951.00 **Allspace-Filling Tetrahedra**

951.01 The tetrahedra that fill allspace by themselves are all asymmetrical. They are dynamic reality only-for-each-moment. Reality is always asymmetrical.

951.10 **Synergetic Allspace-Filling Tetrahedron:** Synergetic geometry has one cosmically minimal, allspace-filling tetrahedron consisting of only four A Quanta Modules and two B Quanta Modules—six modules in all—whereas the regular tetrahedron consists of 24 such modules and the cube consists of 72. (See Illus. 950.12.)

953.00 **Mites and Sytes: Minimum Tetrahedra as Three-Module Allspace Fillers**

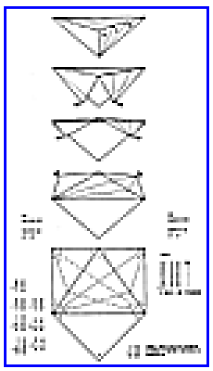
Fig. 953.10

953.10 **Minimum Tetrahedron: Mite:** Two A Quanta Modules and one B Quanta Module may be associated to define the allspace-filling positive and negative sets of three geometrically dissimilar, asymmetric, but *unit volume* energy quanta modules which join the volumetric center hearts of the octahedron and tetrahedron. For economy of discourse, we will give this minimum allspace-filling AAB complex three-quanta module's asymmetrical tetrahedron the name of Mite (as a contraction of Minimum Tetrahedron, allspace filler). (See drawings section.)

953.20 **Positive or Negative:** Mites can fill allspace. They can be either positive (+) or negative (-), affording a beautiful confirmation of negative Universe. Each one can fill allspace, but with quite different energy consequences. Both the positive and negative Mite Tetrahedra are comprised, respectively, of two A Quanta Modules and one B Quanta Module. In each Mite, one of the two A s *is* positive and one is negative; the B must be positive when the Mite is positive and negative when the Mite is negative. The middle A Quanta Module of the MB wedge-shaped sandwich is positive when the Mite and its B Quanta Module are negative. The Mite and its B Quanta Module have like signs. The Mite and its middle A Quanta Module have unlike signs.

953.21 If there were only positive Universe, there would be only Sytes (see Sec. 953.40. But Mites can be either plus or minus; they accommodate both Universes, the positive and the negative, as well as the half-positive and half-negative, as manifestations of fundamental complementarity. They are true rights and lefts, not mirror images; they are inside out and asymmetrical.

