

442.00 **Polarization of Vector Equilibrium**

442.01 In closest packing of spheres, there are always between the spheres alternate spaces that are not being used, and so triangular space and space-available groups can be alternated from their original positions 60 degrees to alternate nestable positions. We find that you can take two halves of the vector equilibrium and rotate one of the halves 60 degrees. Instead of having the vector-equilibrium condition of alternate faces in symmetrical array around it, you will get a polarized system around the equatorial zone of which you will get a square and a square side by side and a triangle and a triangle side by side. By rotating the system 60 degrees, you will get a top polar triangle and a bottom polar triangle in the same orientation. If you rotate the vector equilibrium to the next 60-degree nestable position, suddenly it is omnisymmetrical again.

442.02 It is in this polarized condition that a section through the vector equilibrium makes the famous chemical hex that the chemists have used for years. The chemists recognized it as a polarized system, but they did not recognize it as the vector equilibrium because chemists had not had any internal atomic experience like that. Apparently, then, all the chemical compounding in the organic chemistry relates to polarized systems.

443.00 **Vector Equilibrium as Equanimity Model**

443.01 In order to reduce the concept of vector equilibrium to a singlename identity, we employ the word *equanimity* as identifying the eternal metaphysical conceptuality model that eternally tolerates and accommodates all the physically regenerative, intertransforming transactions of eternal, inexorable, and irreversible evolution's complex complementations, which are unitarily unthinkable, though finite.

443.02 The equanimity model permits metaphysically conceptual thinkability and permits man to employ the package-word *Universe*. Equanimity, the epistemological model, is the omni-intertransformative, angle- and frequency-modulatable, differential accommodator and identifies the direction toward the absolute, completely exquisite limit of zero-error, zero-time omnicomprehension toward which our oscillatory, pulsating reduction of tolerated cerebrally reflexed aberrations trends.

443.03 Humanity's physical brains' inherent subjective-to-objective time lag reflexing induces the relatively aberrated observation and asymmetrical articulation tolerated by ever more inclusively and incisively demanding mind's consciousness of the absolute exactitude of the eternally referential centrality at zero of the *equanimity model*. Thus mind induces human consciousness of evolutionary participation to seek cosmic zero. Cosmic zero is conceptually but sizelessly complex, though full-size-range accommodating.

443.04 In the equanimity model, the physical and the metaphysical share the same design. The whole of physical Universe experience is a consequence of our not seeing instantly, which introduces time. As a result of the gamut of relative recall time-lags, the physical is always the imperfect experience, but tantalizingly always ratio-equated with the innate eternal sense of perfection.

445.00 **Frequency of Vector Equilibrium**

445.01 As the most compact spherical agglomeration of unit radius spheres around a unit radius nuclear sphere, the vector equilibrium is indefinitely expandable, either by additional unit radius spheres, colonied, layerembracement multiplication, or by uniform time-size increase. If expanded by unit radius, sphere-colonized, omni-embracing, concentric layer multiplication, additional new locally operative nuclei are progressively born with every four successive concentric generations of symmetrical, omni-embracing layer multiplication. We use here the concept of multiplication only by division of the conceptual sizeless whole in a greater number of coordinate parts.

445.02 The eight-triangled, six-square, planar-faceted space volume of the vector equilibrium is always frequency to the third power times 20—with frequency being of omnisymmetric, radial-circumferential, modular subdivisioning of the whole. The geometrical conceptioning of volume as used here is in contradistinction to the number of vari-frequenced, vectorequilibrium-forming, closest-packed spheres and their nonoccupied concave octahedra and concave vector equilibria-shaped intersphere interstices: these being the all and only shapes of inter-closest-packed unit radius sphere agglomeration interstices. (See illustration [1032.31](#).)

445.03 When the frequency of the vector equilibrium is one (or radiationally inactive), its initial volume is always $20 \times F^3 = 20$; wherefore, with $F = 1$, $1^3 = 1$, $1 \times 20 = 20$. When the frequency is, for instance, eight, the $8^3 = 512$; $512 \times 20 = 10,240$.

445.04 The relative size of the vector equilibrium begins with the initial zero-size integrity of conceptuality and its omnidimensional modular subdivisibility for accounting any frequency of geometrical configuration transformative accounting. Vector equilibria, as with the tetrahedra and other polyhedra, are conceptually valid as vector equilibria or tetrahedra, independent of size. Size is where relativity becomes generated. The eternality of synergetics is the experienceable conceptuality whose imaginability is independent of individual human life's successive special-case experiences of time and size relativity.

445.05 Considering vector equilibrium as initial unity, 20 in respect to tetrahedral unity of one, it constitutes the total volumetric domain unique to any universal focus or point.

