905.70 **Summary: Wave Propagation Model**

905.71 Both in the spherical vector equilibrium and in the disequilibrious icosahedral spherical system, the prime number five is produced by the fundamental allspace-filling complementarity of the l-volume tetrahedron and the 4-volume octahedron.

__ Symmetrical: 1 + 4 = 5

__ Asymmetrical: 4 + 1 = 5

The effect is *symmetrical* when the tetrahedron's four vertexes simultaneously pulse outwardly through their opposite void triangles to produce the "star tetrahedron," one outwardly-pointing tetrahedron superimposed on each of the four faces of a nuclear tetrahedron: i.e., 1 + 4 = 5. The effect is *asymmetrical* when one outwardly-pointing tetrahedron is superimposed on one face of one octahedron: i.e., 4 + 1 = 5.

905.72 We now understand how the equilibrious 48 basic triangles transform into the 120 disequilibrious basic triangles. The 120 (60 positive and 60 negative) LCD spherical triangles' central (or nuclear) angles are unaltered as we transform their eternal systemic patterning symmetry from (a) the octahedral form of l20/8=15 A Quanta Modules per each octa triangle; to (b) the icosahedron's 120/20 = 6 A Quanta Modules per each icosa triangle; to (c) the dodecahedron's l20/l2 = 10 A Quanta Modules per each pentagon. This transformational progression demonstrates the experientially witnessable, wave-producing surface-askewing caused by the 120-degree, alternating rotation of the icosahedron's triangles inside of the octahedron's triangles. Concomitant with this alternating rotation we witness the shuttling of the spherical vector equilibrium's 12 vertexial positions in a successive shifting-back-and-forth between the spherical icosahedron's 12 vertexial positions; as well as the wave-propagating symmetrical, polyhedral alterations of the inward-outward pulsations which generate surface undulations consequent to the radial contractions, at any one time, of only a fractional number of all the exterior vertexes, while a symmetrical set of vertexes remains unaltered.

905.73 This elucidates the fundamental, electromagnetic, inward-outward, and complex great-circling-around type of wave propagation, as does also the model of spheres becoming voids and all the voids becoming spheres, and their omniradiant wave propagation (see Sec. 1032).

905.74 There are also the approximately unlimited ranges of frequency modulatabilities occasioned by the symmetrical subdivisioning of all the prime, equiangled, surface triangles of the tetrahedron, octahedron, and icosahedron. This additionally permitted wave undulation of surface pattern shifting is directly identified with the appearance of photons as spherically clustered and radiantly emittable tetrahedra (see Sec. 541.30).

910.00 **A and B Quanta Modules**

910.01 All omni-closest-packed, complex, structural phenomena are omnisymmetrically componented only by tetrahedra and octahedra. Icosahedra, though symmetrical in themselves, will not close-pack with one another or with any other symmetrical polyhedra; icosahedra will, however, face-bond together to form open- network octahedra.

910.02 In an isotropic vector matrix, it will be discovered that there are only two omnisymmetrical polyhedra universally described by the configuration of the interacting vector lines: these two polyhedra are the regular tetrahedron and the regular octahedron.

910.10 **Rational Fraction Elements**

910.11 All other regular, omnisymmetric, uniform-edged, -angled, and -faceted, as well as several semisymmetric, and all other asymmetric polyhedra other than the icosahedron and the pentagonal dodecahedron, are described repetitiously by compounding rational fraction elements of the tetrahedron and octahedron. These elements are known in synergetics as the A and B Quanta Modules. They each have a volume of l/24th of a tetrahedron.

911.00 **Division of Tetrahedron**

911.01 The regular tetrahedron may be divided volumetrically into four identical Quarter-Tetrahedra, with all their respective apexes at the center of volume of the regular unit tetrahedron. (See Illus. 913.01.) The Quarter-Tetrahedra are irregular pyramids formed upon each of the four triangular faces of the original unit tetrahedra, with their four interior apexes congruent at the regular tetrahedron's volumetric center; and they each have a volume of one quarter of the regular tetrahedron's volume-1.