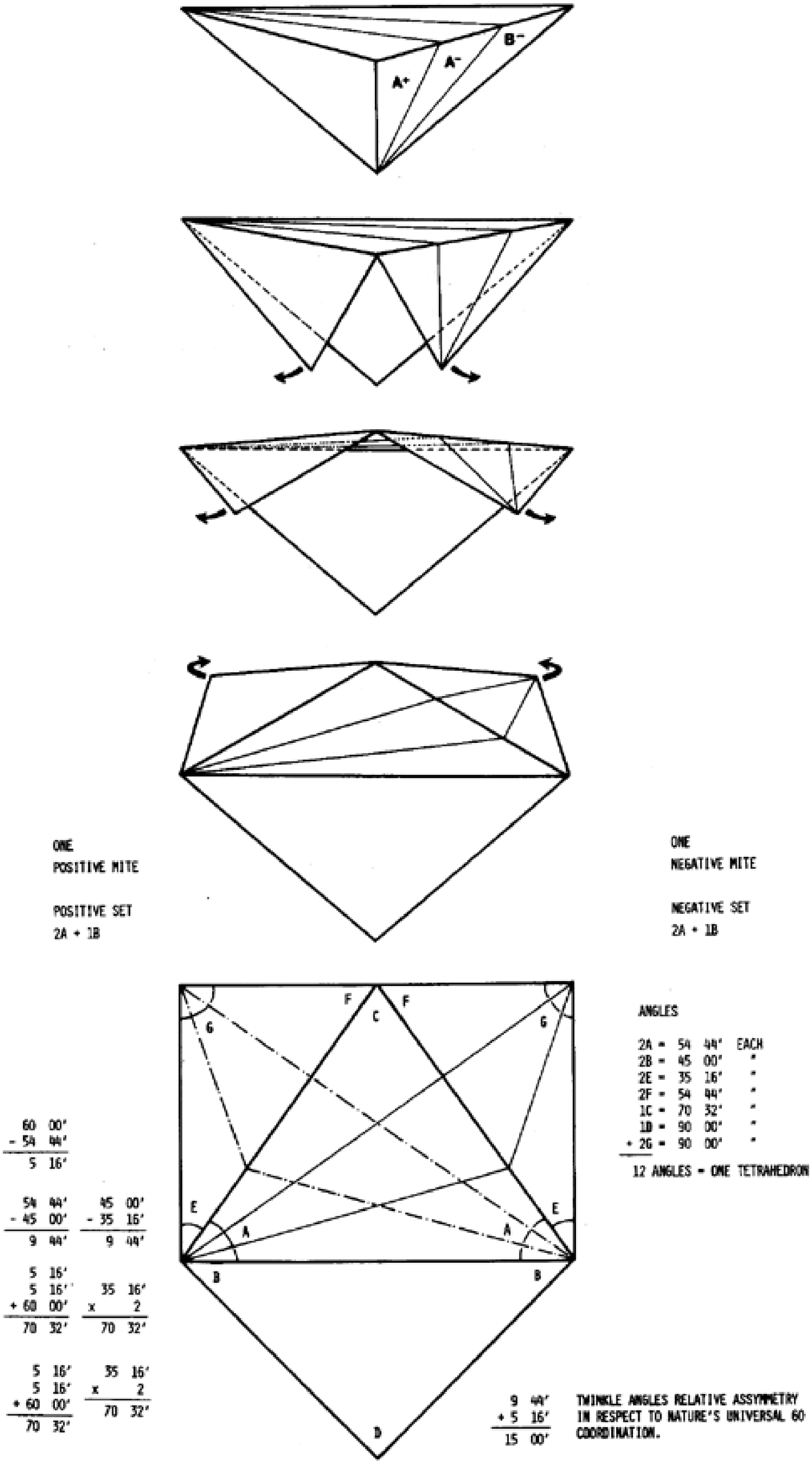

Fig. 953.10 Positive and Negative Mites Constituted of Two A Quanta and One B Quanta Module.

953.22 There is a noncongruent, ergo mutually exclusive, tripartiteness (i.e., two As and one B in a wedge sandwich) respectively unique to either the positive or the negative world. The positive model provides for the interchange between the spheres and the spaces.[4] But the Mite permits the same kind of exchange in negative Universe.

(Footnote 4: See Sec. 1032.10.)

953.23 The cube as an allspace filler requires only a positive world. The inside-out cube is congruent with the outside-out cube. Whereas the inside-out and outside-out Mites are not congruent and refuse congruency.

953.24 Neither the tetrahedron nor the octahedron can be put together with Mites. But the allspace-filling rhombic dodecahedron and the allspace-filling tetrakaidecahedron can be exactly assembled with Mites. Their entire componentation exclusively by Mites tells us that either or both the rhombic dodecahedron and the tetrakaidecahedron can function in either the positive or the negative Universe.

953.25 The allspace-filling functions of the (+) or (-) AAB three-module Mite combines can operate either positively or negatively. We can take a collection of the positives or a collection of the negatives. If there were only positive outside-out Universe, it would require only one of the three alternate six-module, allspace-filling tetrahedra (see Sec. 953.40) combined of two A (+), two A (-), one B (+), and one B (-) to fill allspace symmetrically and complementarily. But with both inside-out and outside-out worlds, we can fill all the outside-out world's space positively and all the inside-out world's space negatively, accommodating the inherent complementarity symmetry requirements of the macro-micro cosmic law of convex world and concave world, while remembering all the time that among all polyhedra only the tetrahedron can turn itself inside out.

953.30 **Tetrahedron as Three-Petaled Flower Bud:** Positive or negative means that one is the inside-out of the other. To understand the insideouting of tetrahedra, think of the tetrahedron's four outside faces as being blue and the four inside faces as being red. If we split open any three edges leading to any one of the tetrahedron's vertexes, the tetrahedron will appear as a three-petaled flower bud, just opening, with the triangular petals hinging open around the common triangular base. The opening of the outside-blue- inside-red tetrahedron and the hinging of all its blue bud's petals outwardly and downwardly until they meet one another's edges below the base, will result in the whole tetrahedron's appearing to be red while its hidden interior is blue. All the other geometrical characteristics remain the same. If it is a regular tetrahedron, all the parts of the outside-red or the outside-blue regular tetrahedron will register in absolute congruence.

953.40 **Symmetrical Tetrahedron: Syte:** Two of the AAB allspace-filling, three- quanta module, asymmetric tetrahedra, the Mites—one positive and one negative—may be joined together to form the six-quanta-module, semisymmetrical, allspace-filling Sytes. The Mites can be assembled in three different ways to produce three morphologically different, allspace-filling, asymmetrical tetrahedra: the *Kites, Lites,* and *Bites,* but all of the same six-module volume. This is done in each by making congruent matching sets of their three, alternately matchable, right-triangle facets, one of which is dissimilar to the other two, while those other two are both positive-negative mirror images of one another. Each of the three pairings produces one six-quanta module consisting of two A (+), two A (-), one B (+), and one B (-).

953.50 Geometrical Combinations: All of the well-known Platonic, Archimedean, Keplerian, and Coxeter types of radially symmetric polyhedra may be directly produced or indirectly transformed from the whole unitary combining of Mites without any fractionation and in whole, rational number increments of the A or B Quanta Module volumes. This prospect may bring us within sight of a plenitudinous complex of conceptually discrete, energy-importing, -retaining, and -exporting capabilities of nuclear assemblage components, which has great significance as a specific closed-system complex with unique energy-behavior-elucidating phenomena. In due course, its unique behaviors may be identified with, and explain discretely, the inventory of high-energy physics' present prolific production of an equal variety of strange small-energy "particles," which are being brought into split-second existence and observation by the ultrahigh-voltage accelerator's bombardments.

