)

### 536.20 **Domain of an Area**

536.21 Areas do not have omnidirectional domains. The domain of an area is the area itself: it is the superficial one that man has looked at all these centuries. The domain of a face is a triangle in the simplest possible statement. Thus the domain of each face of the icosahedron is the triangular face itself.

### 536.30 **Domain of a Line**

536.31 The domains of the vector edges are defined by interconnecting the two centers of area of the two surface areas divided by the line with the ends of the line. The edge dominates an area on either side of it up to the centers of area of the areas it divides. Therefore, they become diamonds, or, omnidirectionally, octahedra. The domains of lines are two tetrahedra, not one octahedron.

536.32 The domains of lines must be two triple-bonded (face-bonded) tetrahedra or one octahedron. There could be two tetrahedra base-to-base, but they would no longer be omnisymmetrical. You can get two large spheres like Earth and Moon tangent to one another and they would seem superficially to yield to their mass attractiveness dimpling inward of themselves locally to have two cones base to base. But since spheres are really geodesics, and the simplest sphere is a tetrahedron, we would have two triangles base to base—ergo, two tetrahedra face-bonded and defined by their respective central angles around their two gravity centers.

536.33 The domain of each edge of the icosahedron is a diamond formed by connecting the vertexes of two adjacent icosahedron-face triangles with their centers of area.

**536.40 Domain of a Point**

536.41 Looking at a vector equilibrium as unity, it is all the domain of a point with a volume of 480.

536.42 The domains of points as vertexes of systems are tetrahedra, octahedra, or triangulated cubes. Or they could be the A and B Modules formed around the respective polyhedra.

536.43 The most complete description of the domain of a point is not a vector equilibrium but a rhombic dodecahedron, because it would have to be allspace filling and because it has the most omnidirectional symmetry. The nearest thing you could get to a sphere in relation to a point, and which would fill all space, is the rhombic dodecahedron.

536.44 A bubble is only a spherical bubble by itself. The minute you get two bubbles together, they develop a plane between them.

**536.50 Domains of Actions**

536.51 There are critical proximities tensionally and critical proximities compressionally—that is, there are attractive fields and repelling fields, as we learn from gravity and electromagnetics. There are domains or fields of actions. In gases under pressure, the individual molecules have unique atomic component behaviors that, when compressed, do not allow enough room for the accelerated speeds of their behavior; the crowded and accelerating force impinges upon the containing membrane to stretch that membrane into maximum volume commensurate with the restraints of its patterned dimensions.

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[Next Section: 537.00](#)

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## 537.00 Twelve Universal Degrees of Freedom

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537.01 Nothing stands in a vacuum of Universe. Nothing can change locally without changing everything else. We have to look for conditions where there is permitted transformability and where there is some really great unanimity of degrees of freedom. We see that certain kinds of patterns accrue from certain numbers of restraints. You could see how planar things could happen as a consequence of two restraints and how linear things could happen as a consequence of three restraints. (See Sec. [401](#), Twelve Vectors of Restraint Define Minimum System.) We see, then, that we are in a Universe where there is a certain limited number of permitted freedoms. Synergetics discovers that whatever is rigidly related to anything else discloses 12 restraints. There are a minimum of 12 restraints in developing anything we might call a rigidly related set of events.

537.02 We start with Universe as a closed system of complementary patterns—i.e., regenerative, i.e., adequate to itself—that has at any one moment for any one of its subpatterns 12 degrees of freedom. There is an enormous complexity of choice. We start playing the game, the most complicated game of chess that has ever been played. We start to play the game Universe, which requires absolute integrity. You start with 12 alternate directions and multibillions of frequency options for your first move and from that move you have again the same multioptions at each of your successive moves. The number of moves that can be made is unlimited, but the moves must always be made in absolute respect for all the other moves and developments of evolving Universe.

537.03 The game of Universe is like chess with 92 unique men, each of which has four different frequencies available, and it works on 12 degrees of freedom instead of a planar checkerboard. The vector equilibrium becomes the omnidirectional checker frame and you can change the frequencies to suit conditions. But you must observe and obey the complexity of mass attraction and the critical proximity between precessing and falling in. And there are also electromagnetic attractions and repulsions built into the game.



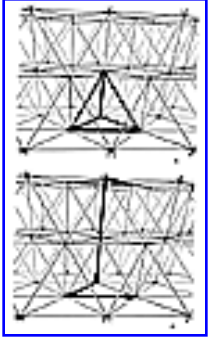
537.04 In order to be able to think both finitely and comprehensively, in terms of total systems, we have to start off with Universe itself. We must include all the universal degrees of freedom. Though containing the frequently irrational and uneconomic XYZ dimensional relationships, Universe does not employ the three-dimensional frame of reference in its ever-most-economical, omnirational, coordinate-system transactions. Nature does not use rectilinear coordination in its continual intertransforming. Nature coordinates in 12 alternatively equieconomical degrees of freedom—six positive and six negative. For this reason! 12 is the minimum number of spokes you must have in a wire wheel in order to make a comprehensive structural integrity of that tool. You must have six positive and six negative spokes to offset all polar or equatorial diaphragming and torque. (See illustration [640.40](#).)

537.05 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.

537.06 **Four Sets of Actions, Reactions, and Resultants:** Nature always employs only the most economical intertransformative and omnicosmic interrelatedness behavioral stratagems. With each and every event in Universe—no matter how frequently recurrent—there are always 12 unique, equieconomical, omnidirectionally operative, alternate-action options, which 12 occur as four sets of three always interdependent and concurrent actions, reactions, and resultants. This is to say that with each high frequency of recurring turns to play of each and all systems there are six moves that can be made in 12 optional directions. (See Secs. [251.46](#), [421.20](#), [521.06](#) and Fig. [537.10](#).)

537.08 Universe Divisible by Two: Everything in Universe is divisible by two. There will always be two poles to any system. Unity is two.

537.09 All the aspects of the constant relative abundances of points, areas, and lines are divisible by two: four faces, four points, and six edge lines. Thus there are six vectorial moves for every event; each of the vectorial moves is reversible, hence 12. Positional differentials in Universe derive only from the sixness of the 12 degrees of freedom.



### 537.10 **Six Vectors for Every Point**

[Fig. 537.10](#)

537.11 Each of the six positive and six negative energy lines impinging on every nonpolarized point ("focal event") in Universe has a unique and symmetrical continuation beyond that point. The six positive and six negative vectors are symmetrically arrayed around the point. Consequently, all points in Universe are inherently centers of a local and unique isotropic-vector-matrix domain containing 12 vertexes as the corresponding centers of 12 closest-packed spheres around a nuclear sphere. (See Synergetics Corollaries at Secs. [240.12](#), [240.15](#), and [240.19](#).)

537.12 Experiments show that there are six positive and six negative degrees of fundamental transformation freedoms, which provide 12 alternate ways in which nature can behave most economically upon each and every energy-event occurrence. Ergo, there is not just one "other"; there are always at least 12 "others." (See Secs. [502.25](#) and [511.03](#))

537.13 We find that in the 12 degrees of freedom, the freedoms are all equal and they are all realizable with equal "minimum effort."

537.131 **Six Vectors for Every Point:** The behavioral interpatterning frame of reference of the six degrees of freedom in respect to omnidirectionality is of course the vector equilibrium, which embraces the three-dimensionality of the cube and the six- dimensionality of the vector equilibrium. Experience is inherently omnidirectional; ergo, there is always a minimum of 12 "others" in respect to the nuclear observing self. The 24- positive- and 24-negative- vectored vector equilibrium demonstrates an initially frequenced, tetrahedrally quantized unity of 20; ergo, the Universe, as an aggregate of all humanity's apprehended and comprehended experiences, is at minimum a plurality of 24 vectors. (See Secs. [981.12](#) and [1224.21](#).)

