1000.00 Omnitopology

1001.00 Inherent Rationality of Omnidirectional Epistemology

1001.10 Spherical Reference: Operationally speaking, the word *omnidirectional* involves a speaker who is observing from some viewing point. He says, "People and things are going every which way around me." It seems chaotic to him at first, but on further consideration he finds the opposite to be true, that only inherent order is being manifest. First, we observe that we do not and cannot live and experience in either a one- dimensional linear world nor in a two-dimensional infinitely extended planar world.

1001.11 Omnidirectional means that a center of a movable sphere of observation has been established a priori by Universe for each individual life's inescapably mobile viewpoint; like shadows, these move everywhere silently with people. These physical- existence-environment surrounds of life events spontaneously resolve into two classes:

1. those events that are to pass *tangentially* by the observer; and
2. those event entities other than self that are moving *radially* either toward or away from the observer.

1001.12 The tangentially passing energy events are always and only moving in lines that are at nearest moment perpendicular to the radii of the observer, which means that the multiplicity of his real events does not produce chaos: it produces discretely apprehendable experience increments, all of which can be chartingly identified by angle and frequency data therewith to permit predictable reinterpositioning events and environmental transformations .

1001.13   The observer's unfamiliarity with the phenomena he is observing, the multiplicity of items of interaction and their velocity of transformations, and their omniengulfing occurrences tend to dismay the observer's hope of immediate or reasonable comprehension. Therefore, observers are often induced to discontinue their attempts at technical comprehension of their experience, in a surrender of the drive to comprehend. This fills the potential comprehension void of the observer with a sense of chaos, which sensation he then subconsciously converts into a false rationale by explaining to himself that the environment is inherently chaotic, ergo, inherently incomprehensible. Thus he satisfies himself that he is being super-reasonably "realistic" and that Universe is just annoyingly disorderly—ergo, frequently dismissible—which seemingly warrants his invention of whatever kind of make-believe Universe seems momentarily most satisfying to him.

1001.14   The more humanity probes and verifies experimentally by reducing its theories to demonstrable practice in order to learn whether or not the theories are valid, the more clearly does Universe reveal itself as being generated and regenerated only upon a complex of entirely orderly relationships. The inherent spherical center viewpoint with which each individual is endowed generates its own orderly radii of observation in a closed finite system of event observations that are subject to orderly angular subdividing, recording, and interrelating in spherical trigonometric computational relationship to the observer's inherently orderly sphere of reference.

1001.15   The expression "frame" of reference is not only "square" as imputed by the two-dimensional language of youth, but also by its exclusive three-dimensional axes of reference. Such XYZ coordinates impose inept, exclusively rectilinear definings, which are uncharacteristic of the omniwavilinear orbiting Universe reality. Science has not found any continuous surfaces, solids, straight lines, or infinitely extensible, nonclosed-system planes. The only infinity humanity has discovered experimentally is that of the whole-fraction subdivisibility of wholes into parts, as for instance by the progressive halvings that divide the finitely closed circle into ever smaller, central-angle-expressed, arc increments. The spherical dimensions of tangent and angle frequencied intervals can always be searchlighted "right on" all actual event tracery.

1001.16   Because spherical trigonometry sounded so formidable, it was omitted from primary education. Humans preferred to rationalize their observed experience exclusively in terms of nonexistent straight lines and planes, and thus they evolved illogical linear and square models of Universe such as the four corners of the wide, wide world with its nonexistent fixed *up* and *down* coordinates. Employment of the "square" XYZ coordinate frame of mensural reference in all present scientific exploration is similar to going to Washington from Boston only via Chicago because that pattern conformed to the scientists' only right-angled-expressibility of relationships. Of course, if you know calculus, you could evolve a curve plotted on the XYZ gridding which may shorten your course; but if you don't know calculus, you have to go via Chicago.

1001.20   **Field of Geodesic Event Relationships**

1001.21   Since the myriads of eccentricities of cyclic periodicities of omni-everywhere-and-everywhen complex intermotions of intertransforming Universe inherently defy any "fixed" overall frame of cosmic motion referencing; and *since* the omnicosmic presence of mass-attractive and tensionally operative gravity means that no so-called straight line can be generated by any one body, as all bodies are affected by other bodies in varying degrees; and *since* all bodies are in motion either independently or in company with other bodies and are axially rotating on precessionally skewed axes as they elliptically orbit their dominant bodies (or dominant collection of bodies); *wherefore,* any point on any body progressively describes only an overall pattern in Universe of a cyclic, curlicue, wavilinear, elliptically-orbiting-within-elliptically-orbiting of larger systems.