953.60 **Prime Minimum System:** Since the asymmetrical tetrahedron formed by compounding two A Quanta Modules and one B Quanta Module, the Mite, will compound with multiples of itself to fill allspace and may be turned inside out to form its noncongruent negative complement, which may also be compounded with multiples of itself to fill allspace, this minimum asymmetric system—which accommodates both positive or negative space and whose volume is exactly 1/8th that of the tetrahedron, exactly 1/32nd that of the octahedron, exactly 1/160th that of the vector equilibrium of zero frequency, and exactly 1/1280th of the vector equilibrium of initial frequency (= 2), 1280 = $2^8 \times 5$—this Mite constitutes the generalized nuclear geometric limit of rational differentiation and is most suitably to be identified as the *prime minimum system;* it may also be identified as the prime, minimum, rationally volumed and rationally associable, structural system.

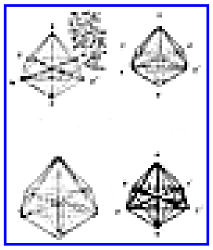

Fig. 954.00A

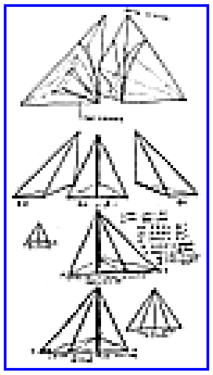

Fig. 954.00B

954.00 **Mite as the Coupler's Asymmetrical Octant Zone Filler**

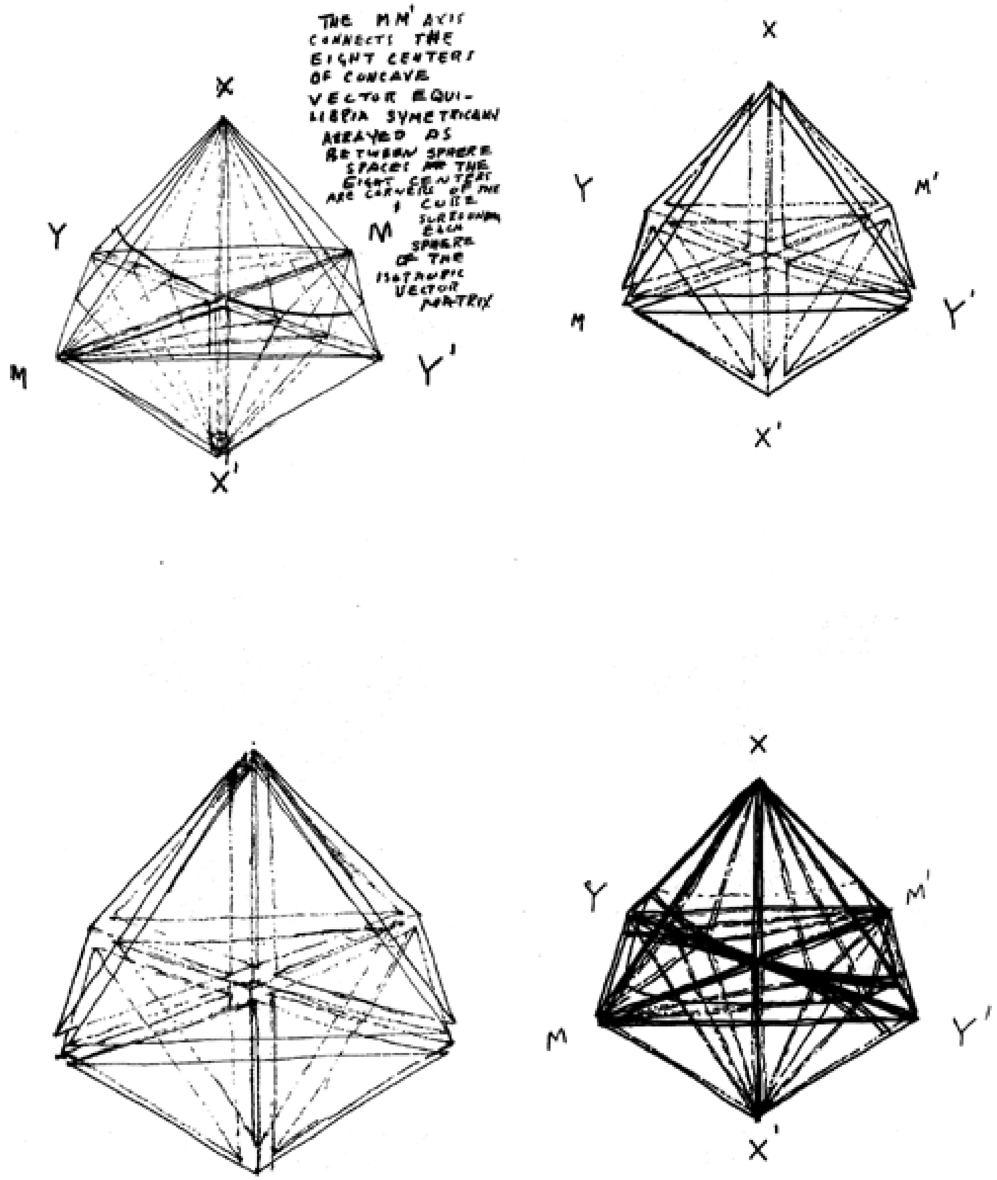

Fig. 954.00A A and B Quanta Module Orientations.

