987.130 **Primary and Secondary Great-circle Symmetries**

987.131 There are seven other *secondary* symmetries based on the pairing into spin poles of vertexes produced by the complex secondary crossings of one another of the seven original great circle symmetries.

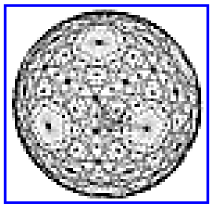
Fig. 987.132E

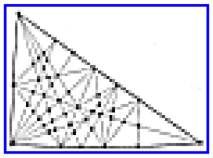
Fig. 987.132F

987.132 The primary and secondary icosa symmetries altogether comprise 121 = 11^2 great circles. (See Fig. 987.132E.)

987.133 The crossing of the primary 12 great circles of the VE at G (see Fig. 453.01, as revised in third printing) results in 12 new axes to generate 12 new great circles. (See color plate 12.)

987.134 The crossing of the primary 12 great circles of the VE and the four great circles of the VE at C (Fig. 453.01) results in 24 new axes to generate 24 new great circles. (See color plate 13.)

987.135 The crossing of the primary 12 great circles of the VE and the six great circles of the VE at E (Fig. 453.01) results in 12 new axes to generate 12 new great circles. (See color plate 14.)

987.136 The remaining crossing of the primary 12 great circles of the VE at F (Fig. 453.01 results in 24 more axes to generate 24 new great circles. (See color plate 15.)

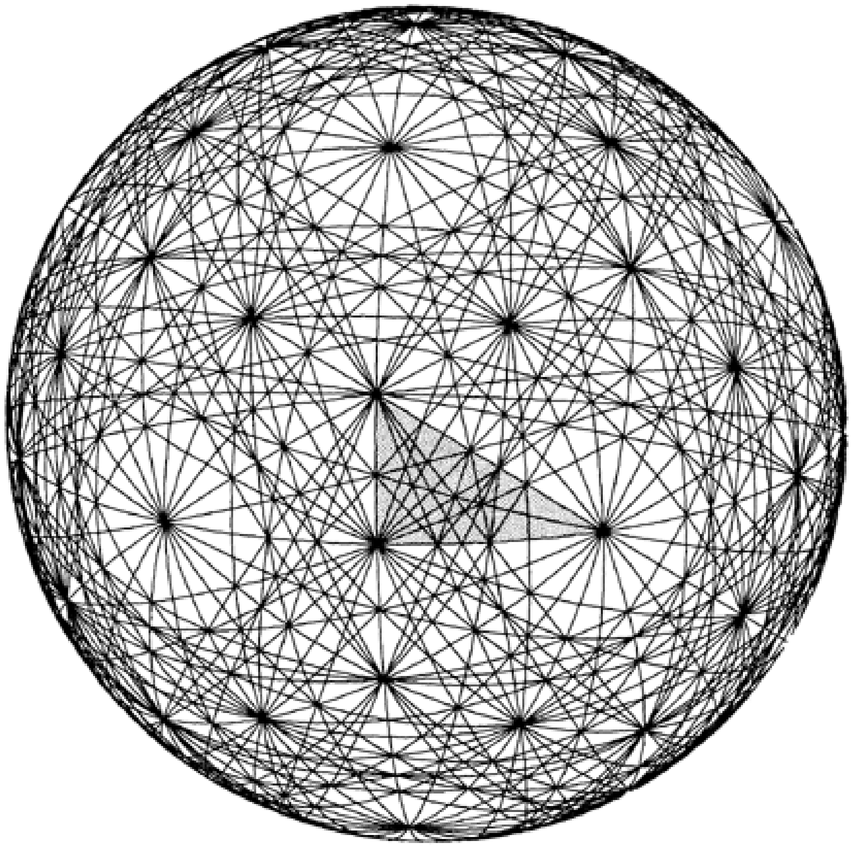

Fig. 987.132E Composite of Primary and Secondary Icosahedron Greate Circle Sets: This is a black- and-white version of color plate 30. The Basic Disequilibrium 120 LCD triangle as presented at Fig. 901.03 appears here shaded in the spherical grid. In this composite icosahedron spherical matrix all of the 31 primary great circles appear together with the three sets of secondary great circles. (The three sets of secondary icosahedron great circles are shown successively at color plates 27-29.)