537.14 **Basic Event**

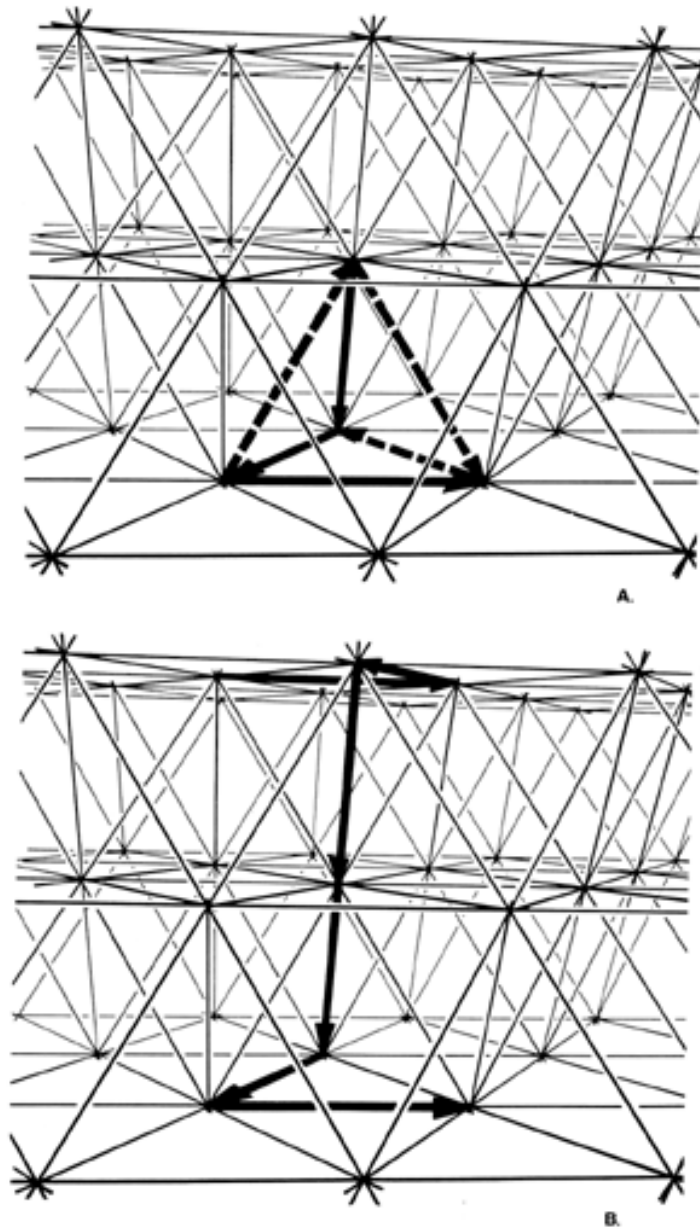


Fig. 537.10 Six Vectors for Every Point: With each high frequency of recurrent turns to play, there are six moves that can be made in 12 optimal directions.

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537.15 A basic event consists of three vectorial lines: the action, the reaction, and the resultant. This is the fundamental tripartite component of Universe. One positive and one negative event together make one tetrahedron, or one quantum. The number of vectors (or force lines) cohering each and every subsystem of Universe is always a number subdivisible by six, i.e., consisting of one positive and one negative event on each of three vectors, which adds up to six. This holds true topologically in all abstract patterning in Universe as well as in fundamental physics. The six vectors represent the fundamental six, and only six, degrees of freedom in Universe. Each of these six, however, has a positive and a negative direction, and we can therefore speak of a total of 12 degrees of freedom. These 12 degrees of freedom can be conceptually visualized as the radial lines connecting the centers of gravity of the 12 spheres, closest packed around one sphere, to the center of gravity of that central sphere. The 12 degrees of freedom are also identified by the push- pull alternative directions of the tetrahedron's six edges.

#### 537.20 **High-Tide Aspects**

537.21 Spheres in closest packing are high-tide aspects of vertexes. It is easy to be misled into thinking that there are no lines involved when you see two spheres in tangency, because the lines are hidden inside the spheres and between the points of tangency. And if you do realize that there is a force line between the two spheres' centers, you could assume that there is only one line between the two. This is where you see that unity is two, because the line breaks itself into radii of the two spheres.

537.22 In synergetics, a "line" is the axis of intertangency of unity as plural and minimum two. The line becomes the axis between two tangent balls which, without disturbing that single-axis aspect, can articulate both axial and circumferential degrees of freedom.

#### 537.30 **General Systems Applications**

537.31 The 12 universal degrees of freedom govern the external and internal motions of all independent systems in Universe. In order to take synergetic strategy advantage and thereby to think comprehensively and anticipatorily, in terms of total systems, we have to start off with Universe itself as a closed finite system that misses none of the factors. We must also include all the universal degrees of freedom, and the approximately unlimited range of frequencies in the use thereof, which cover all variable interrelationships of Universe. They become the controlling factors governing general systems and, thereby govern such supercomplex systems design as that of a nation's navy or a fundamental program for comprehensively considerate and efficiently effective use of all world resources. The general systems approach starts with the differentiation of Universe, including both metaphysical and physical, and permits progressive subdivisions in cybernetical bits to bring any local pattern of any problem into its identification within the total scheme of generalized system events. Problem solving starts with Universe and thereafter subdivides by progressively discarding irrelevancies thereby to identify the "critical path" priorities and order of overlapping developments that will most economically and efficiently and expeditiously realize the problem's solution by special local problem identification and location within the totality of the problem-solving scenario.

537.32 Because of our overspecialization and our narrow electromagnetic spectrum range of our vision, we have very limited integrated comprehension of the significance of total information. For this reason, we see and comprehend very few motions among the vast inventory of unique motions and transformation developments of Universe. Universe is a nonsimultaneous complex of unique motions and transformations. Of course, we do not "see" and our eyes cannot "stop" the 186,000-miles-per-second kind of motion. We do not see the atomic motion. We do not even see the stars in motion, though they move at speeds of over a million miles per day. We do not see the tree's or child's moment-to-moment growth. We do not even see the hands of a clock in motion. We remember where the hands of a clock were when we last looked and thus we accredit that motion has occurred. In fact, experiment shows that we see and comprehend very little of the totality of motions.

537.33 Therefore, society tends to think statically and is always being surprised, often uncomfortably, sometimes fatally by the omni-inexorable motion of Universe. Lacking dynamic apprehension, it is difficult for humanity to get out of its static fixations and to see great trends evolving. Just now, man is coming into technical discovery of general systems theory. The experimental probing of the potentials of the computers awakened man to a realization of the vast complexes of variables that can be mastered by general systems theory. So far, man has dealt but meagerly and noncomprehensively with his powerful planning capability. So far, he has employed only limited systems theory in special open-edged systems—"tic-tac-toe" rectilinear grid systems and planar matrixes. The arbitrary open parameters of infinite systems can never be guaranteed to be adequate statements of all possible variables. Infinite systems engender an infinite number of variable factors. Unless one starts with Universe, one always inadvertently starts with open infinite systems. Only by starting with finite Universe and progressively dismissing finite irrelevancies can one initiate finite, locally limited, general systems theory to assured satisfaction in problem solving.

537.34 The Dymaxion airocean world map is only one of many devices that could provide man with a total information-integrating medium. We are going to have to find effective ways for all of humanity to see total Earth. Nothing could be more prominent in all the trending of all humanity today than the fact that we are soon to become world man; yet we are greatly frustrated by all our local, static organizations of an obsolete yesterday.

#### 537.40 **Game of Universe: Individuality and Degrees of Freedom**

537.41 We may define the individual as one way the game of Universe could have eventuated to date. Universe is the omnidirectional, omnifrequency game of chess in which with each turn of the play there are 12 vectorial degrees of freedom: six positive and six negative moves to be made. This is a phenomenon of frequencies and periodicities. Each individual is a complete game of Universe from beginning to end. This is why each of us individuals is so much alike and yet completely different, a unique and individual way of playing the game with each of the omnidirectional degrees of freedom. With the six positive and the six negative omnidirectional degrees-of-freedom moves to be made at each turn of the play, the individual can move to any cosmic point that is not occupied and can move back over the same points or move on to new ones. (See Fig. [537.10](#).) Intellect as "god" can play all these incredibly different games in all these different ways and at all the differential rates at the same time. (See Sec. [1002.12](#).)

537.42 The individual differentiates position in Universe. The six degrees of freedom operate at *every* turn of the play. Just think of the frequencies per second of each of the chemical elements that make up the individual human body and then think of the periodicities of those frequencies.

537.43 That each individual is a complete integrity is one of the reasons I don't have to make any effort in loving my fellow human. (In the first-person plural of *we-even* the *I* even classes itself with the *other*. Each individual integrity has a steering effect, and like all steering effects it goes from one aberration to another. Certain individuals may be very wide aberrations from all the corruption that's going on in Universe, acting as just one of those infrequent and very wide aberrations so that Universe can hold its center. At that center sphere is the *two*, and you turn inside-out—and only the tetrahedron turns inside out. The other side of the Universe is not like the other side of the river; it is an inside- outing.)

537.44 We regard each individual as the special case, but consciousness as the generalization. Like the bumper sticker, "The Real World is Special Case." Reality is special case. You and I are sitting here, and no one else can be sitting right where we are. This is the kind of reality that the newspapers miss: they write about reality as if we were all the same realities, as if we were all the same things. If you and I are sitting here, we couldn't possibly be anywhere else.

537.45 There are many different realities. This is the difference between reality and generalization. There is only one generalization. The only reason the radio works is that it has no interference. The game of Universe can be played on any one of the fantastically large number of the quadrillions of quadrillions of frequencies: the game can be played any way just so long as there is no interference on the frequency you are using, so long as there are not two pieces in the same vector equilibrium at the same time.