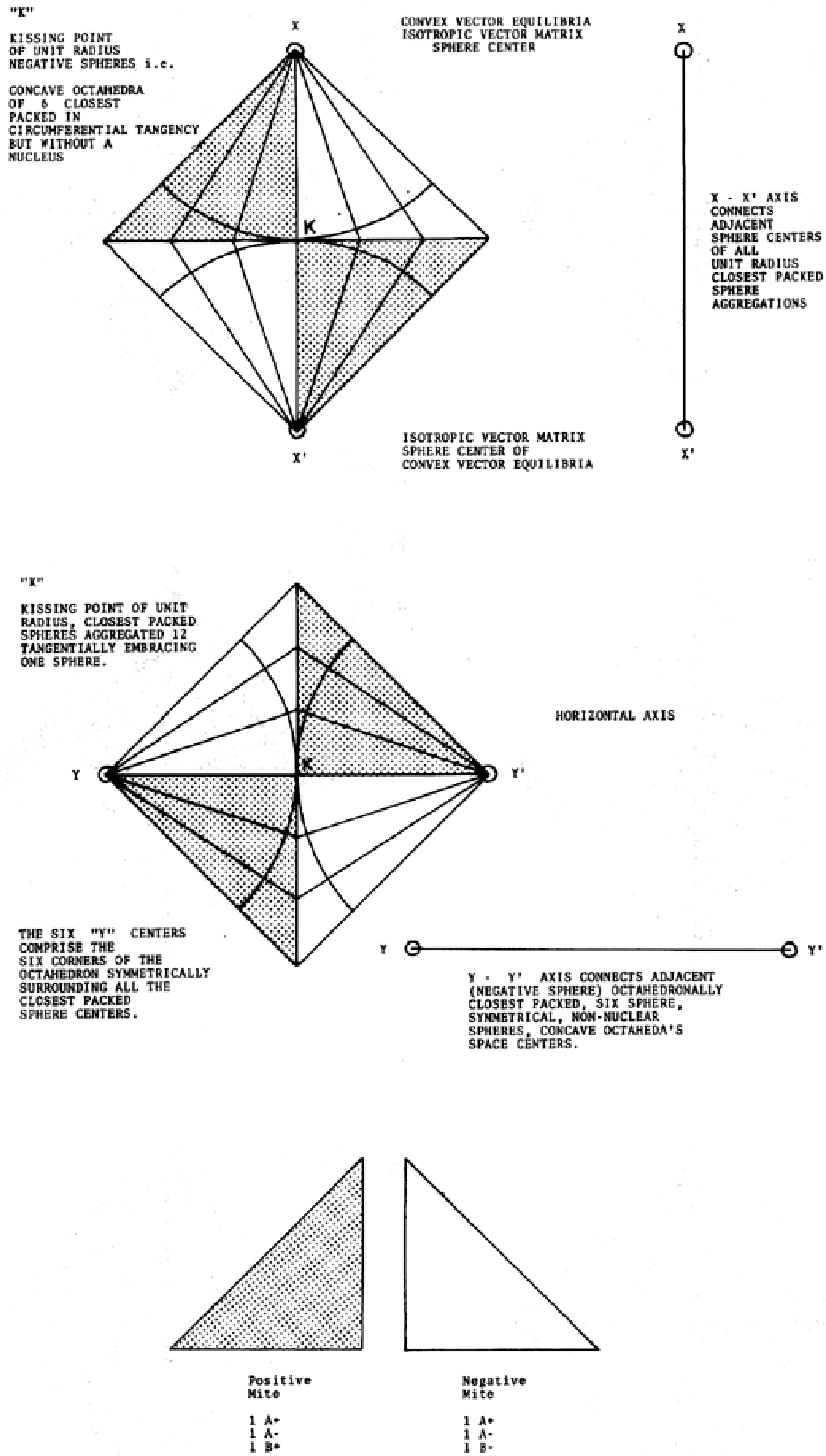

Fig. 954.00A A and B Quanta Module Orientations.