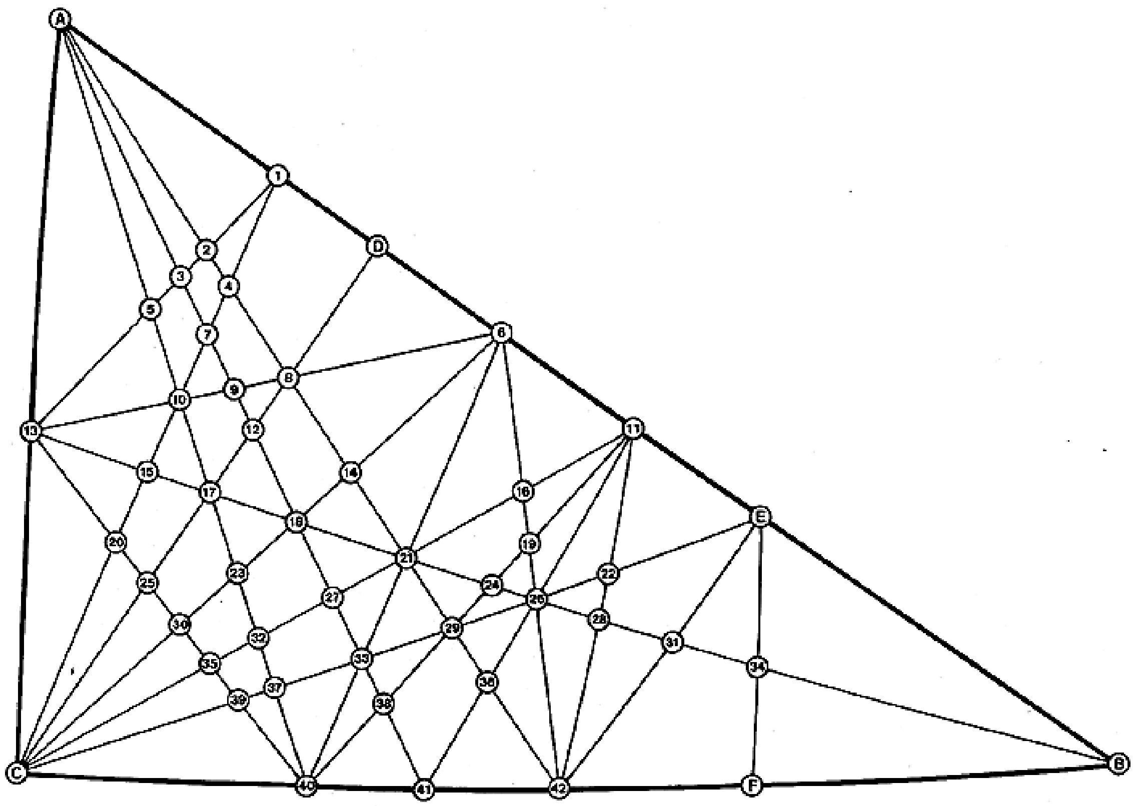

Fig. 987.132F Net Diagram of Angles and Edges for Basic Disequilibrium 120 LCD Triangle: This is a detail of the basic spherical triangle shown shaded in Fig. 987.132E and at Fig. 901.03. It is the key to the trigonometric tables for the spherical central angles, the spherical face angles, the planar edge lengths, and the planar face angles presented at Table 987.132G.