537.46 What is important about the individual and important about the Universe is that neither is exempt from any of the rules. Universe is the sumtotal, and the individual is the special case. Universe is the aggregate of all the generalized principles. Each individual is one of the illions of ways the game of Universe could be played.

### 537.50 **Freedom and Will**

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537.51 I think I tend to avoid using the word *will* because I spontaneously associate it with the term "free will" and all the controversies regarding the history of such human beliefs. I have felt that all such controversies lack adequate knowledge of science's generalized laws. To me it is obvious that no amount of individual will can nullify any cosmic law. It is also obvious to me that few know of and comprehend the significance of nature's having six positive and six negative equieconomical alternative moves to make with each turn to play in cosmic events.

537.52 It is clear to me that most humans tend to think in a linear, Go-or No-go, greenlight-redlight manner. To me, *will* is an optionally exercisable control by mind over brain—by wisdom over conditioned reflex—that becomes realizable when mind is adequately convinced regarding which of the 12 alternatives will produce the most comprehensively considerate vital advantage for all.

537.53 In a lesser way *will* becomes operative when the individual finds himself in terminal peril and has only seconds to "pull out" of a tailspin, when he becomes "cool," that is, when he discovers swiftly which of the alternative moves can save him, and exercises his will to execute the survival procedures.

537.54 Will determines what we should do in all the special case circumstances. Will is not a muscle thing—not the clenched fist—at all. People say I have a strong will, but what I have is a fairly clear view of the options of humanity and the commitments to their realization. It is thus that I determine what course to take in the special cases confronting us.

## 538.00 **Probability**

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538.01 Nature's probability is not linear or planar, but the mathematical models with which it is treated today are almost exclusively linear. Real Universe probability accommodates the omnidirectional, interaccommodative transforming transactions of universal events, which humanity identifies superficially as environment. Probability articulates locally in Universe in response to the organically integral, generalized, omnidirectional *in, out, inside out, outside in*, and *around* events of the self-system as well as with the selfsystem's extraorganic travel and externally imposed processing around and amongst the inwardly and outwardly contiguous forces of the considered system as imposed by both its synchronously and contiguously critically near macrocosmic and microcosmic neighbors.

538.02 Real Universe's probability laws of spherically propagative whole systems' developments are intimately and finitely conditioned by the three-way great-circle spherical grids inherently embracing and defining the nonredundant structuring of all systems as formingly generated by critical proximity interferences of the system's components' behaviors and their dynamical self-triangulations into unique system- structuring symmetries whose configurations are characterized by the relative abundance patterning laws of topological crossing points, areas, and lines of any considered system as generally disclosed by the closed-system hierarchy of synergetics.

538.03 Synergetics, by relating energy and topology to the tetrahedron, and to systems, as defined by its synergetic hierarchy, replaces randomness with a rational hierarchy of omni-intertransformative phase identifications and quantized rates of relative intertransformations.

### 538.10 **Probability Model of Three Cars on a Highway**

538.11 I am tying up the social experience, often observed, in which three independently and consistently velocitied automobiles (and only three) come into close proximity on the highway—often with no other cars in sight. Mathematically speaking, three points—and only three—define both a plane and a triangle. The cars make a triangle; and because it is mathematically discovered that the total number of points, or areas, or lines of a system are always even numbers; and that this divisibility by two accommodates the polar-and-hemispherical positive-negativeness of all systems; and because the defining of one small triangle on the surface of a system always inadvertently defines a large triangle representing the remainder of the whole system's surface; and this large triangle's corners will always be more than 180 degrees each; ergo, the triangle is an "inside-out," i.e.,

negative, triangle; and to convert it to positive condition requires halving or otherwise fractionating each of its three corners by great circle lines running together somewhere within the great negative triangle; thus there develops a minimum of four positive triangles embracing the Earth induced by such three-car convergences.

538.12 The triangle made by the three cars is a complementarity of the three other spherical triangles on the Earth's surface. The triangle formed by the two cars going one way, and one the other way, gets smaller and smaller and then reverses itself, getting ever larger. There is always a closer proximity between two of the three. This is all governed by topological "pattern integrity. "

538.13 Probability is exclusively abstract mathematics: theoretically calculated points on curves. The statisticians think almost exclusively in lines or planes; they are what I call planilinear. Willard Gibbs in evolving his phase rule was engaged in probability relating to chemistry when he inadvertently and intuitively conceived of his phase rule for explaining the number of energetic freedoms necessary to introduce into a system, complexedly constituted of crystals, liquids, and gases, in order to unlock them into a common state of liquidity. His discovered phase rule and topology are the same: they are both synergetic. Despite the synergetic work of such pioneers as Euler and Gibbs, all the different chemistries and topologies still seem to be random. But synergetics, by relating energy and topology to the tetrahedron, and to systems as defined, and by its synergetic hierarchy, replaces randomness with a rational cosmic, shape-and-structural-system hierarchy. This hierarchy discloses a constant relative abundance of the constituents; i.e., for every nonpolar point there are always two faces and three edges. But systems occur only as defined by four points. Prime structural systems are inherently tetrahedral, as is also the quantum.

538.14 A social experience of three cars: they make a triangle changing from scalene to equilateral to scalene. The triangles are where the cars don't hit. (These are simply the windows.) But you can't draw less than four triangles. The complementarity of the three triangles makes the spherical tetrahedron—which makes the three-way grid. The little spherical triangle window is visible to human observers in greatest magnitude of human observability and awareness of such three-car triangles at 15 miles distance, which is 15 minutes of spherical arc of our Earth. Such dynamically defined Earth triangulation is not a static grid, because the lines do not go through the same point at the same time; lines—which are always action trajectories—never do. All we have is patterning integrity of critical proximities. There is always a nonviolated intervening boundary condition. This is all that nature ever has.

538.15 Nature modulates probability and the degrees of freedom, i.e., frequency and angle, leading to the tensegrity sphere; which leads to the pneumatic bag; all of which are the same kind of reality as the three automobiles. All the cosmic triangling of all the variety of angles always averages out to 60 degrees. That is the probability of all closed systems, of which the Universe is the amorphous largest case. Probability is not linear or planar, but it is always following the laws of sphericity or whole systems. Probability is always dependent upon critical proximity, omnidirectional, and only dynamically defined three-way gridding pattern integrity, and with the concomitant topologically constant relative abundance of points, areas, and lines, all governed in an orderly way by low-order, prime-number, behavioral uniqueness as disclosed by synergetics.

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[Next Section: 539.00](#)

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## 539.00 Quantum Wave Phenomena

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539.01 We say that Universe is design and that design is governed exclusively by frequency and angular modulations, wherefore the "angle" and "frequency" must be discretely equatable with quantum mechanics which deals always synergetically with the totality of Universe's finite energy.

539.02 The relative acutenesses and the relative obtusenesses of the angle and frequency modulating must relate discretely to the relative mass experienciabilities of Universe.

539.03 Quantum wave phenomena's *omni-wholeness* of required a priori accountability and persistent consideration is always systematically conceivable as a sphere and may be geodesically fractionated into great-circle-plane subsets for circular plane geometry considerability. Quantum waves always complete their cycles (circles). The circle can be divided into any number of arc increments as with the teeth of a circular gear—many little teeth or a few big teeth. In quantum wave phenomena we may have a few big, or many small, differentiated events, but they always add up to the same whole.

539.04 The rate of angular change in a big wave is very much slower than the rate of angular change in a small wave, even though they look superficially to be the same forms—as do two circles of different size appear to be the same form. The difference in the wave that is big and the wave that is small, is always in relation to the dimensioning of the observer's own integral system, and determines the discrete difference (i.e., the "relativity") of the wave angle.

539.05 What is "the most economical relationship" or "leap" between the last occurred event and the next occurring event? It is the chord (identifiable only by central angle) and the rate of the central-angle reorientation-aiming most economically toward that event, which is the angular (momentum) energy change involved in the angular and frequency modulation of all design of all pattern integrity of Universe.

539.06 Let us say that you are progressively leaping—"pacing" —around the perimeter of two circles: one small, six feet in diameter; the other large, 600 feet in diameter, leaping clockwise as seen from above. You are six feet long—"tall." On the small circle you will be turning, or angularly reorienting your direction to the right, much more obtusely in relation to your last previous direction of leap-accomplished facing and pacing.

539.07 Your rate of angular change in direction will be apprehendable in relation to the angles and overall direction of "you," as the observer, and as the criteria of the "rate of angle modulation."

539.08 Newton's first law: A body persists in a straight line except as affected by other bodies. But the 1974 era of physics' discoveries of "prime otherness" must add to Newton that: All bodies are always being affected by other bodies, and the intereffects are always precessional. The intereffects are angular-momentum aberrating. The angular momentum alterations are all determined by the angle and frequency modulating.