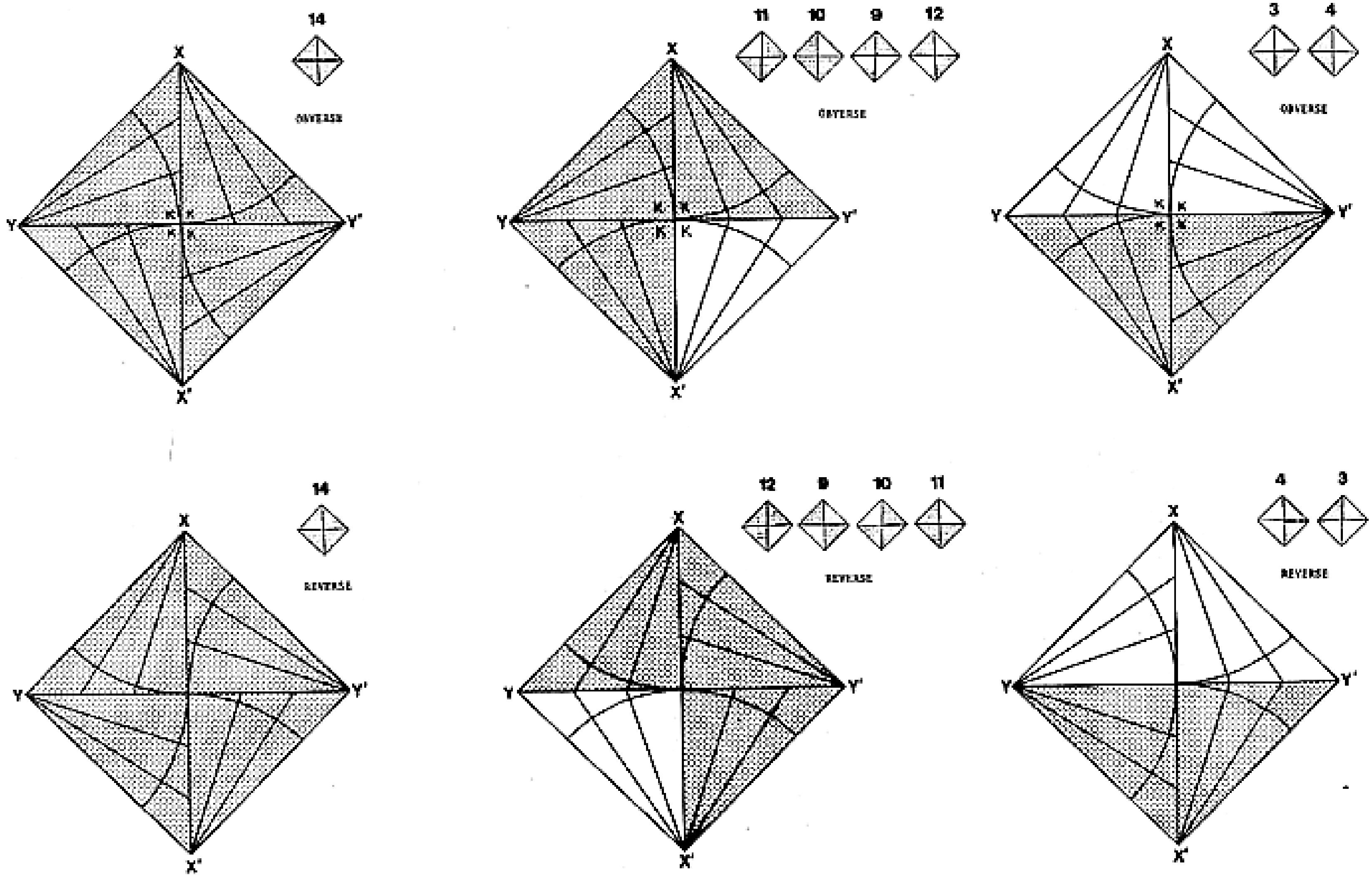

Fig. 954.00A A and B Quanta Module Orientations.

