

764.00 **Escape from Compression Structuring**

764.01 Geodesics introduces tension as the integrity of structure. Geodesics is in fundamental contradistinction to the compressional arches where men made lesser rings of stone and bricks and so forth, like Santa Sophia, fitting them together beautifully and shaping them very mathematically to prevent their slipping or falling inwardly from one another to break the integrity of the compressional rings. In Santa Sophia, they put a chain around the bottom of the dome to take care of the outward thrust of the enormous weights of the aggregate trying to come apart. They could not build an exclusively compressional dome that would not thrust outwardly at the base, so they put the chains around the bases to prevent their collapsing.

764.02 We have seen that in tensional structures there is no limit of length to cross section: you can make as big a pneumatic bag as you want. In the comprehensive, geodesically omnitriangulated, tensegrity structures, we are able to reach unlimited spans because our only limitation is tension, where there is no inherent limit to cross section due to length. We get to where there is no cross section visible at all, as in the pull between the Earth and the Moon. With such structural insights we can comprehend the structure of an apple in terms of noncompressible hydraulic compression and critical proximity cellular wall tensioning. Synergetics identifies tensegrity with high-tensile alloys, pneumatics, hydraulics, and load distribution.

765.00 **Snow Mound**

765.01 A child playing in sticky snow may make a big mound of snow and hollow it out with his hands or a shovel to make a cave. The snow is fascinating because you can push it together and it will take on shapes. It has coherence. Almost every child with mittens on has built himself a mound and then started chipping away to make a cave. Looking at the hollowed mound from the outside, he may discover that he has made a rough dome. He might then conclude that whatever makes the structure stand up has to do with the circumferential interactions of the snow crystals and their molecules and the latter's atoms. He finds that he can get in it and that the structural integrity has nothing to do with the snow that used to be at the middle. So we may develop a strong intuition about this when we are very young: that it is the circumferential set of molecules that are accounting for the structural integrity of the dome.



[Fig. 765.02](#)

765.02 The child may then find by experiment that he might hollow out the pneumatic network and put not only one hole, but many holes, in the snowdome shell, and it continues to stand up. It becomes apparent that it would be possible to take a pneumatic balloon, pair the molecules doing the work, and get rid of all the molecules at the center that were not hitting the balloon—for it is only the molecules that hit the balloon at high frequency of successive bounce-offs that give the balloon its shape.

766.00 **Tensegrity Geodesic Three-Way Grid**

766.01 What happens in the snow mound is also what happens in the three-way tensegrity geodesic spherical grid. In the balloon, we get paths of these positively and negatively paired kinetic molecules reacting from one another in a random set of directions. If they went into one path only, they would make a single circle, which would push the balloon outwardly only at its equator, making a disc and allowing the poles to collapse. If they made a two-way stack of parallel lesser circles as a cylinder, the cylinder would contract axially into a disc.

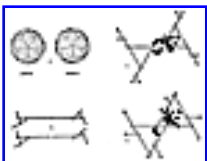
766.02 A gas-filled balloon is not stratified. If it were, it would collapse like a Japanese lantern.

766.03 A two-way grid would make only unstable squares and diamonds, which would elongate into a tubular snake.

766.04 Once we have three or more sets of angularly independent, great-circularly continued, push-pull paths, they must inherently triangulate by push-pull into stabilization of opposite angles. Triangulation means selfstabilizing; which creates omnidirectional symmetry; which makes an inherent three-way spherical symmetry grid; which is the geodesic structure.

770.00 **System Turbining in Tensegrity Structures**

770.10 **Comprehensive System Turbining**



[Fig. 770.11](#)

770.11 The whole system turbines positively, or the whole system turbines negatively. There are no polar or opposite hemisphere differences of these systems. There are no "rights" or "lefts" in Universe.