911.02 Any of the Quarter-Tetrahedra may be further uniformly subdivided into six identical irregular tetrahedra by describing lines that are perpendicular bisectors from each vertex to their opposite edge of the Quarter-Tetrahedron. The three perpendicular bisectors cut each Quarter-Tetrahedron into six similar tetrahedral pieces of pie. Each one of the six uniformly symmetrical components must be l/6th of One Quarter, which is l/24th of a regular tetrahedron, which is the volume and description of the A Quanta Module. (See Illus. 913.01B.)

912.00 **Division of Octahedron**

912.01 The regular octahedron has a volume equivalent to that of four unit tetrahedra. The octahedron may be subdivided symmetrically into eight equal parts, as Eighth-Octahedra, by planes going through the three axes connecting its six vertexes. (See Illus. 916.01.)

912.02 The Quarter-Tetrahedron and the Eighth-Octahedron each have an equilateral triangular base, and each of the base edges is identical in length. With their equiangular-triangle bases congruent we can superimpose the Eighth-Octahedron over the Quarter-Tetrahedron because the volume of the Eighth-Octahedron is l/2 and the volume of the Quarter-Tetrahedron is 1/4. The volume of the Eighth-Octahedron is twice that of the Quarter-Tetrahedron; therefore, the Eighth-Octahedron must have twice the altitude because it has the same base and its volume is twice as great.

913.00 **A Quanta Module**

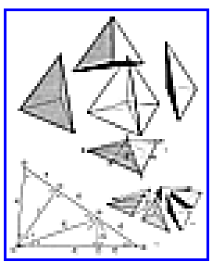
Fig. 913.01

913.01 The A Quanta Module is l/6th of a Quarter-Tetrahedron. The six asymmetrical components of the Quarter-Tetrahedron each have a volume of l/24th of the unit tetrahedron. They are identical in volume and dimension, but three of them are positive and three of them are negative. (See Illus. 913.01.)

913.10 **Positive and Negative:** The positive and negative A Quanta Modules (the + and the -) will not nest in one another congruently despite identical angles, edges, and faces. The pluses are inside-out minuses, which can be shown by opening three of their six edges and folding the three triangles' hinged edges in the opposite direction until their edges come together again.