445.06 We find that the vector equilibrium has a volume of 480 in terms of the A and B Quanta Modules.

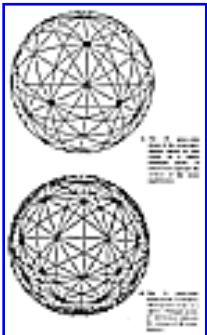
445.07 When the frequency of the vector equilibrium is 50 (that is, with 50 edge intervals and with radii at 50 intervals), the volume is frequency to the third power times unity of 480 A and B Quanta Modules: or $50^3 \times 480 = 375,000$ A and B Quanta Modules. This will give us the exact number of quanta at any symmetrical stage growth. Here we witness experientially the quantum propagation of radiant wave after radiant wave identifiable with given wavelengths and frequencies of embracements.

445.10 Frequency inherently involves a plurality of events, which means that frequency begins with two or more event experiences. Where frequency is one, it means frequency is none=N-one=frequency-is-not-one, because frequency is two-or-more. (None is Latin for number nine, which is also numerologically a zero.) A frequency of one in the vector equilibrium is like the vector equilibrium itself, a *zero state*, i.e., energetically inactive. Frequency of experience inherently involves *intervals* between experience. Intervals that are nonexperiences are not *nothingness*: they are number integrities like zero state. This zero-state integrity is brought home to human cognition by numerological arithmetic disclosure (see [Chapter 12](#), Numerology) that every nine experiences in arithmetical system integrity (integer) accounting always has a zero operational effect in all intersystem multiplying or dividing calculations, and that nature's number coordination coincides with its geometrical operational evolution, having only octave periodicity in which four positive entities accrue followed by the accrual of four negative entities and an interval zero state nine, which positive-negative accrual and intervallng accommodates rationally and elegantly both the

wavilinear and discontinuity characteristics of all- experimentally acquired information to date regarding the electromagnetics and chemistry of both physical and metaphysical Universe. (See Sec. [1012](#) and Fig. [1012.14B](#).)

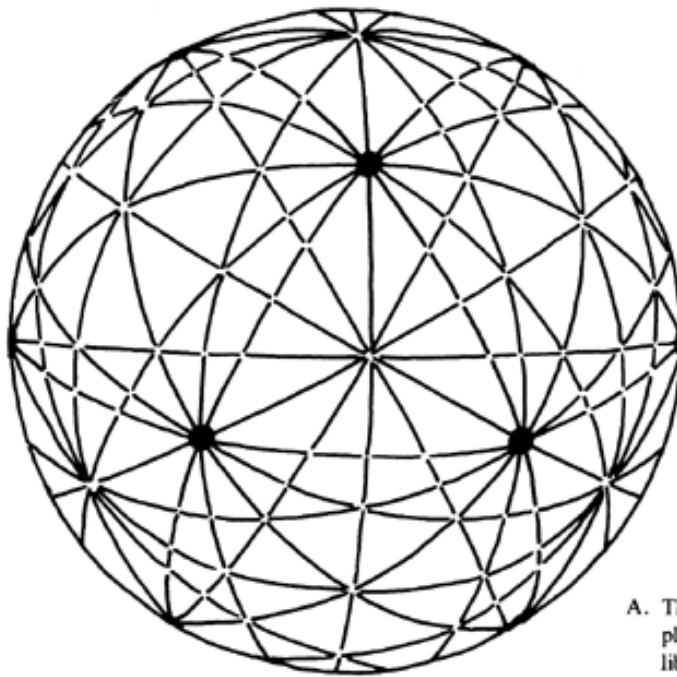
445.11 At eternal "outset," the vector equilibrium's frequency is none— non, which is inactive, which is different in meaning from nonexistent. Zero is the inside-out phase of conceptual integrity; it is the eternal complementation of system. Quite the contrary to "nonexistent," it means only "eternally existent" in contrast to "temporarily existent." Experience is all temporary. Between experiences is the forever eternal metaphysical, which cannot be converted into existent. Zerophase, i.e., the absolute integrity, is a metaphysical potential in pure principle but is inherently inactive. The inactivity of zerophase can be converted into activity only by pure principle of energetic geometrical propagation of successive positive-negative-positive-negative aberrational pulsations which intertransform locally initiated Universe through vector-equilibrium complex frequency accommodations in pure principle. The propagative pulsations are unopposed by the inherent but eternal, limitless, unoccupied outwardness of absolute metaphysical integrity. The unlimited metaphysical conceptual equilibrium integrity permits the limited special-case realizations. The limited cannot accommodate the unlimited. The unlimited metaphysical can and does accommodate the limited and principles-dependent physical; but the physical, which is always experienceable and special-case, cannot accommodate the metaphysical independence and unlimited capability.