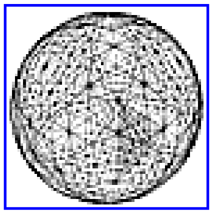
Fig. 987.137B

987.137 The total of the above-mentioned *secondary* great circles of the VE is 96 new great circles (See Fig 987.137B.)

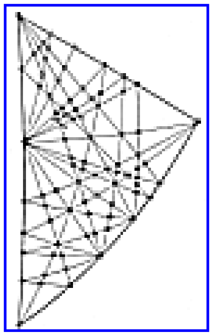
Fig. 987.137C

987.200 **Cleavagings Generate Polyhedral Resultants**

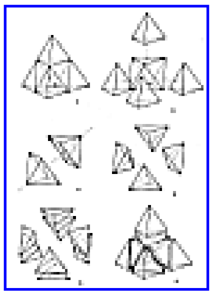
Fig. 987.210

987.210 **Symmetry #1 and Cleavage #1**

987.211 In Symmetry #l and Cleavage #1 three great circles-the lines in Figs.
987.210 A through F—are successively and cleavingly spun by using the midpoints of each of the tetrahedron's six edges as the six poles of three intersymmetrical axes of spinning to fractionate the primitive tetrahedron, first into the 12 equi-vector-edged octa, eight Eighth-octa (each of l/2-tetravolume), and four regular tetra (each of l-tetravolume).