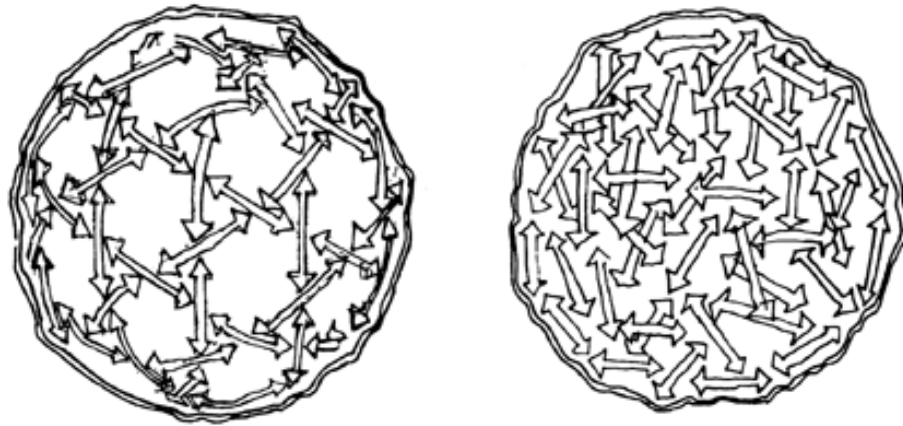


Fig. 765.02 Stabilization of Three-Way-Grid Tensegrity Sphere: What happens with the snow mound is also exactly what happens in a three-way-grid tensegrity-geodesic spherical grid. In the balloon we get paths of these positively and negatively paired, kinetic molecules reacting from one another in a random set of directions. If they went into one path only, they would make a single circle which would push the balloon outwardly only at its equator making a disc and allowing the poles to collapse. If they made a two-way stack of parallel lesser circles as a cylinder, the cylinder would contract axially into a disc. A two-way grid would make only unstable squares and diamonds, which would elongate into a tubular snake. But once we have three or more sets of angularly independent circularly continued push-pull paths, they must inherently triangulate by push-pull stabilization of opposite angles. Triangulation means self-stabilizing, which creates omnidirectional symmetry, which makes an inherent three-way spherical symmetry grid, which is the geodesic structure.

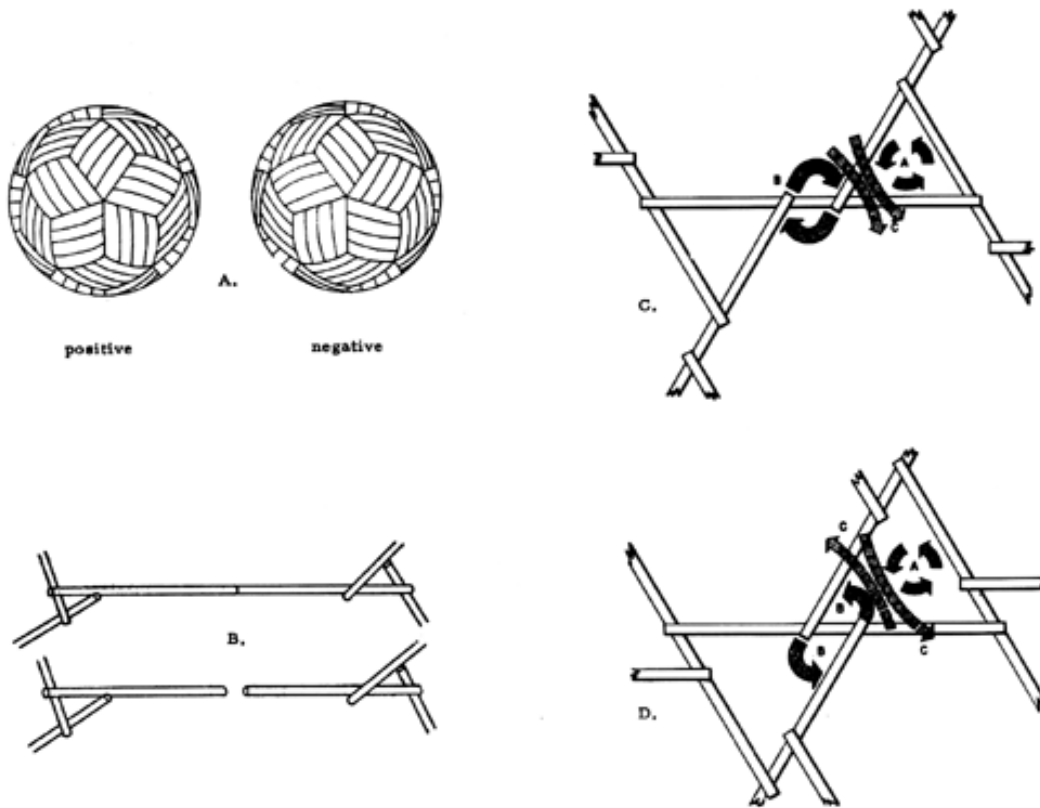


Fig. 770.11 System Turbining in Tensegrity Structures:

- A. The two above both have six axes of symmetry. It is the patterning of the thirty diamond domains of the icosahedron's thirty edges, the rhombic triacontahedron.
- B. The linear-congruence juncture of two positive or two negative turbining-surface three-strut tensegrity units.
- C. Single-bonded tensegrity: turbining tendencies of thrusts of C about A and B are additive.
- D. Double-bonded tensegrity: turbining tendencies of thrusts of C about A are opposed to those about B.

770.12 Three-strut tensegrity units exhibit either two positive or two negative turbinating surfaces at their linear congruence junctures.

770.13 In single-bonded tensegrity structures, turbinating tendencies are additive. In double-bonded tensegrity structures, turbinating tendencies are opposed.

770.20 **Central-Angle and Surface-Angle Turbinating**



770.21 Turbinating in tensegrity systems may derive from either central angles or surface angles. There is inherent comprehensive positive or negative turbinating of finite systems in both central and surface angles. Central-angle turbinating effects surface-angle turbinating.

[Fig. 770.21](#)

780.00 **Allspace Filling**

780.10 **Conceptual Definition of Allspace Filling:** The multiply furnished but thought-integrated complex called space by humans occurs only as a consequence of the imaginatively recallable consideration (see Sec. [509](#)) of an insiderness-and-outsideness- defining array of contiguously occurring and consciously experienced time-energy events.

780.11 Unitary conceptuality requires spontaneous aggregating of relevant magnitudes and frequencies of experience recalls.

780.12 Conceptualization is inherently local in time as are the separate frames of scenario Universe's conceptualities nonconceptually identical. Conceptuality is always momentary and local.

780.13 When we speak of allspace filling, we refer only to a conceptual set of in-time local relationships. This is what we mean by tunability.

780.14 The limits of an allspace-filling array are nondefinable. Nondefinable is not the same as infinite.

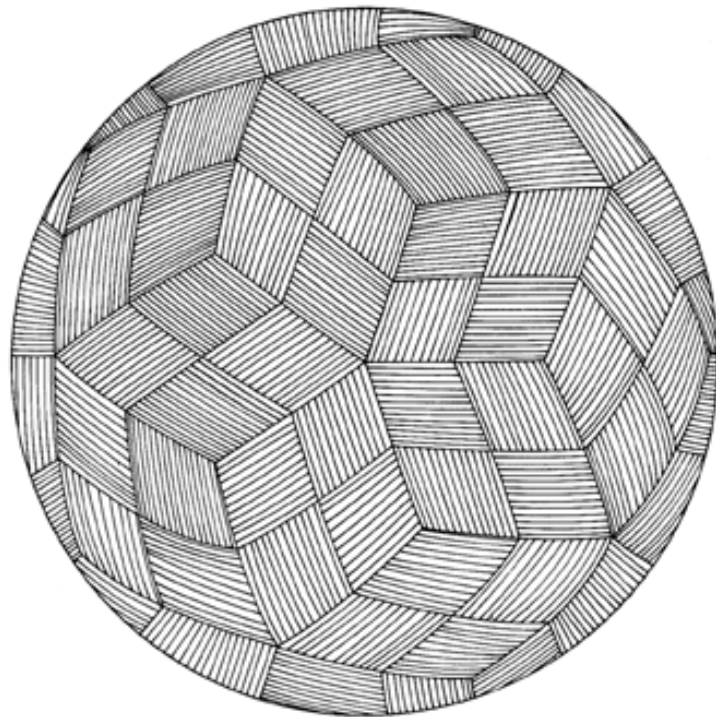
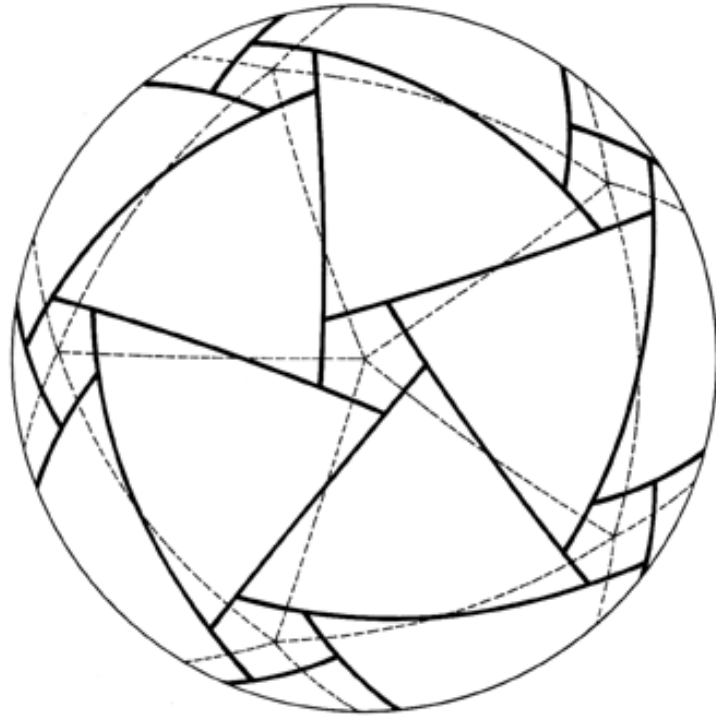