539.09 We may think of our leaps as describing the circular chords between the successive circular circumference points leaped-to. With our relative leap-size taken as that of our height—six feet—the chord of "our self" — either leaping around or lying down—in a small circle will represent the chord of the arc of a much larger central angle than it would constitute in respect to a large circle. The relative *angular difference* is that of the respective central angle changes as subtended by each use of self (the observer) as the chord of a circle of given size. This ground-contact-discontinuing chordal "leap" of self relates to quantum mechanics employment in experimental physics wherein no absolute continuum is manifest.

539.10 If a six-foot man lies down in a six-foot circle he becomes the diameter and the central angle is 180 degrees. If a six-foot man lies down in a 600-foot-diameter circle, he will be a chord subtending a central angle of approximately one degree—a chord whose arc altitude is so negligible that the observing self's height of six-feet will be a chord so relatively short as to lie approximately congruent with the one-degree arc of the circle. When the relative circle size in respect to the observer is of macro-differential magnitudes, such as that of the circumference of the galactic system in respect to each planet observer, then the central-angle magnitude of the subtended macrocosmic arc becomes undetectable, and the astronomer and navigator assume parallelism—parallax—to have set in, which produces a constant factor of error which must be incorporated in mathematical formulation of system descriptions. In quantum accounting and analysis of energy events and transformative transactions, this parallelism separates one quantum tetrahedron from its three surrounding tetrahedra.

#### 540.00 **Frame of Reference**

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540.01 The system generates itself whenever there is an event. The system actually regenerates itself: it is an eternal rebirth system.

540.02 The octet truss is not a priori. The octet truss is simply the most economical way of behaving relative to unity and to self. The octet truss is the evolutionary patterning, intervectoring, and intertrajectory-ing of the ever-recurrent 12 alternative options of action, all 12 of which are equally the most economical ways of self-and-otherness interbehaving—all of which interbehaviors we speak of as Universe.

540.03 Starting with whole Universe as consisting always of *observer* plus the *observed*, we can subdivide the unity of Universe. In synergetics—as in quantum mechanics—we have multiplication only by division.

540.04 I do not like the word *frame*. What we are talking about is the multi-optioned omni-orderly scheme of behavioral reference; simply the most economic pattern of evolvment. Pattern of evolvment has many, many equieconomical intertransformability options. There are many transformation patterns, but tetrahedron is the absolute minimum limit case of structural system interself-stabilizing. A tetrahedron is an omnitriangulated, four-entity, six-vector interrelationship with system-defining insiderness and outsiderness independent of size; it is not a rigid frame and can be any size. "Rigid" means "sized"—arbitrarily sized. "Rigid" is always special-case. Synergetics is sizeless generalization.

540.05 Synergetics is not a frame at all, but a pattern of most omnieconomic (ergo, spontaneous) interaccommodation of all observed self-and-otherness interexperiencing (ergo, geodesic—geodesic being the most economical interrelationships of a plurality of events).

540.06 Prime otherness demands identification of the other's—initially nebulous—entity integrity, which entity and subentities' integrities first attain cognizable self-interpatterning stabilization, ergo, discrete considerability, only at the tetrahedron stage of generalizable entity interrelationships. Resolvability and constituent enumerability, and systematic interrelationship cognition of entity regeneration presence, can be discovered only operationally. (See Secs. [411.00](#), [411.10](#), [411.20](#), and [411.30](#).) After the four-ball structural interpatterning stability occurs, and a fifth ball comes along, and, pulled by mass attraction, it rolls into a three-ball nest, and there are now two tetrahedra bonded face-to-face.

540.07 Because of discontinuity, the otherness points and subpoints may be anywhere. We start always with any point—event points being as yet noncomprehended; ergo, initially only as an apprehended otherness entity. Synergetics, as a strategy of converting apprehension to discrete comprehension, always proceeds vectorially.

540.08 The only difference between experience and nonexperience is time. The time factor is always radial, outwardly, inwardly, and chordally around; always accounted only in most economical to self-experience, energy time relationship (i.e., geodesic) units. The vector is time-energy incrementation, embracing both velocity and relative mass, as well as the observer's angulation of observation—strictly determined in relation to the observer's head-to-toe axis and time, relative, for instance, to heartbeat and diurnal cyclic experience frequencies.

540.09 A vectorial evolvment in no way conforms to a rigid rectilinear frame of the XYZ coordinate analysis which arbitrarily shuns most economical directness and time realizations—by virtue of which calculus is able only awkwardly to define positions rectilinearly, moving only as the chessman's knight. Nature uses rectilinear patterns only precessionally; and precession brings about orbits and not straight lines.

#### 540.10 **Prime Vector**

540.11 All structural accounting of nature is accomplished with rational quantities of tetrahedra. The XYZ coordinates may be employed to describe the arrangements, but only in awkward irrationality, because the edge of the cube is inherently irrational in respect to the cube's facial diagonal. The hypotenuses actually function only as the edges of the positive and negative tetrahedra, which alone permit the cube to exist as a structure. The hypotenuses connect the sphere centers at the cube corners; they function concurrently and simultaneously as the natural structuring of tetrahedra edges in the omnidirectional isotropic vector matrix; as either hypotenuse or tetra edge they are *prime vectors*.

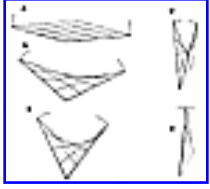
540.12 Of the eight corners of the cube only four coincide with the sphere centers of closest-packed, unit-radius spheres; therefore only the cube's facial diagonals can interconnect closest-packed spheres. One closed set of six cube-face diagonals can interconnect only four sphere-center corners of the prime tetrahedron, which alone provides the structural stability of the cube, whose eight-cornered, structural-stability completeness requires the saturation of the alternate set of six diagonals in each of the cube's six faces. This alternate set of six diagonals intertriangulates the other four sphere centers of the cube's eight corners. The cube diagonals and the edges of the tetrahedra structuring the cube are two aspects of the same phenomenon. The tetra-edge, cube-face diagonals connecting the two sets, of four corners each, of the cube's total of eight corners are the *prime vectors* of the vector equilibrium and of the isotropic vector matrix.



540.13 The second power of the length of the prime vector that constitutes the diagonal of the cube's face equals the sum of the second powers of any two edges of the cube. Because these two edges converge at the cube's corner to form one standing wave that may be multifrequenced to apparently coincide with the cube's facial diagonal, we discover that this relationship is what we are talking about in the deliberately nonstraight line. It is the same mathematical relationship demonstrated in the ancients' proof of the Pythagorean theorem, wherein the square of the hypotenuse is proven to be equal to the sum of the squares of the triangle's two legs. Thus the deliberately nonstraight line displays an evolutionary transformation from coincidence with the two sides of the parallelogram to coincidence with the seemingly straight, wavilinear diagonal of the parallelogram.

540.14 Prime vector may be considered variously as:

- the axis of intertangency (Secs. [521.21](#) and [537.22](#));
- the control line of nature (Sec. [982.21](#));
- the deliberately nonstraight line (Sec. [522](#));
- the diagonal of the cube (Sec. [463](#));
- diametric unity (Sec. [986.160](#) and Fig. [986.161](#));
- half-vectors (Sec. [537.21](#));
- the hypotenuse (Sec. [825.26](#));
- the internuclear vector modulus (Sec. [240.40](#));
- the line of interrelationship (Secs. [505.74](#) and [505.82](#));
- the line between two sphere centers (Sec. [537.21](#));
- linear mensuration unity (Sec. [982.51](#));
- the radial line (Sec. [537.21](#));
- the T Quanta Module edge;
- the tetra edge (Sec. [982.53](#));
- unit radius (Sec. [1106.23](#)).



### 540.30 **Four-frequency Hyperbolic Paraboloid**

[Fig. 540.30](#)

540.31 A flat, four-sided frame (A) can be folded to define a nonplanar hyperbolic paraboloid (B, C, D).

540.32 The edges of the four-sided frame are joined with lines parallel to its edges. This forms the basic grid of the hyperbolic paraboloid. When the frame is in planar position (A), all the grid lines are of equal length. As opposite vertices of the frame are lifted, the grid lines change lengths at unequal rates. Figure [540.30](#) is a four-frequency system that in closed position (E) reveals there are two different cross-lengths in addition to the length of the frame edge. Although the lengths shorten as the altitude increases, there are always only two different cross-lengths for a four-frequency hyperbolic paraboloid. The moment the four-sided frame is no longer planar, the fact of two different axis lengths is revealed.