987.212 A simple example of Symmetry #1 appears at Fig. 835.11. Cleavage #1 is illustrated at Fig. 987.210E.

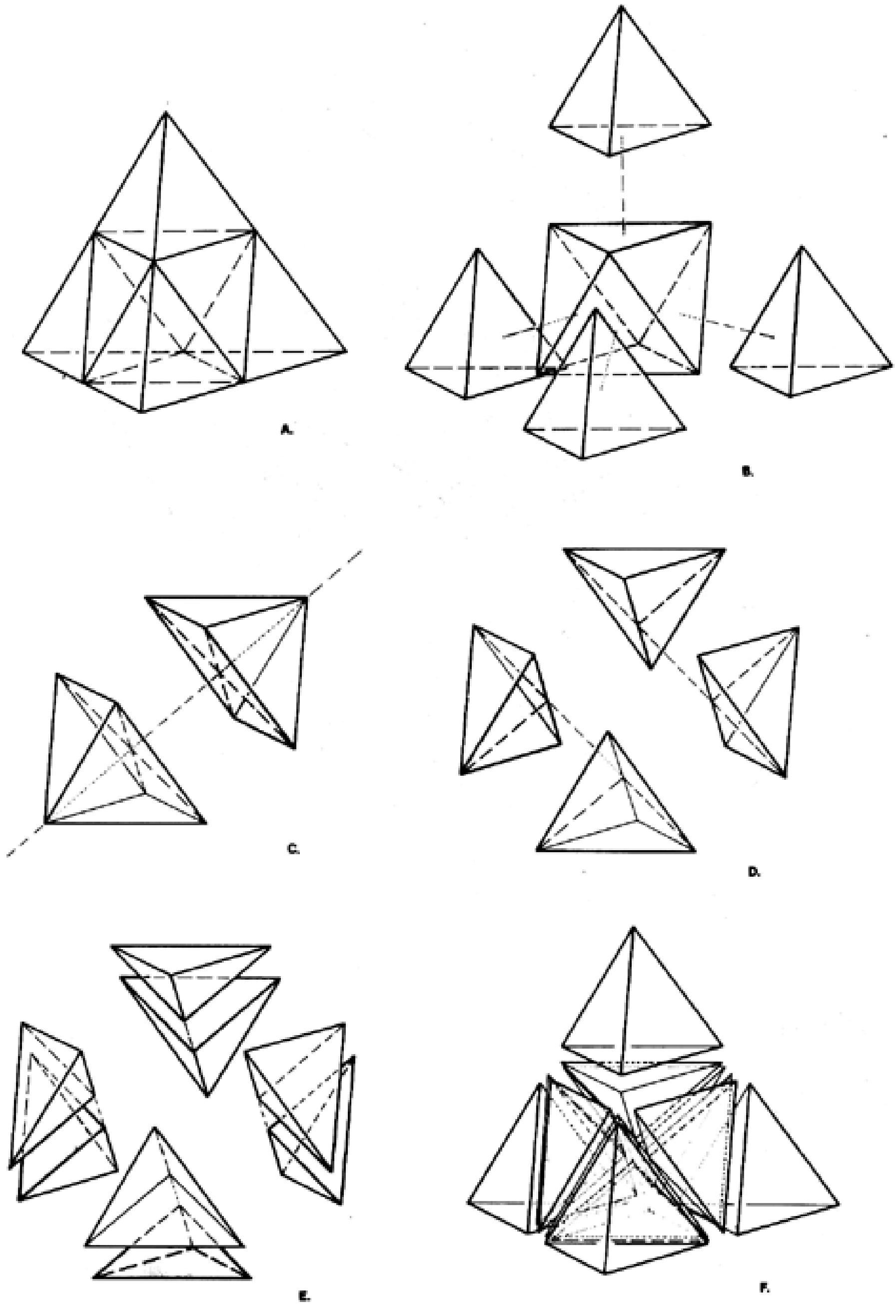

Fig. 987.210 Subdivision of Tetrahedral Unity: Symmetry #1:

A. Initial tetrahedron at two-frequency stage.
B. Tetrahedron is truncated: four regular corner tetra surround a central octa. The truncations are not produced by great-circle cleavages. C, D, and E show great-circle cleavages of the central octahedron. (For clarity, the four corner tetra are not shown.) Three successive great-circle cleavages of the tetrahedron are spun by the three axes connecting the midpoints of opposite pairs of the tetra's six edges.
C. First great-circle cleavage produces two Half-Octa.
D. Second great-circle cleavage produces a further subdivision into four irregular tetra called "Icebergs."
E. Third great-circle cleavage produces the eight Eighth-Octahedra of the original octa.
F. Eight Eighth-Octa and four corner tetras reassembled as initial tetrahedron.