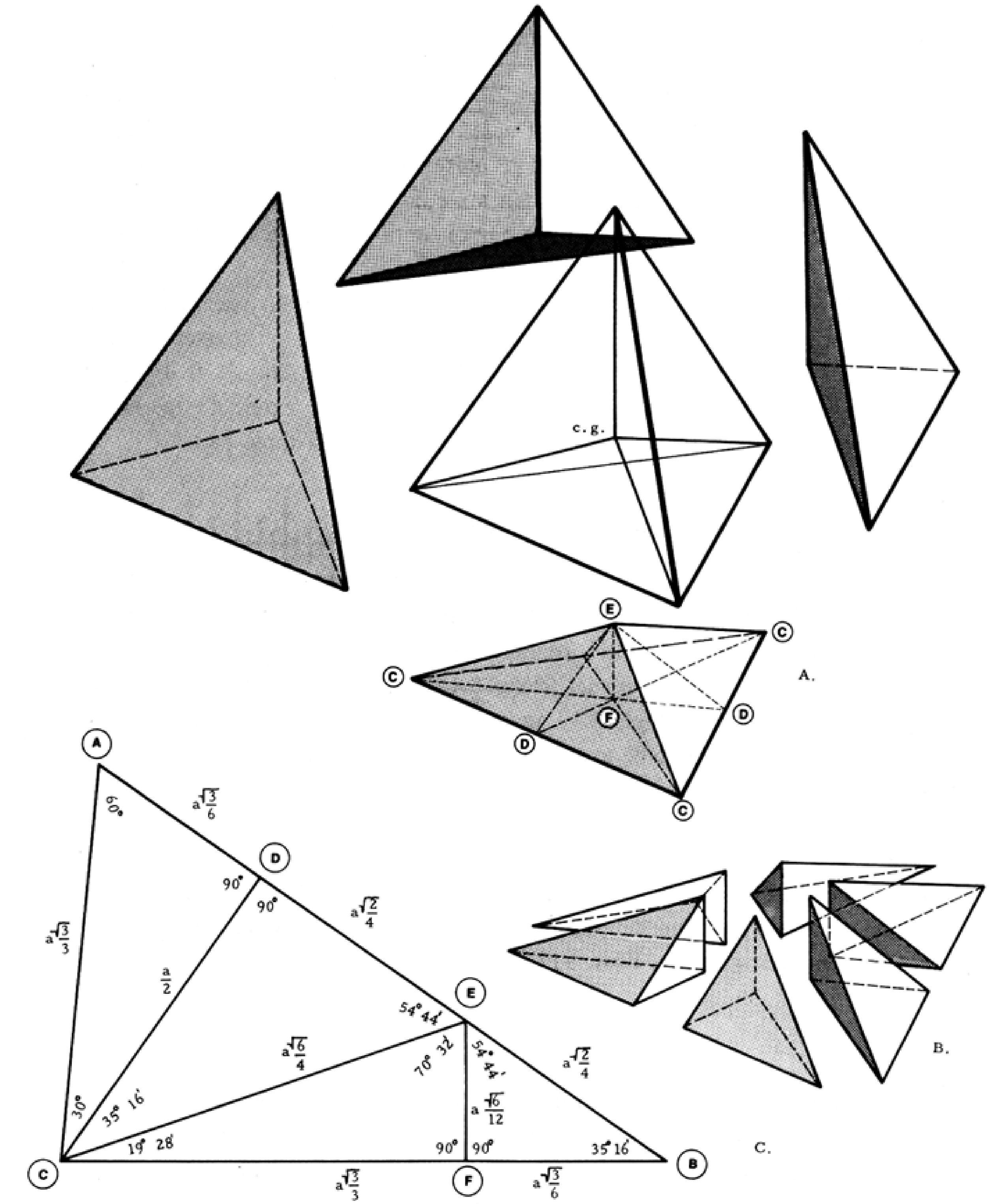

Fig. 913.01 Division of the Quarter-Tetrahedron into Six Parts: A Quanta Module:

A. The regular tetrahedron is divided volumetrically into four identical quarters.
B. The quarter-tetrahedron is divided into six identical irregular tetrahedra, which appear as three right-hand and three left-hand volumetric units each equal in volume to 1/24th of the original tetrahedron. This unit is called the A Module.
C. The plane net which will fold into either left or right A modules is shown. Vertex C is at the vertex of the regular tetrahedron. Vertex E is at the center of gravity of the tetrahedron. Vertex D is at the mid-edge of the tetrahedron. Vertex F is at the center of the tetrahedron face. Note that AD = FB, DE = EB, and AC = CF.

913.11 The A Quanta Module triangle is possibly a unique scalene in that neither of its two perpendiculars bisect the edges that they intersect. It has three internal foldables and no "internally contained" triangle. It drops its perpendiculars in such a manner that there are only three external edge increments, which divide the perimeter into six increments of three pairs.

914.00 A Quanta Module: Foldability

914.01 The A Quanta Module can be unfolded into a planar triangle, an asymmetrical triangle with three different edge sizes, yet with the rare property of folding up into a whole irregular tetrahedron.

914.02 An equilateral planar triangle AAA may be bisected in each edge by points BBB. The triangle AAA may be folded on lines BB, BB, BB, and points A, A, A will coincide to form the regular tetrahedron. This is very well known.

914.10 **Four Right Angles:** In respect to the A Quanta Module flatout triangle or infolded to form the irregular tetrahedron, we find by the method of the module's construction (by perpendicular planes carving apart) that there are four right angles (see Illus. 913.01C):

EFB EDC

EFC ADC

914.20 **Unfolding into a Flat Triangle:** If we go to the vertex at E and break open the edges ED and AD, we can hinge open triangle EBF on hinge line EF. We can then break open the edge AC and fold triangle ADC, as well as folding out the two triangles DEC and CEF, which are connected by the hinge EC, *so* that now the whole asymmetric A Quanta Module is stretched out flat as a triangle.

914.21 The A Quanta Module unfolds into a scalene triangle; that is, all of its non- degree angles are different, and all are less than 90 degrees. Two of the folds are perpendicular to the triangle's sides, thus producing the four right angles. The A Quanta Module triangle may be the only triangle fulfilling all the above stated conditions.