### 540.40 **Multidimensional Accommodation**

540.41 Vectors, like all real experiences, are inherently terminal. The relative lengths of the vectors are the products of the mass and velocity of the energy events, as expressed in unified scale in relation to other co-occurring energy events. All co-occurring vectors have unique angles of direction as angularly referenced multidimensionally to a given observer's system axis, spin orientation, and system-orbit direction at the time of observation. All angularly referenced relationships inherently involve fourth-dimensional accommodation (and fifth-power accommodation, when referenced to the cosmic scenario). These relationships can be conceptually comprehended in synergetics but can be expressed only in complex formula terms in the XYZ-CG<sub>t</sub> S system.

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[Next Section: 541.00](#)

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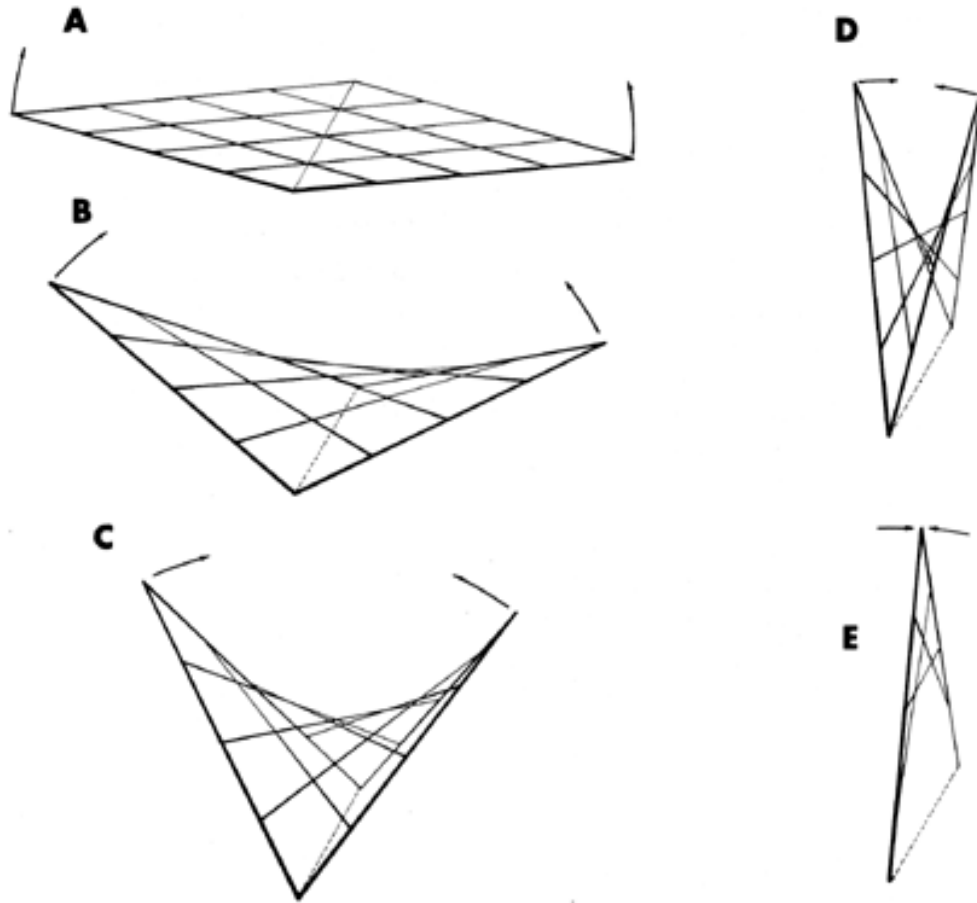


Fig. 540.30 Hyperbolic Paraboloid: There are always only two different cross-lengths for a four-frequency hyperbolic paraboloid. As opposite vertexes of the frame are lifted, the grid lines change length at unequal rates. The moment the four-sided frame is no longer planar, the fact of two different axis lengths is revealed.

## 541.00 Radiation and Gravity

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[Fig. 541.00](#)

541.01A Radiation distributes energy systems outwardly in omnidiametric directions. Radiation fractionates whole systems into multidiametrically dispatched separate packages of the whole. The packaging of spherical unity is accomplished by radii-defined, central- angle partitioning of the spherical whole into a plurality of frequency-determined, simplest central divisioning, thus producing a plurality of three-sided cornucopias formed inherently at minimum limit of volumetric accommodation by any three immediate adjacent central angles of any sphere or of any omnitriangulated polyhedron. The threefold central-angle vertex surroundment constitutes the inner vertex definition of a radially amplified tetrahedral packet of energy, while the three inner faces of the energy package are defined by the interior radial planes of the sphere of omnidiametric distribution. (There is a great- circle plane common to any two radii.) The fourth, or outermost face of the energy package is the spherical surface triangle of the tetrahedron which always occurs at the radial distance outwardly traveled from the original source at the speed of radiation, symbolized as lower-case  $c$ . (See color plate 10.)

541.01 Radiation distributes energy systems outwardly in omnidiametric directions. Radiation fractionates whole systems into multidiametrically dispatched separate packages of the whole. The packaging of spherical unity is accomplished by radii-defined, central- angle partitioning of the spherical whole into a plurality of frequency-determined, simplest, central divisioning, thus producing a plurality of three-sided cornucopias formed inherently at minimum limit of volumetric accommodation by any three immediately adjacent central angles of any sphere or of any omnitriangulated polyhedron.<sup>6</sup> The threefold central-angle vertex surroundment constitutes the inner vertex definition of a radially amplified tetrahedral pack of energy; while the three inner faces of the energy package are defined by the interior radial planes<sup>7</sup> of the sphere of omnidiametric distribution; and the fourth, or outermost, face is the spherical triangle surface of the tetrahedron which always occurs at the radial distance outwardly traveled from the original source at the speed of radiation, symbolized as lower-case  $c$ .

(Footnote 6: The spherical tetrahedra, octahedra, and icosahedra are the only omnitriangulated systems. (See Sec. [532.40](#).)

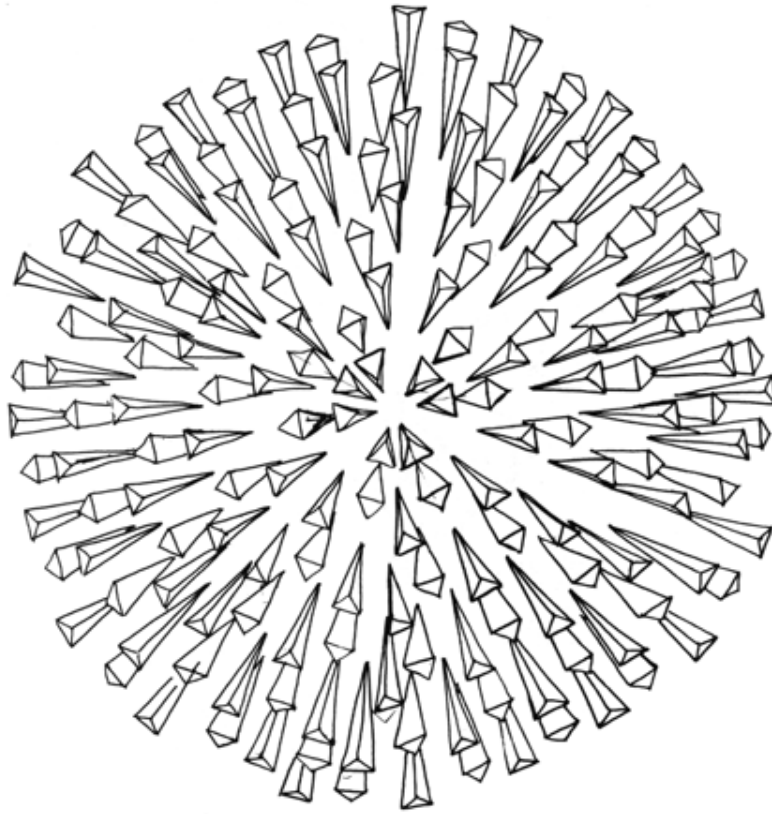


Fig. 541.00 Energy Separated Out into Tetrahedral Photon Packages.

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(Footnote 7: There is a great-circle plane common to any two radii.)

541.02 Radiation is omni-outwardly and omnidiametrically *distributive*; its fractionally packaged radiations are angularly and pulsatively precessed by the universal otherness frequency effects, ergo, in wavilinearly-edged tetrahedral packages. Radiation is wavilinearly amplifying and radially distributive and is defined by the central-angle- partitioning into discontinuous, not-everywhere entities.

541.03 Gravity is omnipresent, omniembracing, and omnicollective: shadowless and awavilinear. Awavilinear means nonwavilinear or antiwavilinear. Gravity counteracts radiation; it is progressively and centrally focusing; and it is always apparently operative in the most economical, i.e., radially-contractive, transformation—the radii being the shortest distances between a sphere's surface and its volumetric center; ergo, employing the absolute straight-nothingness, radial line of direction, which, as such, is inherently invisible.