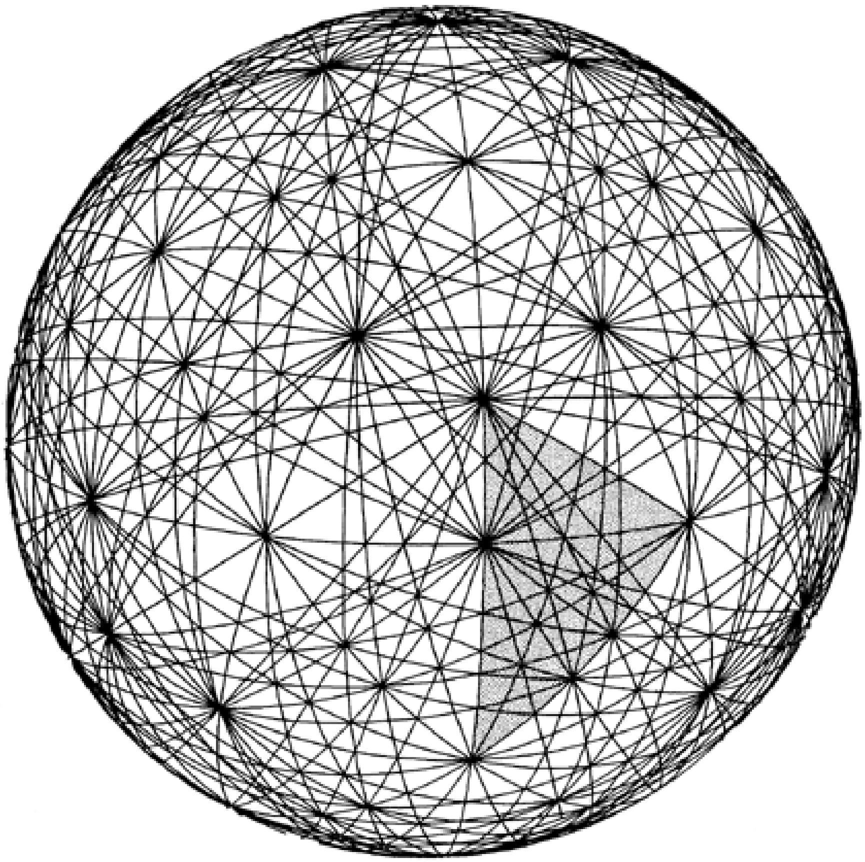

Fig 987.137B Composite of Primary and Secondary Vector Equilibrium Great Circle Sets: This is a black-and-white version of color plate 16. The Basic Equilibrium 48 LCD triangle as presented at Fig. 453.01 appears here shaded in the spherical grid. In this composite vector equilibrium spherical matrix all the 25 primary great circles appear together with the four sets of secondary great circles. (The four sets of secondary vector equilibrium great circles are shown successively at color plates 12-15.)