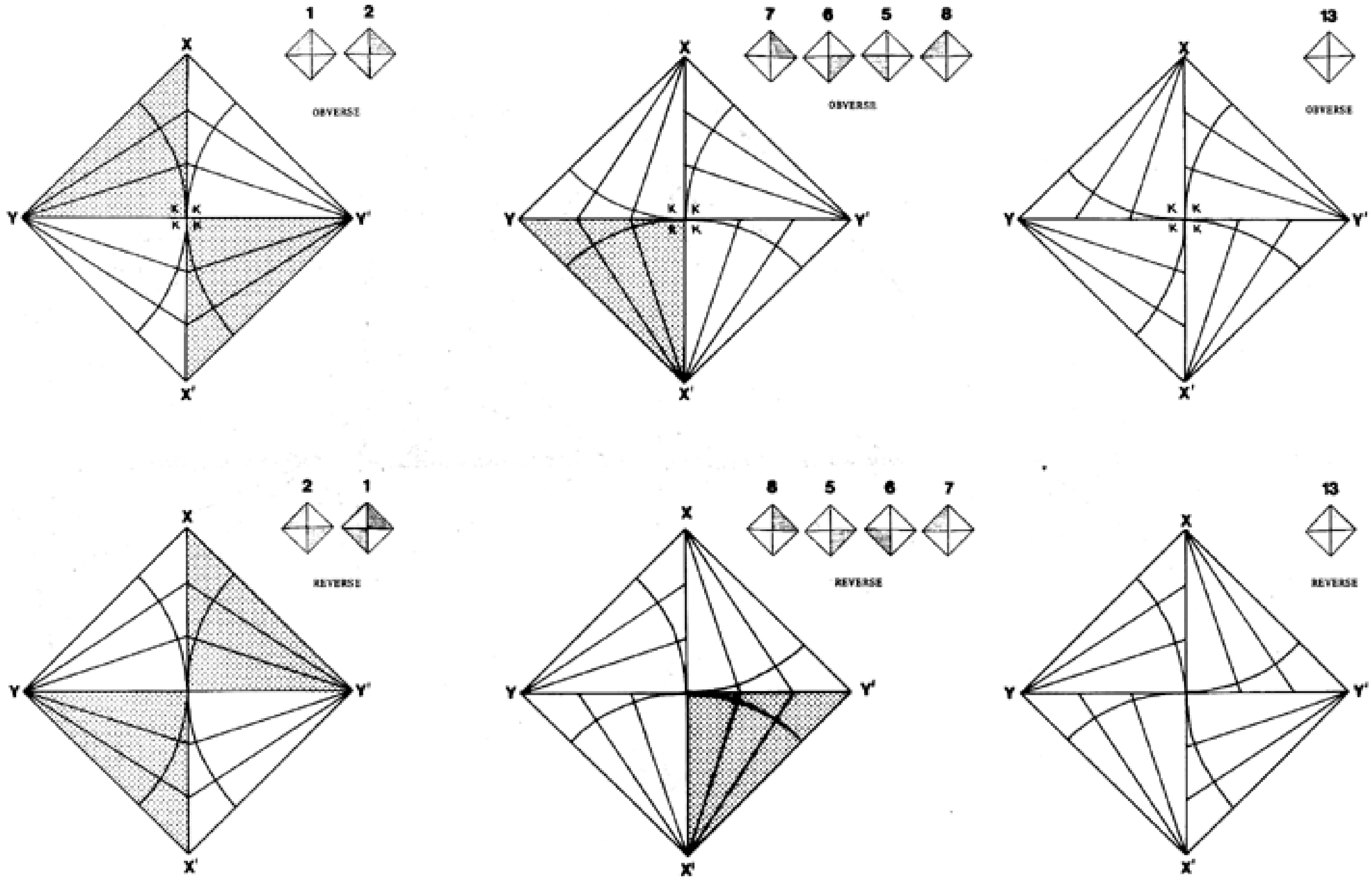

Fig. 954.00A A and B Quanta Module Orientations.