541.04 Radiation is pushive, ergo tends to increase in curvature. Gravity is tensive, ergo tends to decrease its overall curvature. The ultimate reduction of curvature is no curvature. Radiation tends to increase its overall curvature (as in the "bent space" of Einstein). The pushive tends to arcs of ever lesser radius (microwaves are the very essence of this); the tensive tends to arcs of ever greater radius. (See Sec. [1009.56](#).)

541.05 The omni-inbound gravity works collectively toward the invisibility of the central zero-size point. The outbound, tetrahedrally packaged, fractional point works toward and reaches the inherent visibility phases of radiation. Radiation is disintegrative; gravity is integrative.

541.06 Gravity's omniembracing collectiveness precessionally generates circumferential surface foldings—waves (earthquakes)—consequent to the second-power rate of surface diminution in respect to the radially-measured, first-power linear rate of system contraction. Gravity is innocent of wave. Gravity is innocent of radial; i.e., linear aberration waves; i.e. gravity is nonwavilinear. The most economical interterminal relationship is always that with the least angular aberration. Gravity is the geodesic—most economical—relationship of events.

541.07 Gravity's awavilinear, collective, integrative, economical effectiveness is always greater than that of the radiation's disintegrative, wavilinear distributiveness; ergo, gravity guarantees the integrity of eternally regenerative omni-intertransformative Universe.

541.08 Radiation is wavilinearly and radially distributive; ergo, it is central-angle partitioned. Circularly, it means a single central angle. Spherically, it means a minimum of three central angles: those of a tetrahedron formed with a circumferential limit of the surface of the speed-of-light radial reach.

541.09 Radiation is tetrahedral. A tetrahedron is a tetrahedron independent of size. There are points and no-points. They are both tetrahedral.

541.10 Gravity is circumferentially omniembracing and is never partial, but always whole. Radiation is always packaged. Gravity is the inside-outness of energy-as-matter: the integrity of Universe. It is the sum of all the no-points embracing all the points; and it compounds at the surface-embracing, second-power rate of the linear proximity gains. All the no-points (novents) are always embracing all the points. All the quanta are local- system, center of-event activity, focal points—fractionations of the whole point: what are minimally, ergo, most economically, packaged, and expanded outwardly and omnidiametrically as three-central-angle-defined tetrahedra. (See Secs. [251.05](#) and [529.03](#).)

#### 541.15 **Local Conservation and Cosmic Regeneration**

541.16 The excess effectiveness of gravity over radiation equals the excess of cosmic integrative forces over cosmic disintegrative forces. This gain of syntropy over entropy is invested in the constant intertransformations and transpositionings of eternally regenerative Scenario Universe. (See Secs. [231](#) and [320](#).)

541.17 The vector equilibrium provides a vector model of these functions: the 24 circumferential vectors of the vector equilibrium close back upon themselves and are united in the interconnection of their ends, providing integrative effectiveness of the circumferential vectors vs the individually acting, disintegrative abandonment of the total associative effectiveness of the 24 radial vectors of the vector equilibrium. These represent, respectively, the total gravitational forces of Universe and the total radiational forces of Universe, rendering the total integrative forces of Universe to be inherently more efficient than the total disintegrative forces of Universe. The excess efficiency of the integrative over the disintegrative provides an energy bonus that is cosmically reinvested in local intertransformings of nonsimultaneous, nonunitarily conceptual, almost-totally- invisible-to-humans Scenario Universe.

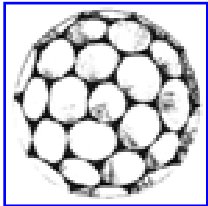
541.18 Thus gravity uses energy more efficiently than radiation, which accounts for the eternal dominance of syntropy over entropy. The energy conserved is invested in the constant transformative transpositioning of the eternal regeneration of Universe. The dominance of syntropy over entropy is the dominance of the metaphysical over the physical and guarantees an eternal resolution of all conflicts between the physical and the metaphysical in favor of the metaphysical. Mind will always win over energy. Omniconsiderate love will always win out over ruthless selfishness, but the score is only cosmically accounted and the meager, momentarily-visible-and-tunable considerations cannot so inform the inherently limited comprehension of the local players. The players may easily be deluded into misassuming that momentary victories won by treachery or physical force are of lasting importance. The invisible design provides for the only-slowly- gestating self-education of humanity from naked, helpless ignorance at birth, through individual trial-and-error coping with necessities, to omnigraduation into functioning with omnireliable., omniloving, intellectual-integrity-governing individuals of an omnifaithfully operative and truthful society. The cosmic design often employs precession to guide the ignorant players into inadvertently producing the evolutionarily necessary regenerative integrity functions, while the ignorant are consciously preoccupied only in vain and selfishly expedient ends.

541.19 The cosmic excess of integrative effectiveness and constancy is manifest in the successively repeatable, self-intertransformative "jitterbug" articulation of the vector equilibrium as it contracts rotationally, symmetrically, and precessionally, thereby successively to transform from the 20-quanta-volume vector equilibrium to the 4-volume octahedron to the volume-of-1 positive tetrahedron to the volume-of-1 negative tetrahedron. (See Illus. [460.08](#) and [461.08](#).) The jitterbug articulation turns around at the negative tetrahedron to reexpand therefrom, returning through all of those volumetric stages to its original 20-volume integrity, to be alternately recontracted through all the 20- to-1 and 1-tetravolume-to-20 without any break ever occurring in the circuitry integrity of the vector-chord closures and intertriangulation in the four planes of the four-dimensional symmetry. The syntropic integrity capability of the vector-equilibrium jitterbug articulation also discloses the means by which nature can effect as much as a 20-to-1 symmetrical and locally volumetric disappearance from visibility.

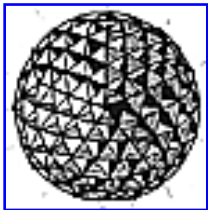
541.20 **Solution of Four-Color Theorem**



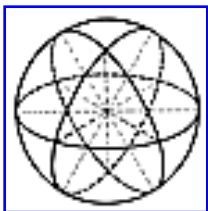
541.21 Polygonally all spherical surface systems are maximally reducible to omnitriangulation, there being no polygon of lesser edges. And each of the surface triangles of spheres is the outer surface of a tetrahedron where the other three faces are always congruent with the interior faces of the three adjacent tetrahedra. Ergo, you have a four-face system in which it is clear that any four colors could take care of all possible adjacent conditions in such a manner as never to have the same colors occurring between two surface triangles, because each of the three inner surfaces of any tetrahedron integral four-color differentiation must be congruent with the same-colored interior faces of the three and only adjacent tetrahedra; ergo, the fourth color of each surface adjacent triangle must always be the one and only remaining different color of the four-color set systems.



541.30 **Photon as Tetrahedral Package**



[Fig. 541.30I](#)



[Fig. 541.30M](#)

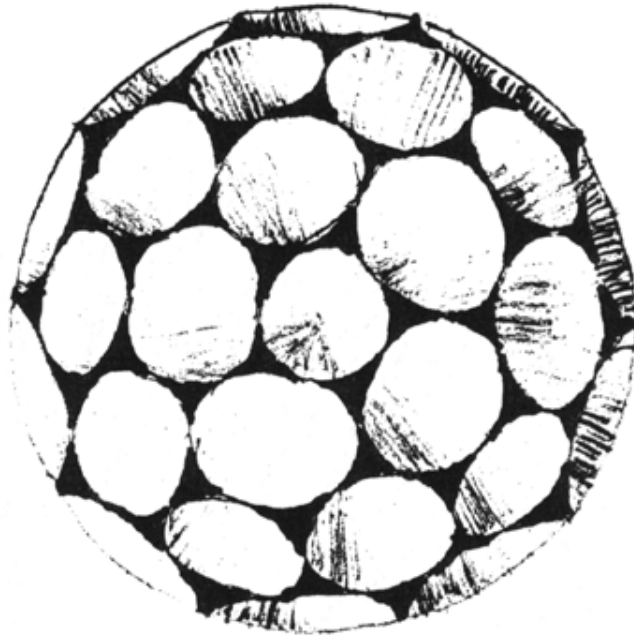


Fig. 541.30H Circular Cornucopia Assembled Around Interior Points to Form a Spherical Array. The tangent circles areas as well as concave triangle interstices constitute the total spherical surface.