914.30 **Spiral Foldability:** The foldability of the A Quanta Module planar triangle differs from the inter-mid-edge foldability of the equilateral or isosceles triangle. All the mid-edge-foldable equilateral or isosceles triangles can all form tetrahedra, regular or irregular. In the case of the folded equilateral or isosceles triangle, the three triangle corners meet together at one vertex: like petals of a flower. In the case of the inter-mid- edge-folding scalene triangle, the three corners fail to meet at one vertex to form a tetrahedron.

915.00 **Twinkle Angle**

915.01 The faces of an A Quanta Module unfold to form a triangle with 84° 44' (30° 00' + 35° 16' + 19° 28') as its largest angle. This is 5° 16' less than a right angle, and is known as the *twinkle angle* in synergetics (see Illus. 913.01C).

915.02 There is a unique 5° 16'-ness relationship of the A Quanta Module to the symmetry of the tetrahedron-octahedron allspace-filling complementation and other aspects of the vector equilibrium that is seemingly out of gear with the disequilibrious icosahedron. It has a plus-or-minus incrementation quality in relation to the angular laws common to the vector equilibrium.

915.10 **A Quanta Module Triangle and Basic Disequilibrium 120 LCD Triangle:** The angles of fold of the A Quanta Module triangle correspond in patterning to the angles of fold of the Basic Disequilibrium 120 LCD Triangle, the 1/120th of a sphere whose fundamental great circles of basic symmetry subdivide it in the same way. The angles are the same proportionally when the spherical excess subsides proportionally in all three corners. For instance, the angle ACB in Illus. 913.01C is not 90 degrees, but a little less.

915.11 It is probable that these two closely akin triangles and their respective folded tetrahedra, whose A Module Quantum phase is a rational subdivider function of all the hierarchy of atomic triangulated substructuring, the 120 Basic Disequilibrium LCD triangles and the A Module triangles, are the *same quanta* reoccurrent in their most powerful wave-angle oscillating, intertransformable extremes.

915.20 **Probability of Equimagnitude Phases:** The 6° spherical excess of the Basic Disequilibrium 120 LCD Triangle, the 5° 16' "twinkle angle" of the A Quanta Module triangle, and the 7° 20' "unzipping angle" of birth, as in the DNA tetrahelix, together may in time disclose many equimagnitude phases occurring between complementary intertransforming structures.

916.00 **B Quanta Module**

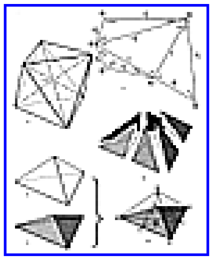
Fig. 916.01

916.01 The B Quanta Module is 1/6th of the fractional unit described by subtracting a Quarter-Tetrahedron from an Eighth-Octahedron. The six asymmetrical components of the fractional unit so described each have a volume of 1/24th of the unit tetrahedron. They are identical in volume and dimensioning, but three of them are positive and three of them are negative. (See Illus. 916.01.)

916.02 When the Eighth-Octahedron is superimposed on the Quarter-Tetrahedron, the top half of the Eighth-Octahedron is a fractional unit, like a concave lid, with a volume and weight equal to that of the Quarter-Tetrahedron below it. We can slice the fractional unit by three planes perpendicular to its equilateral triangular base and passing through the apex of the Quarter-Tetrahedron, through the vertexes of the triangular base, and through the mid-points of their respective opposite edges, separating it into six equidimensional, equivolume parts. These are B Quanta Modules.

916.03 B Quanta Modules are identical irregular tetrahedra that appear as three positive (outside-out) and three negative (outside-in) units. Each of the B Quanta Modules can be unfolded into a planar, multitriangled polygon. (See Illus. 916.01F.)