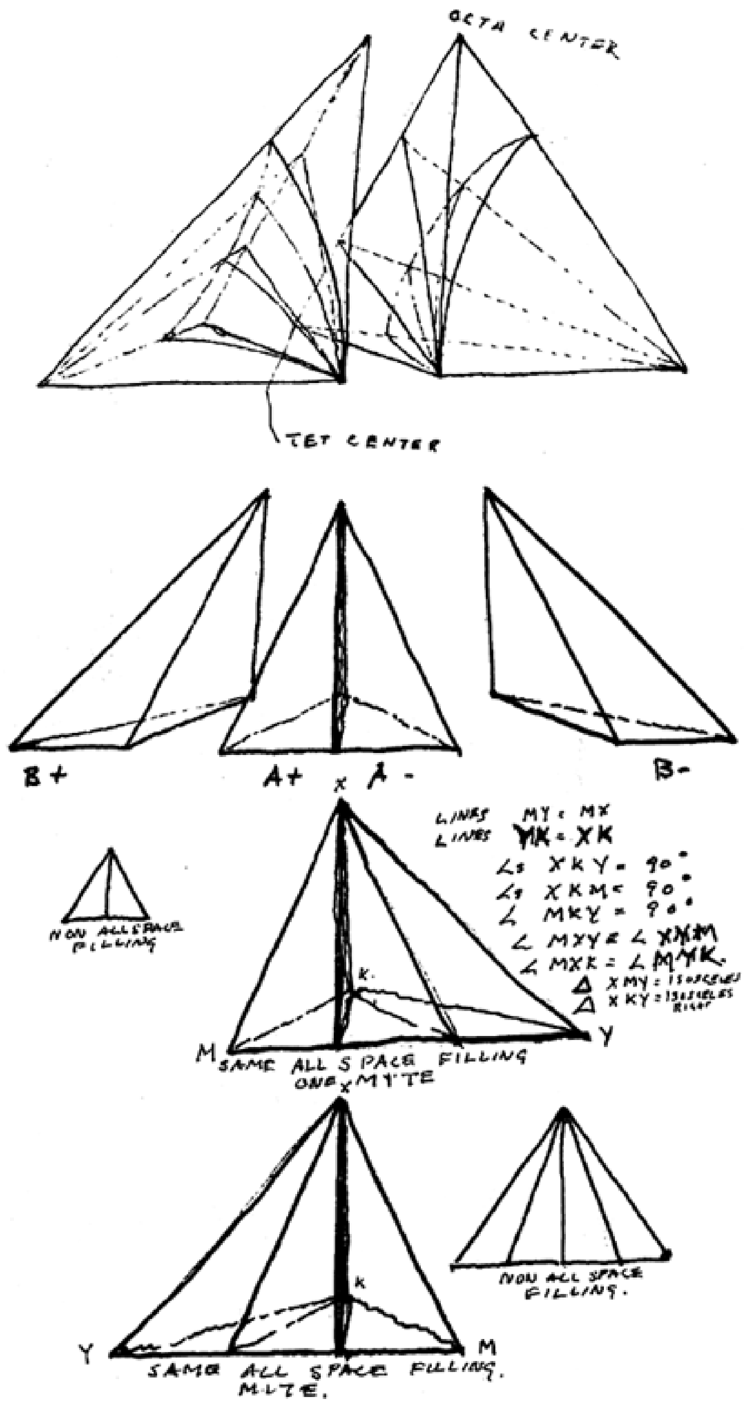

Fig. 954.00B Mites and Couplers

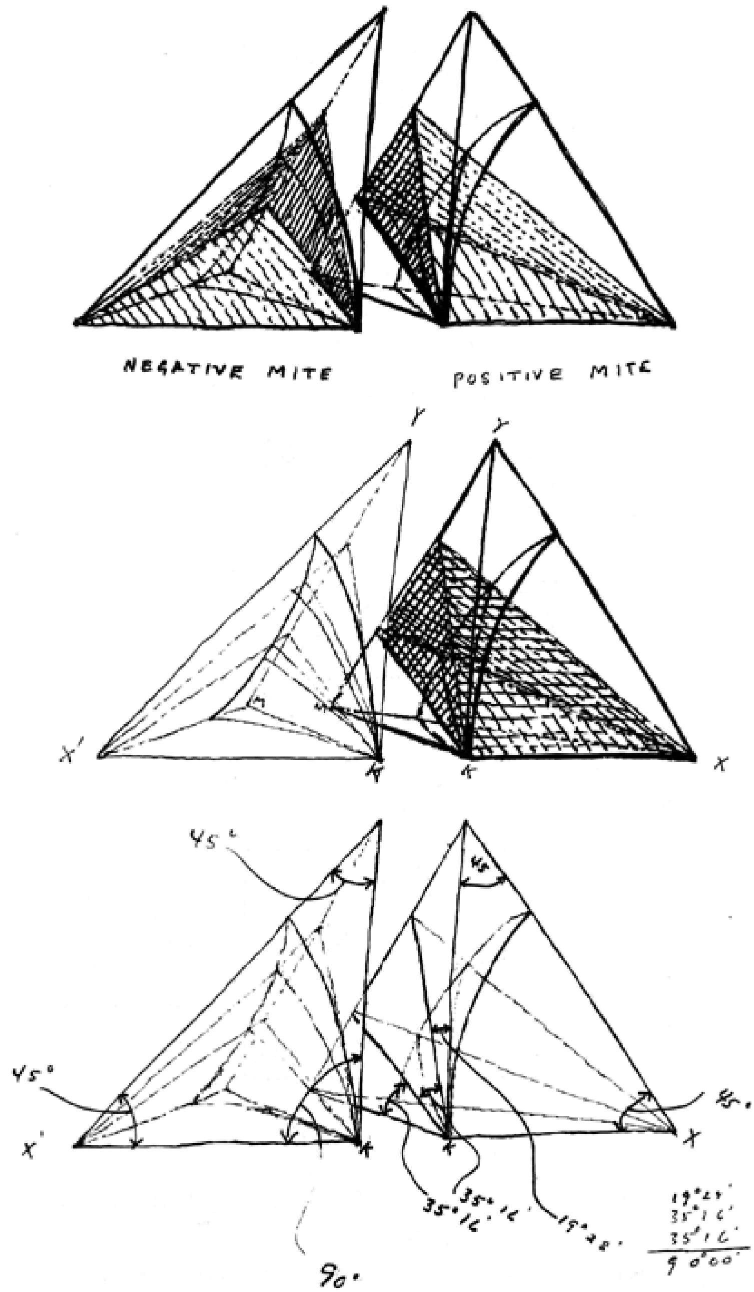

Fig. 954.00B Mites and Couplers

954.01 The Coupler is the asymmetric octahedron to be elucidated in Secs. 954.20 through 954.70. The Coupler has one of the most profound integral functionings in metaphysical Universe, and probably so in physical Universe, because its integral complexities consist entirely of integral rearrangeability within the same space of the same plus and/or minus Mites. We will now inspect the characteristics and properties of those Mites as they function in the Coupler. Three disparately conformed, nonequitriangular, polarized half-octahedra, each consisting of the same four equivolumetric octant zones occur around the three half-octants' common volumetric center. These eight octant zones are all occupied, in three possible different system arrangements, by identical asymmetrical tetrahedra, which are Mites, each consisting of the three AAB Modules.

954.02 Each of these l/8 octant-zone-filling tetrahedral Mite's respective surfaces consists of four triangles, CAA, DEE, EFG^1, and EFG^2, two of which, CAA and DBB, are dissimilar isosceles triangles and two of which, EFG^1 and EFG^2, are right triangles. (See Illus. 953.10.) Each of the dissimilar isosceles triangles have one mutual edge, AA and BB, which is the base respectively of both the isosceles triangles whose respective symmetrical apexes, C and D, are at different distances from that mutual baseline.

954.03 The smaller of the mutually based isosceles triangle's apex is a right angle, D. If we consider the right-angle-apexed isosceles triangle DBB to be the horizontal base of a unique octant-zone-filling tetrahedron, we find the sixth edge of the tetrahedron rising perpendicularly from the right-angle apex, D, of the base to C (FF), which perpendicular produces two additional right triangles, FGE^1 and FGE^2, vertically adjoining and thus surrounding the isosceles base triangle's right-angled apex, D. This perpendicular D (FF) connects at its top with the apex C of the larger isosceles triangle whose baseline, AA, is symmetrically opposite that C apex and congruent with the baseline, BB, of the right- angle-apexed isosceles base triangle, BBD, of our unique octant-filling tetrahedral Mite, AACD.

954.04 The two vertical right triangles running between the equilateral edges of the large and small isosceles triangles are identical right triangles, EFG^{1} and EFG^{2}, whose largest (top) angles are each 54° 44' and whose smaller angles are 35° 16' each.

```
   90° 00'
   54° 44'
   35° 16'
 ----------
  180° 00'
```

954.05 As a tetrahedron, the Mite has four triangular faces: BBD, AAC, EFG^{1}, and EFG^{2}. Two of the faces are dissimilar isosceles triangles, BBD and AAC; ergo, they have only two sets of two different face angles each—B, D, A, and C—one of which, D, is a right angle.

954.06 The other two tetrahedral faces of the Mites are similar right triangles, EFG, which introduce only two more unique angles, E and F, to the Mite's surface inventory of unique angles.