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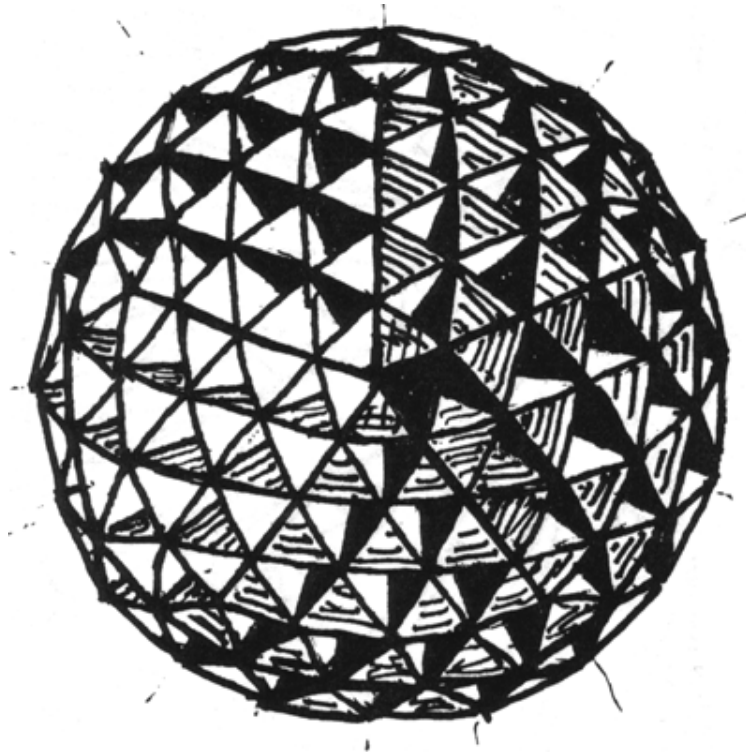


Fig. 541.30I Three-Sided, Triangular Cornucopia Subdivide the total sphere.

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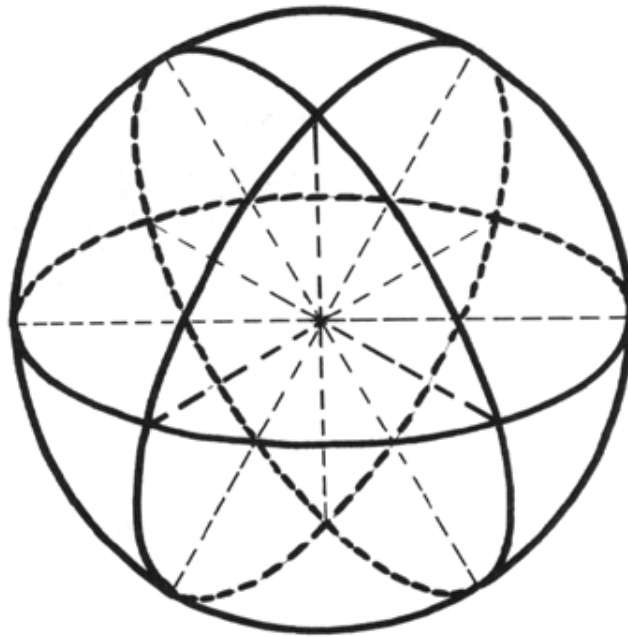
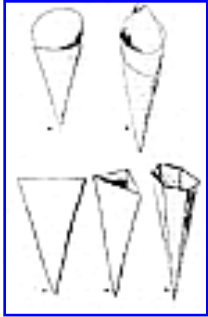


Fig. 541.30M Gradually the four tetrahedron-defining, vertexial components of the photon package's spiralling results in an equilibrium-seeking interaction of their four separate interattractions, which generates the four great circles of the vector equilibrium and establishes its tactical energy center as the four planes of the zerophase tetrahedron.



[Fig. 541.31](#)

541.31 An ice cream cone (Fig. A).

A cornucopia (Fig. B).

A cone which, in its flattened state, has zero interior volume. In its flattened state it is two-sided (Fig. C).

The three-sided state has the volume of a tetrahedron (Fig. D).

The six-sided state (Fig. E)

and the 12-sided state (Fig. F)

have progressively greater volume with the same surface area.

541.32 The seemingly circular—but inscrutably multifaceted—state, the conic (Fig. G) has most volume with the same surface as that of its tetrahedral cornucopia state.

541.33 Circular cornucopia can be tangentially assembled around interior points to form a "spherical bouquet," a spherical array, but the tangent circle areas do not constitute the total surface of the sphere. There are concave triangle interstices (see Fig. 541.30H).

541.34 But three-sided, triangle-mouthed cornucopia will, together, subdivide the total sphere (see Fig. 541.30I). Therefore, as the three-sided tetrahedral packages become outwardly separated from one another, they will inherently yield to their greater volume and, being spun precessionally (Fig. K) by their sum-total cosmic otherness, will, by centrifugal force, become *cones*; which, rotating on their long conic axis will generate a cylindrical, spiral, wave pattern: (Fig. L). By their radially outward dispatch, they rotationally describe the cornucopia, or cone of gradual beam spread—the spread rate being negligible in relation to the axial speed-of-light rate of travel (See Fig. 541.30M).

541.35 Progressively the four tetrahedron-defining vertexial components of the photon packages spiralling precession results in an equilibrium-seeking of the inward- outward-and-around proclivities of the four separate interattractivenesses which spontaneously generate the four great circles of the vector equilibrium and establish its tactical energy center as the four planes of the zero-size phase of the tetrahedron.

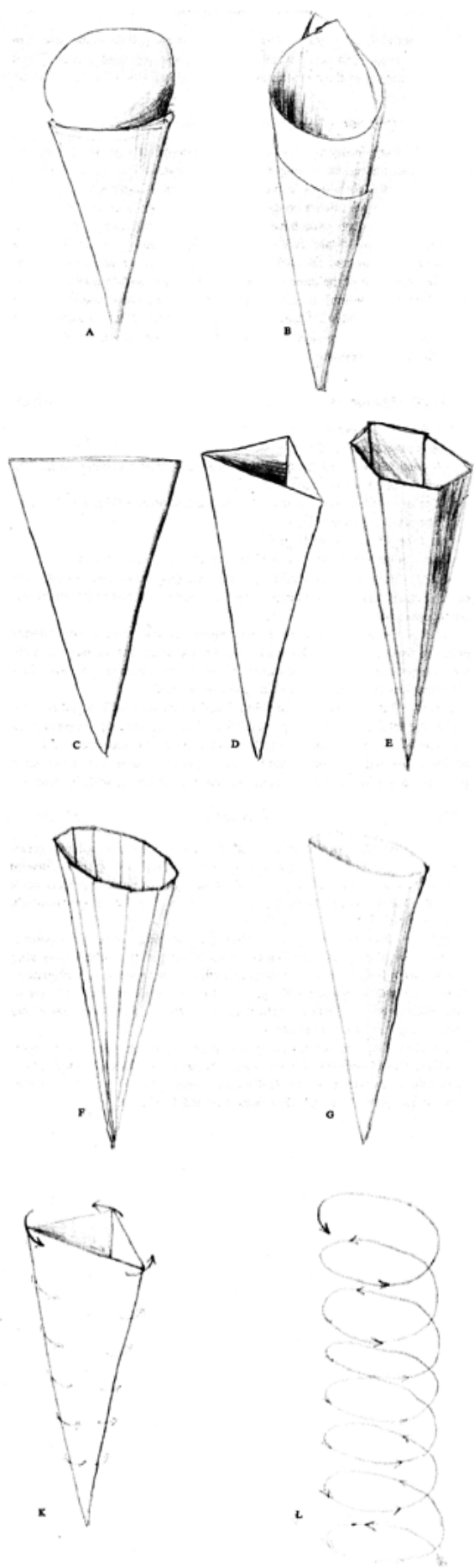


Fig. 541.31

541.36 The total vector equilibrium spherical package becomes an export photon. Though superficially amorphous, radiation is inherently tetrahedrally and spherically packaged, and is discretely accountable as such. The tetrahedron is the quantum model. (See Secs. [620](#) and [1106.23](#).)

#### 541.40 **Islanded Radiation and Tensional Constancy**

541.41 Radiation is special case, systematically centered, and discontinuously islanded. Gravity is continuous tension omni-inter-between all systems. Because gravitational, intertensional intensivity varies as the second power of the arithmetical interdistancing variations, whose unique variations are locally periodic, it manifests periodic intensities of tidal pulls, but the overall tensional integrity is constant independent of local variabilities in intensity.

541.42 Electromagnetic radiation is distributive and entropic; its frequency magnitudes represent multiplication by division. Gravity is nondivisive and syntropic; its conservation is accomplished by holistic embracement of variable intensities. Gravity is integral. Holistic gravity has no frequency.

541.43 Earth's biospheric inventory of water is radially dispersed outwardly by vaporization and omnilocally condensed as inwardly "falling" drops of rain, which are gravitationally and convergently collected as ocean.

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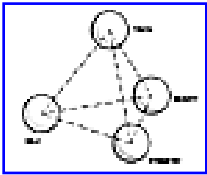
## 542.00 Quality

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. . . then, if we are not able to hunt the Good with one idea only, with three we may catch our prey: Beauty, Symmetry, Truth are the three....