Fig. 770.21

780.20 **Galactic Orientation:** Apparently simultaneous static-system conceptualization is "relatively" misinterpretable as an environmentally experienceable condition of the individual which he reflexively identifies as "instantaneous"—a word as yet frequently used with omnipopularly misassumed fidelity to reality.

780.21 This instantaneously infinite static Universe misconception is vastly fortified as the living observers go outside the house on a clear, "still" night and stand fixedly *under* the stars, gazing fixedly at the fixed stars, and, as we say poetically, "turn this instant into eternity," within which cosmically arrested moment, subconsciously stimulated by the latest newspaper item regarding a way-up-there quasar or other astro discovery, we say in spontaneously expressed curiosity: "I wonder what's outside the outside of all these omnidirectionally positioned stars?"

780.22 This brain-fixing fixity's conceptual interpretation of experience is permitted only by the infinitesimally short life span of humans in the thus-far-discovered historical magnitudes of universal history's events. As we stand "fixedly" in "space" at the terrestrial latitude most occupied by Earthian humans, we are revolving around the-Earth's axis at 600 m.p.h. Together with our Moon, we orbit around Sun at 60,000 m.p.h. (which orbital speed is three times as fast as the Earth-Moon-ferrying, Apollo-rocketed space vehicle), and all the while our solar system, situated about three-quarters of the way outward from the center of our celestial galaxy—together with all that inwardly active galaxy's billions of stars—are cosmically merry-go-rounding at approximately a million miles per hour, and all the while we participate in all these motions, our Milky Way merry-go-round galaxy itself may be, and is scientifically thought to be, involved in comprehensive motion at an even higher velocity. Due to the omnieverywhere-expanding Universe (interpretation of observed data), our galaxy and all the other of the billions of galaxies of Universe are alike in traveling outwardly from one another isotropically at additional millions of miles per hour.

780.23 This expanding-Universe concept is easy to phrase in words as reported, but lucid comprehension of its import involves experientially "impossible," three-dimensional, space-motion conceptualizing, for in order to travel away cosmically from each of all the spherically surrounding galaxies of our Milky Way, any one of the billions of galaxies seemingly would have to go outwardly in all directions in order to go away from each of them simultaneously. Obviously, however, this could not be accomplished by any one of them moving in only one direction—which is humanity's way of thinking of motion—unless there were a center of galaxy of Universe outwardly from which all others move *exactly* and only radially, *or* unless all of Universe and all of the galaxies and each and all phenomena within them, including the smallest nuclear particle, are either *expanding* systematically and simultaneously or are *shrinking* systematically and simultaneously, all changing in size at a rate that is just a bit faster than the speed of light, with either the universal contraction or universal expansion of all points in Universe producing the same effect of uniform withdrawal from one another.