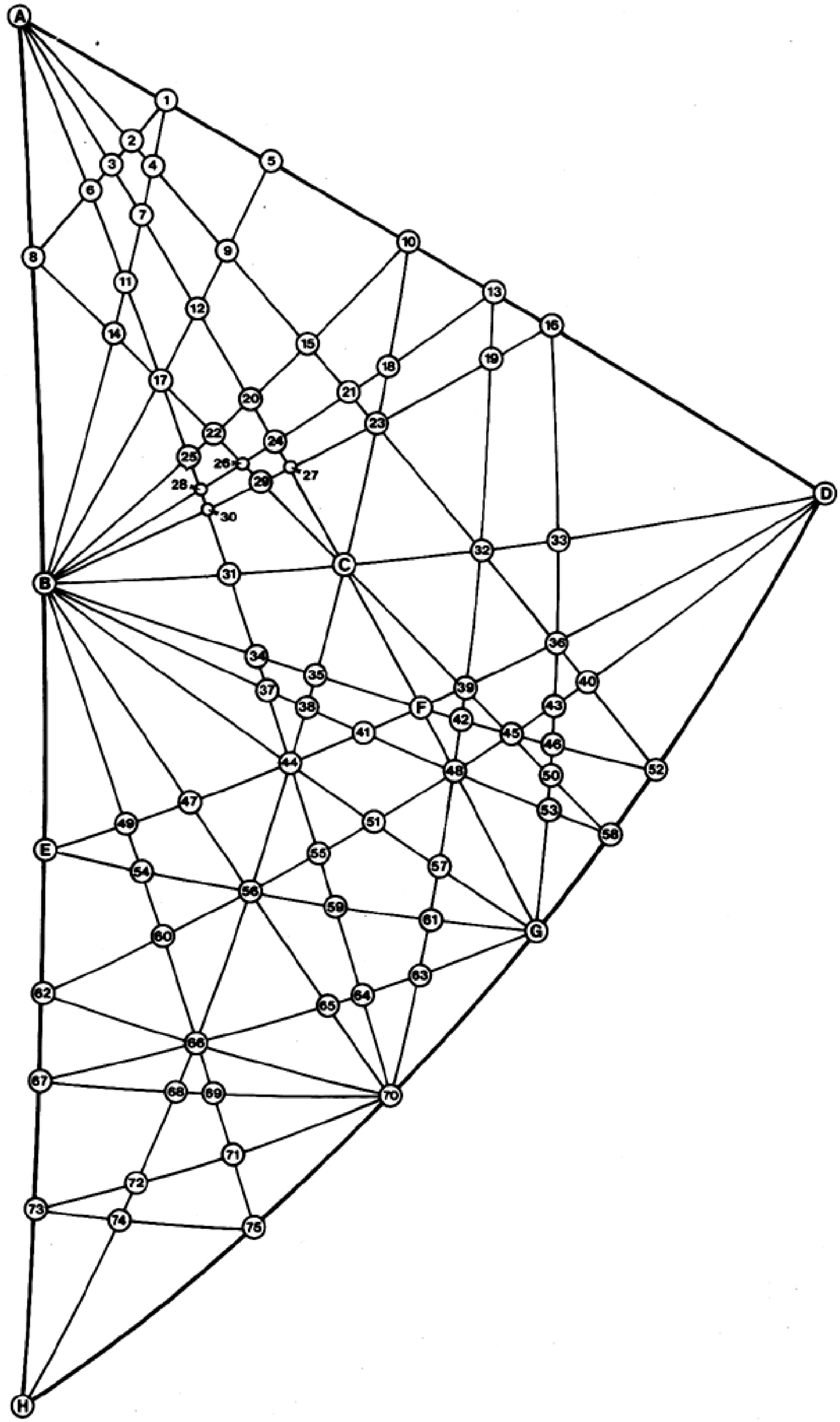

Fig 987.137C Net diagram of Angles and Edges for Basic Equilibrium 48 LCD Triangle in Vector Equilibrium Grid: This is a coded detail of the basic spherical triangle shown shaded in Fig. 987.137B and at Fig. 453.01. It is the key to the trigonometry tables for the spherical central angles, the spherical face angles, the planar edge lengths, and the planar face angles presented at Table 987.137D. (The drawing shows the spherical phase: angle and edge ratios are given for both spherical and planar phases.)

987.213 Figs. 987.210A-E demonstrate Cleavage #1 in the following sequences: (1) The red great circling cleaves the tetrahedron into two asymmetric but identically formed and identically volumed "chef's hat" halves of the initial primitive tetrahedron (Fig. 987.210). (2) The blue great circling cleavage of each of the two "chef's hat" halves divides them into four identically formed and identically volumed "iceberg" asymmetrical quarterings of the initial primitive tetrahedron (Fig. 987.210B). (3) The yellow great circling cleavage of the four "icebergs" into two conformal types of equivolumed one- Eighthings of the initial primitive tetrahedron—four of these one-Eighthings being regular tetra of half the vector-edge-length of the original tetra and four of these one-Eighthings being asymmetrical tetrahedra quarter octa with five of their six edges having a length of the unit vector = 1 and the sixth edge having a length of sqrt(2) = 1.414214. (Fig. 987.210C.)

987.220 **Symmetry #2 and Cleavage #4:**

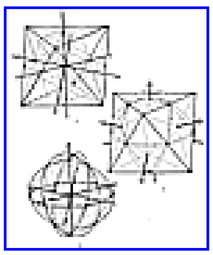
Fig. 987.221

987.221 In Symmetry #2 and Cleavage #4 the four-great-circle cleavage of the octahedron is accomplished through spinning the four axes between the octahedron's eight midface polar points, which were produced by Cleavage #2. This symmetrical four-great- circle spinning introduces the nucleated 12 unit-radius spheres closest packed around one unit-radius sphere with the 24 equi-vector outer-edge-chorded and the 24 equi-vector- lengthed, congruently paired radii—a system called the vector equilibrium. The VE has 12 external vertexes around one center-of-volume vertex, and altogether they locate the centers of volume of the 12 unit-radius spheres closest packed around one central or one nuclear event's locus-identifying, omnidirectionally tangent, unit-radius nuclear sphere.

987.222 The vectorial and gravitational proclivities of nuclear convergence of all synergetics' system interrelationships intercoordinatingly and intertransformingly permit and realistically account all *radiant* entropic growth of systems as well as all *gravitational* coherence, symmetrical contraction, and shrinkage of systems. Entropic radiation and dissipation growth and syntropic gravitational-integrity convergency uniquely differentiate synergetics' natural coordinates from the XYZ-centimeter-gram-second abstract coordinates of conventional formalized science with its omniinterperpendicular and omniinterparallel nucleus-void frame of coordinate event referencing.