954.07 The inventory of the Mite's twelve corner angles reveals only five different angles. There are two As and two Fs, all of which are 54° 44' each, while there are three right angles consisting of one D and two Gs. There are two Bs of 45° 00' each, two Es of 35° 16' each, and one C of 70° 32'. (See drawings section.)

954.08 Any of these eight interior octant, double-isosceles, three-right-angled-tetrahedral domains—Mites—(which are so arrayed around the center of volume of the asymmetrical octahedron) can be either a positively or a negatively composited allspace- filling tetrahedron.

954.09 We find the Mite tetrahedron, AACD, to be the smallest, simplest, geometrically possible (volume, field, or charge), allspace-filling module of the isotropic vector matrix of Universe. Because it is a tetrahedron, it also qualifies as a structural system. Its volume is exactly l/8th that of its regular *tetrahedral* counterpart in their common magnitude isotropic vector matrix; within this matrix, it is also only 1/24th the volume of its corresponding allspace-filling cube, 1/48th the volume of its corresponding allspace-filling *rhombic dodecahedron,* and 1/6144th the volume of its one other known unique, omnidirectional, symmetrically aggregatable, nonpolarized-assemblage, unit- magnitude, isotropic-vector-matrix counterpart, the allspace-filling *tetrakaidecahedron.*

954.10 **Allspace-Filling Hierarchy as Rationally Quantifiable in Whole Volume Units of A or B Quanta Modules**

Synergetics' Name	*Quanta Module Volume*	*Type Polyhedron*	*Symmetrical or Asymmetrical*
Mite	3	Tetrahedron	Asymmetrical
Syte (3 types)	6	Tetrahedron	Asymmetrical
Kites			
Lites			
Bites			
Coupler	24	Octahedron	Asymmetrical
Cube	72	Cube	Simple Symmetrical
Rhombic		Rhombic	
Dodecahedron	144	Dodecahedron	Complex Symmetrical
Tetrakaidecahedron	18,432	Tetrakaidecahedron	Complex Symmetrical

954.10A **Allspace-Filling Hierarchy as Rationally Quantifiable in Whole Volume Units of A or B Quanta Modules**

Synergetics' Name	*Quanta Module Volume*	*Type Polyhedron*	*Symmetrical or Asymmetrical*
Mite	3	Tetrahedron	Asymmetrical
Syte (3 types)	6	Tetrahedron	Asymmetrical
Kites	6	Tetrahedron	Asymmetrical
Lites	6	Tetrahedron	Asymmetrical
Bites	6	Hexahedron	Asymmetrical
Coupler	24	Octahedron	Asymmetrical
Cube	72	Hexahedron	Simple Symmetrical
Rhombic dodecahedron	144	Dodecahedron	Simple Symmetrical

Tetrakaidecahedron	18,432	Tetrakaidecahedron	Complex Symmetrical

954.20 **Coupler:** The basic complementarity of our octahedron and tetrahedron, which always share the disparate numbers 1 and 4 in our topological analysis (despite its being double or 4 in relation to tetra = 1), is explained by the uniquely asymmetrical octahedron, the Coupler, that is always constituted by the many different admixtures of AAB Quanta Modules; the Mites, the Sytes, the cube (72 As and Bs), and the rhombic dodecahedron (144 As and Bs).

954.21 There are always 24 As or Bs in our uniquely asymmetrical octahedron (the same as one tetra), which we will name the Coupler because it occurs between the respective volumetric centers of any two of the adjacently matching diamond faces of all the symmetrical, allspace-filling rhombic dodecahedra (or 144 As and Bs). The rhombic dodecahedron is the most-faceted, identical-faceted (diamond) polyhedron and accounts, congruently and symmetrically, for all the unique domains of all the isotropic-vector- matrix vertexes. (Each of the isotropic-vector-matrix vertexes is surrounded symmetrically either by the spheres or the intervening spaces-between-spheres of the closest-packed sphere aggregates.) Each rhombic dodecahedron's diamond face is at the long-axis center of each *Coupler* (vol. = 1) asymmetric octahedron. Each of the 12 rhombic dodecahedra is completely and symmetrically omnisurrounded by—and diamond-face-bonded with—12 other such rhombic dodecahedra, each representing one closest-packed sphere and that sphere's unique, cosmic, intersphere-space domain Lying exactly between the center of the nuclear rhombic dodecahedron and the centers of their 12 surrounding rhombic dodecahedra—the *Couplers* of those closest-packed-sphere domains having obviously unique cosmic functioning.

954.22 A variety of energy effects of the A and B Quanta Module associabilities are contained uniquely and are properties of the *Couplers,* one of whose unique characteristics is that the Coupler's topological volume is the exact prime number one of our synergetics' tetrahedron (24 As) accounting system. It is the asymmetry of the Bs (of identical volume to the As) that provides the variety of other than plusness and minusness of the all-A- constellated tetrahedra. Now we see the octahedra that are allspace filling and of the same volume as the As in complementation. We see proton and neutron complementation and non-mirror-imaging interchangeability and intertransformability with 24 subparticle differentiabilities and 2, 3, 4, 6, combinations—enough to account for all the isotopal variations and all the nuclear substructurings in omnirational quantation.

Next Section: 954.30