780.24 This may be the universal effect of the *speed* of gravity, whose force (possibly in order to eternally cohere Universe) is, as is often found experimentally, always just a fraction greater than the cosmic speed of inherently disintegrative radiation. (See Sec. [231](#).) This conceptioning becomes lucid if one is familiar with the vector equilibria and their identity with isotropism, which spontaneously accommodates coexpansion or contraction independent of any Universe center, every nuclear point within the system being a Universe center, with all its 12 most immediate neighbors always being equidistant and bearing at the same total of central-angle magnitudes from one another,¹ with the circumferentially closed, embracing vector forces always more effective than their equal and opposite radial vectors' noncooperative, open-ended, disintegrative forces.

(Footnote 1: I.e., 60 degrees. The nucleus of a square would have a completely different distance to its corners than the corners would have to each other.)

780.25 Humans standing on Earth gazing outwardly from Earth at the stars cannot see the stars in the celestial sphere in the direction of their feet. Earth is in the way. Earth is so much in the way that humans at sea on a calm, clear night can see only about half the celestial sphere at any one time. An astronaut out "space-walking" can see approximately all of the stars of the celestial array omnisurrounding him at vast varieties of distances from him, though they all seem to be superficially on the same concave surface of the same black sphere at whose center the astro-observer seems to be. Remembering the difference between the Earth-standing observer's totality of sky and the astronaut's also optically illusioned but far more comprehensively stimulated conjuring of the concept "totality," we can understand why the Earth-standing observer on a completely overcast day cannot see the cloud cover as a dimensionally definable phenomenon, whereas the astronaut seeing the Earth at a distance wrapped in its cloud cover can see Earth and its biosphere as a dimensionally defined entity.

780.26 When we speak of the cosmic limits of seemingly allspace filling, we refer to the totally surrounding, indefinable, extensive allspace-filling effect of fog upon an observer in that dense fog. It seemingly has no shape. Nor has that fog a "shape" even when it lifts into the sky above the observer and fills the whole overhead spherical domain. Observed from outer space at the same moment, however, mantling Earth may seem to have momentarily stable descriptability akin to that of a frozen icefield. Then the same fog or cloud blanket may be viewed at the same time by a third human from a mountaintop just protruding through the cloud. The third observer sees that the clouds are intertransforming in complex, high-speed turbulence, vanishing here in rain and being newly formed elsewhere by Sun-drawn evaporation. Every atom involved in Earth's ocean-atmosphere-intertransforming H₂O cloud-cover phenomena, visible or invisible, has its integrity, and the allspace-filling events become other than visible transformation events, yet may indeed be kept account of by you and me and Universe, with its mathematical integrities of complexedly interaccommodative principles of intertransformative events always occurring interconsiderately.

780.27 Seen from Moon, the total local dimensional involvement of such Earthian atmospheric-oceanic intertransforming events is well within the field of a telephoto-lensed, video-recording camera as well as of a battery of frequency sensors ``seeing" the humanly invisible events transpire. The intertransformings are finitely packagable and analyzable in conformity to allspace-filling laws. That these same events seem boundless to the Earthian observer uninformed by the celestial-scanning instruments need not obscure our realization that what we mean by allspace-filling regularities are omni-intertransformable—ergo, are scenarios of an aggregate of nonsimultaneously overlapping, energy-transforming events in which one or a few isolated frames of special-case considerations fail to disclose the meaning accruing only to large-continuity consideration of the whole story.

780.28 As a cosmic, generalized, intertransformability system *field*, our allspace-filling synergetics matrix accommodates and equates these behaviors. Allspace filling is a scenario: the eternally self-regenerative scenario of cosmic integrity.

780.30 **Eternality:** "Eternal" identifies only the metaphysical, weightless, abstract principles, which, to hold true in all special-case experiences, are inherently eternal.

780.31 Angles are eternally transcendental to time-size limits. The angle is a subdivision of one cycle quite independent of the length size (time) of the angle-defining radii edges of the angle. One-sixth of unity: the circle is one-sixth independent of time and size.

780.32 Regularity is eternal. But the regularities are eternally omni-interaccommodative, permitting approximately limitless freedoms of selectable alternative developments involving a vast plurality of time-dimensioned frequency involvements.

780.40 **Unitary Conceptuality of Allspace Filling:** Allspace filling means all unitarily conceptual space filling, because Universe, though finite, is an aggregate of nonsimultaneous and only partially overlapping event transformations which, being nonsimultaneous and differentially rate-frequenced, are never momentarily subject to total unitarily synchronized—ergo, simultaneous, apparently static system—conceptualization.

[Next Section: 781.00](#)