987.223 Symmetry #2 is illustrated at Fig. 841.15A.

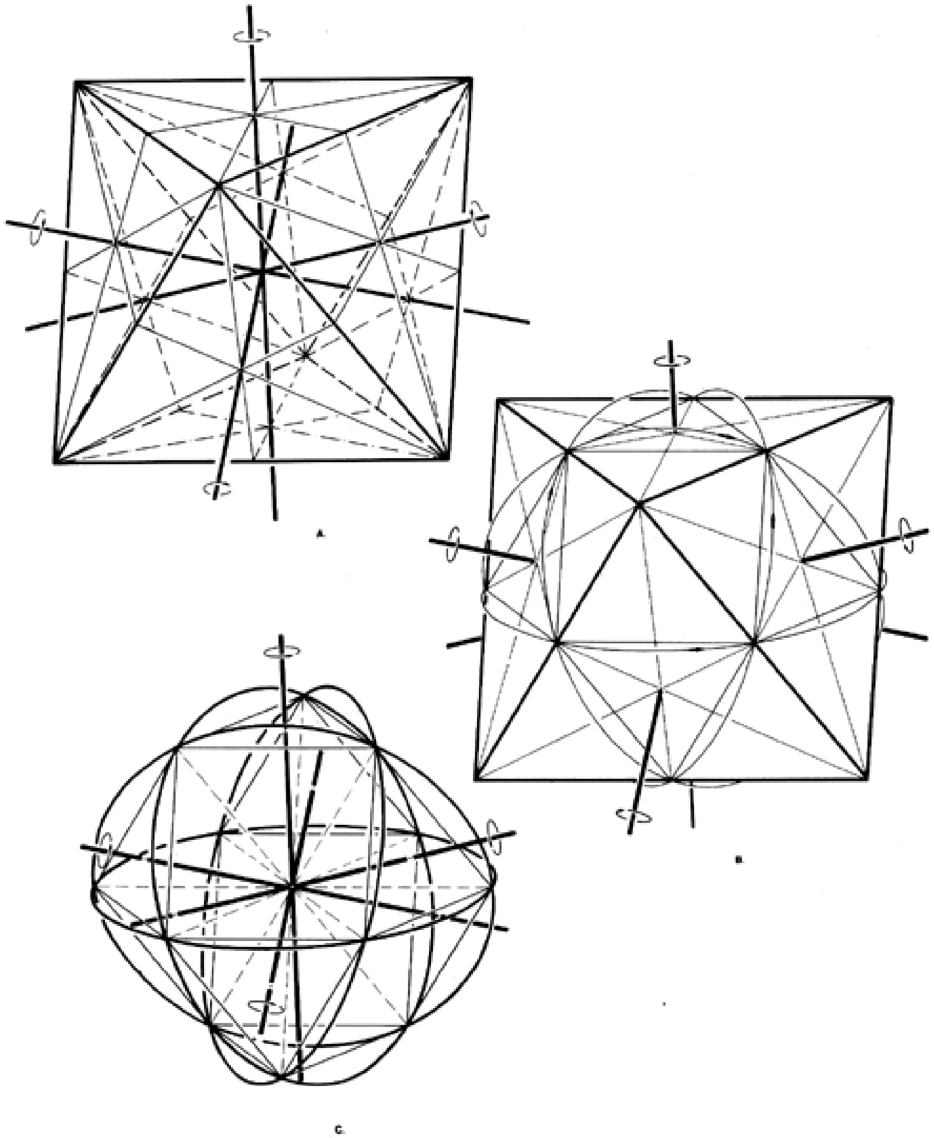

Fig. 987.221 Four-great-circle Systems of Octahedron and Vector Equilibrium: Symmetry #2:

A. Six-great-circle fractionation of octahedron (as shown in Figs. 987.240 B and C) defines centers of octa faces; interconnecting the pairs of opposite octa faces provides the octahedron's four axes of symmetry—here shown extended.
B. Four mid-face-connected spin axes of octahedron generate four great circle trajectories.
C. Octahedron removed to reveal inadvertent definition of vector equilibrium by octahedron's four great circles. The four great circles of the octahedron and the four great circles of the vector equilibrium are in coincidental congruence. (The vector equilibrium is a truncated octahedron; their triangular faces are in parallel planes.)

Next Section: 987.230