--Plato, *Philebus*

542.01 This triadic concept is exclusively planar—ergo, nonexistent. What is inadvertently omitted is the observer of the planar triad, whose observer position marks the fourth corner of the tetrahedron, the minimum system.



[Fig. 542.02](#)

542.02 The observer-plus-the-observed, Beauty, Symmetry, and Truth are the four unique system-defining characteristics. It is possible that Plato might have approved a systematic reordering of his statement to read: The observer (as a truth) observing three other truths constitutes a system whose macro-micro-

Universe-differentiating capability displays inherent symmetry and beauty—symmetry of four vertexes subtending four faces and symmetry of any two opposite pairs of its six edges precessionally subtending one another, together with the beauty of accomplishing such symmetry and Universe- differentiating with the minimum of structural system interrelationships. (See Fig. [542.02](#).)

542.03 The qualitative interrelationships of this beautiful and symmetrical system are expressed in the generalized formula

$$N = \frac{N^2 - N}{2}$$

in which  $N = 4$ , the number of vertexes of the minimum system constituting the tetrahedron; wherefore

$$4^2 = 16, 16 - 4 = 12, 12/2 = 6.$$

Six is the set of the uniquely symmetrical interrelationships of the minimum system.

542.04 Beauty and symmetry are inherent and make superficially "good" the three additional interrelationships: thankfulness, maximum economy, and wisdom. They also make "good" all the remaining cases on balance—the 32 cases (Sec. [1044](#)) of all the simplest cosmically conceptual and structurally realizable systems of Universe.



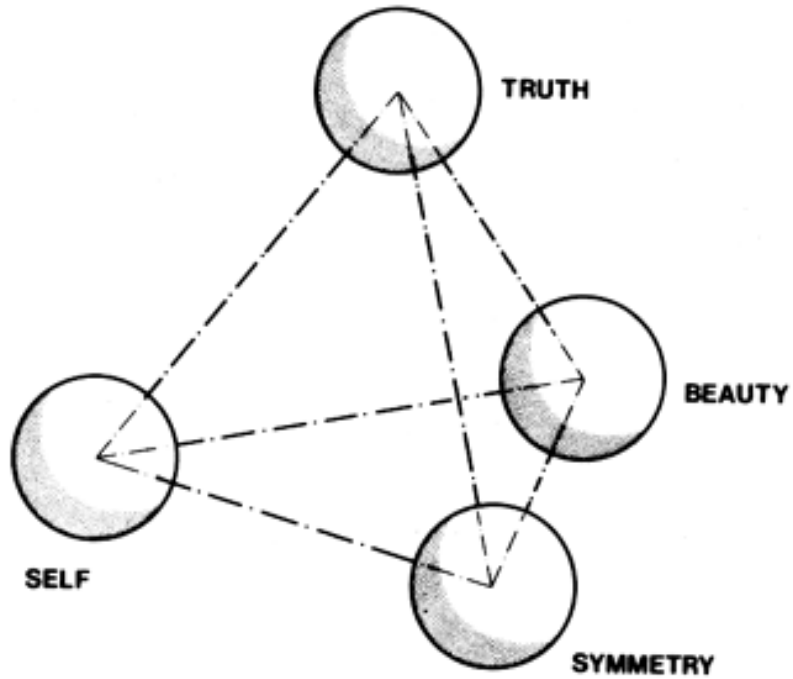


Fig. 542.02 Tetrahedral Analysis of Plato's Triad: The triadic concept of Beauty, Symmetry, and Truth inadvertently omitted the function of the observer. The tetrahedron is the unique symmetrical set of minimum interrelationships.

542.05 Is there a *qualitative* systems attribute? Can special case system events and characteristics be appraised *qualitatively*? My answer is that you and I are always off- center. All special case realizations of generalized principles are always aberrated realizations. Since there is no simultaneity, there is always realization lag. Consciousness is aberration. But the lags are always accompanied by experientially evolved inventions of more efficient operational means of decreasing the magnitude of tolerated errors—i.e., off-center aberrations.

542.06 Evolutingly we always acquire the means to come closer to the truth, but in all special-case temporality and its asymmetric resonance we can never reach statically concentric congruence with truth.

542.07 Quality describes the relative proximity—concentrically attained—of absolute congruence with convergently directioned, dimensionless truth.

### 543.00 Reality and Inexactitude

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543.01 Reality is the special case, episodic, high-frequency recall of like experiences within our individual scenario lives. Reality is nothing but highfrequency recurrence of the awareness of a dominant generalized principle remanifesting itself in our special case awareness sequences.

543.02 The cognitive is self-startered by mind's outer-rampart-guardian intuition and by mind's aesthetic delicacy of tolerance of pro tem imperfection. The intellect differentiates the reactions and discernments of our sense apprehending. The intellect- invented differentiations become operative when the high frequency of unrecognized events accelerates in pure principle to thicken up as do storm clouds: "Something's about to happen.... Now it's happening. "

543.03 What you and I call matter are the high-frequency recurrences of interprinciple, interangular-action accommodations . . . the deflectings . . . the thickenings . . . sometimes intensifying to *hurt* or *bang!*

543.04 The cyclic timing of our only-apparently continuous sight—as photoframes—differs greatly from the cyclic timing of our other senses, each of which has its separate harmonic ranges and velocities (Sec. [801.09](#)).

543.05 The apprehending of reality is a mind function. Reality = inexactitude.

### 543.10 **Local and Cosmic Exactitude**

543.11 Metaphysical principles are absolutely exact, absolutely inelastic, and absolutely intolerant of error: these are the generalized principles. Despite elegant mathematical expression, they may never be exactly defined by their human mind discoverers. (At Sec. [986.702](#) we see Einstein's once seemingly perfect equation  $E = Mc^2$  having to be improved to read  $E = 2V^2$ , as vectorial expression of the T Module and E Module relationships—the vectors being a more economical expression of the product of mass and velocity.)

543.12 But there exists a plurality of such non-positionally-realized but eternally coexistent generalized principles whose integrated relative degree of relevance to any one episode or event of the individual's experience scenario is inherently inexact. These inexact events are always special case effects of the momentary integration of a plurality of generalized principles.

543.13 The wave-frequency characteristics of energy (either seemingly disassociative as radiation or seemingly associative as matter) are propagated by the elasticity of the mind's tolerance of the inexactitude-shrouded but nonetheless-recognized generalized principle. In complex social phenomena, we speak of this tolerance as love, which spontaneously forgives, allows, or tolerates outright macro-error or micro-deviation from exquisite exactitude.

543.14 The realities of you and I are typical special cases of the infinity of inexactitudes of the individual cognition lags and re-cognitions of the generalized integral of all generalized principles—love.

543.15 It was only the recall of the total of all the love that I had known in my childhood that turned around my determination in 1927 to throw myself away and instead to employ the throwaway-self toward repaying all lives for my unforgettable experiencings of the infinite tolerance of love as it had embraced and permeated (both) my infant, childhood, and juvenile years. My commitment to this repayment in turn led to the discovery of the cumulative total of loving understanding of all humanity in all time as ever regenerated in parents and grandparents for all its children and by the ever regenerative tolerance of children for parents.

### 543.20 **Gravity and Love**

543.21 The scientific word for the integral of all the special case realizations of gravity is love.

543.22 Love is the integral of gravity and radiation. Energy as either radiation or matter is the summa frequency, local-in-Universe, aberrational palpitation of comprehensive gravity embracement. Energy manifests itself as the palpitating, gravity- tolerated, aberrational pulsings-through of the plurality of exact centers of pure principles. This plurality of principles, being inherently different one from the other, have ever- varying interdomain proximities that produce varying push-pulls of the plurality of generalized principles influencing the locally-tuned-in event, which proximity variations depend on which set of principles are most informationally relevant in comprehending both the local and cosmic significance of any given local experience event.

543.23 All the foregoing abets our comprehension of the truth toward which all experience leads—to the truth that the physical is only a misapprehension of the metaphysical and that the reality is absolutely truthful love.

543.24 There is only the metaphysical. The physical can never be *only*- because it is only partially experienceable and think-aboutable.

543.25 It is the love-gravity toleration of high-frequency-recurrent aberrations from any one absolute principle's exact center, along with the varying yielding toward other centers, that permits those from-time-to-time, love-intellect-mind-intuited discoveries of the mathematical variation rates of interrelationship changes evolutionarily existing between the nondimensional plurality of pure principles. This infinitely regenerated and loving comprehension breeds realizations of the infinitude of intercombining the plurality of principles, which infinitude of realizations and complex interrelationships of variable- relevance tolerance effects altogether constitute both the over-all theme and the separate, unique, individual experience episodes of any one life at any one time. (Compare Secs.[541.18](#) and [1005.20](#).)

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