Next Section: 920.00

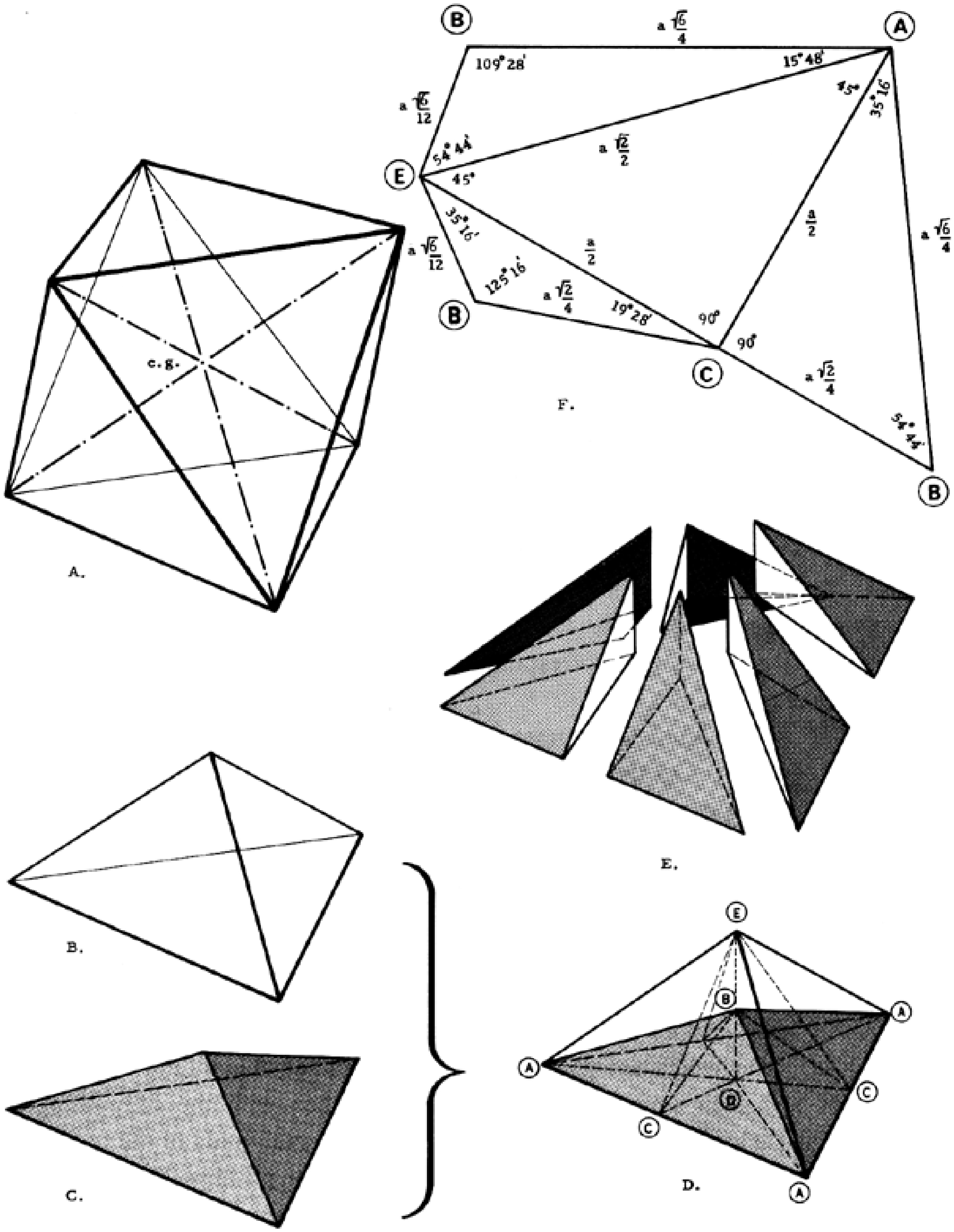

Fig. 916.01 Division of Eighth-Octahedron into Six Parts: B Quanta Module: The regular octahedron (A) is divided into eight identical units (B) equaling 1/8 of the volume of the octahedron. The quarter tetrahedron as defined by six A Modules (C) is subtracted from the 1/8-octahedron (D). This fractional unit is then subdivided into six identical irregular tetrahedra that appear as three right-hand and three left-hand units and are referred to as B Modules. They are equal in volume to the A Modules and are consequently also 1/24th of the regular tetrahedron. In (F) is shown the plane net which will fold into either the right or left B Module. Vertex A is at the vertex of the octahedron. Vertex C is at the mid-edge of the octahedron. Vertex E is at the center of gravity of the octahedron.