445.12 The first layer of nuclear sphere embracement = $10F^2 + 2 = 12$. Twelve balls of the first layer. The center ball has a value of two for the outwardness-inwardness, concave-convex terminal condition. But the center ball's frequency is zero.

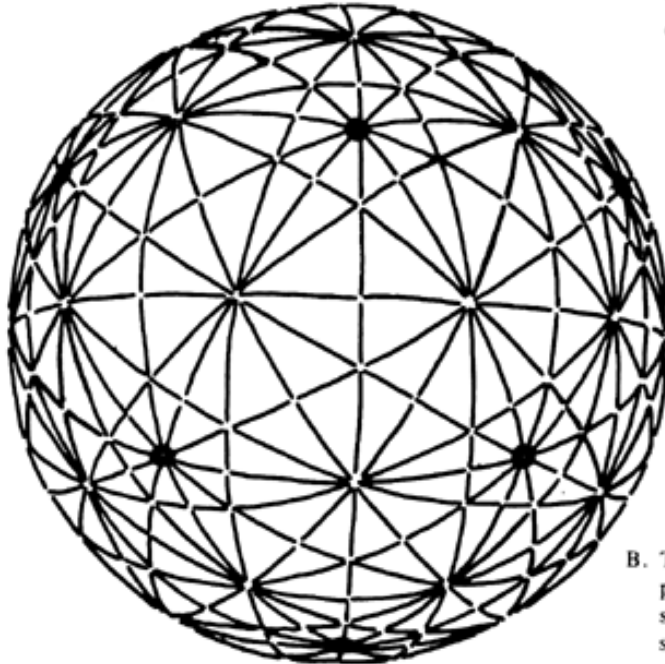


445.13 The number of vertexes in the vector equilibrium is always the same as the number of spheres in omnidirectional closest packing: but frequency is identifiable only as the interval between the sphere centers. Two spheres have only one interval, ergo, $F=1$. Frequency to the second power times ten plus two— $10F^2 + 2 = 12$.

[Fig. 445.13](#)



A. The 25 great-circle planes of the vector equilibrium shown as true circles on a sphere (Enlarged points of intersection represent the vertexes of the vector equilibrium.)



B. The 31 great-circle planes of the icosahedron shown as true circles on a sphere. (Enlarged points of intersection represent the vertexes of the icosahedron.)

Fig. 445.13.

- A. The 25 great-circle planes of the vector equilibrium shown as true circles on a sphere (enlarged points of intersection represent the vertexes of the vector equilibrium.)
- B. The 31 great-circle planes of the icosahedron shown as true circles on a sphere. (Enlarged points of intersection represent the vertexes of the icosahedron.)

445.14 The vector equilibrium is the common denominator of the tetrahedron, octahedron, and cube. It is the modular domain of the nine-zero-punctuated octave system. Double the vector equilibrium's modules radius for octaval volume accommodation.

445.15 When we compare the two-frequency-edge moduled cube's volume as quantized exclusively with cubes, to the vector equilibrium's volume as quantized exclusively with tetrahedra, we find that the volume of the twofrequency cube equals eight—which is two to the third power, expressed as 2^3 . Whereas the volume of the two-frequency vector equilibrium equals 160, which is the integer two raised to the fifth power, $2^5 = 32$, and then multiplied by five, $5 \times 32 = 160$, expressed as $5 \cdot 2^5$. (See illustration [966.05](#).)

445.16 In 60-degree vector equilibrium accounting, when the edge module reads two, we have an energy potential (20) converted to an energy realized value of $20F^3$, F being 2, ergo, $2^3 = 8$, ergo, $20 \times 8 = 160$, which is also expressible most economically in prime numbers as two to the fifth power times five.

445.17 We thus understand the misassumption of mid-19th century science that the *fourth* and *fifth* dimensions were inherently nonmodelable. The misassumption was occasioned by science's identification of dimensional uniqueness only with the rectilinearity of the cube, instead of with the vector equilibrium's omni-sixty-degreeeness and the isotropic vector matrix's most economically mass-interattracted closest-self-packing unit radius sphere nucleation.

445.18 Generalized omni-intertransformable modelability now faithfully permits popular human comprehension of all experimentally derived scientific knowledge regarding physical phenomena heretofore translated only into exclusively abstract mathematical schemes of notationally formalized and formulated treatment, study, discovery; objective physical application now becomes modelable with energy-vectored tetrahedroning. This means that onniconceptuality of the geometrical intertransformations of eternally selfregenerative Universe now returns to science. This also means that the omnirational quantation we are discovering here means that children can conceptualize nuclear geometry even in their kindergarten years. This means in turn that nuclear physics will become lucidly explorable by humanity in its elementary spontaneously conceptioning and reasoning years.

[Next Section: 450.00](#)

Copyright © 1997 Estate of R. Buckminster Fuller