1001.22   Within the total cosmic complexity the directions taken by each and all of the moving bodies are always the paths of least resistance. Because the paths are those of least resistance, all events of all transforming and traveling entities require the least energy to accomplish their complex action programmed passages—ergo, their accomplished curvilinear courses are always the most economical lines of travel. These most economical routes of travel are known as geodesic lines. Geodesics are not only nature's most economical lines of interrelationship travel, but ipso facto they are also nature's shortest- time-of-travel lines.

1001.23   When using string to secure the cover on a cubical box whose edges are two feet long, people spontaneously surround the box in a direction perpendicular to the cube's edges and, having run the string completely around the cubical box in one direction, they do so again in a plane at right angle to the first wind-around. This takes 16 feet of string and a pair of mid-top and mid-bottoms knots to securely bind-in all six faces of the cube. However, all six faces can be surrounded and the cover held secure almost twice as economically by using only one string eight-and-one-half-feet long and following the geodesic line that winds around the corners of the cube from midedge to adjacent mid- edge to produce an equiedged hexagon whose length of line-of-string-reach-around is the shortest distance around all six faces of a cube, wherefore the string cannot slide off the cube. To make this most economical path dynamically evident, hold a cube between the index fingers of your left and right hands with the left index finger pressed against one top corner of the cube and your right index finger pressed against the corner of the bottom of the cube most diagonally opposite the first corner pressed. Now, holding the box firmly between the two index fingers and stretching your arms in front of you with your fingers at the same level above the floor, ask someone to spin the box around the axis between your two fingers; as they do so, you will see the top and bottom profile of the spinning box and its six free corners rotating in two pairs of three each to produce two hills in the top and bottom profiles of the revolving box with a valley between them running around the box's equator of spinning. Along the bottom-most valley runs the hexagonally wound eight-and-one-half-feet-long string in its geodesic valley of least distance around all six faces.

1001.24   When a man shoots a bird in flight, he aims at a point where he thinks the bird will be by the time the bullet can travel that far; he must also allow for gravitational pull Earthward and cross-wind deflection of the bullet's always-consequently-corkscrew line of travel. The corkscrew line of successful travel between gun and bird is the most energy-economical trajectory. It is a geodesic line. If the man chooses the seemingly straight, "shortest" line between himself and the bird at the time he is aiming—which is the way he was taught by geometry in school—he will miss the bird.

1001.25   The misconception of a "straight" line and its popular adoption into humanity's education system as constituting the "shortest distance between two points" takes no consideration of what the invisible, dynamic, atomically structured system may be which provides the only superficially flat paper-and-lead-pencil-pattern of interrelationship graphing of the line running between the two points considered. Nor does the straight-line shortest-distance assumption consider what a "point" is and where it begins and ends— ergo, it cannot determine where and when its dimensionless points have been reached, and it cannot determine what the exact length of that shortest distance between "points" may be.

1001.26   Such self-deceiving misinterpretations of experiences have been introduced by education into human sensing and traditional reasoning only because of humanity's microstature and microlongevity in respect to the terrestrial environment and geological time. Individual humans have also been overwhelmed by the momentum of tradition, the persuasions of "common sense," and a general fear of questioning long-established and ultimately power-backed authority and tradition. Thus has innocent humanity been misinformed or underinformed by the spoken-word-relayed inventory of only popularly explained, naked-eye impressions of local environment experiences as they have occurred throughout millions of years prior to humanity's discovery and development of instrumentally accommodated, macroscoped and microscoped exploration of our comprehensive environment. The experientially obtained, macro-micro, instrumentally measured data found no evidence of the existence of dimensionless "points," "lines," and "planes," nor of dimensioned "solids," nor of any "thing," nor of any noun-designatable, thing-substantiated, static entities. The experiments of human scientists have disclosed only verb-describable events—four-dimensionally coordinate behaviors of complexedly and ceaselessly intertransforming events, wavilinear event trajectories, interferences, and resonant event fields.

1002.10   Omnidirectional Nucleus

1002.11   Omnidirectional invokes a nucleus. Omnidirectional consideration as generalized conceptual pattern integrity requires an inherently regenerative nucleus of conceptual observation reference. Because of omni-closest-packing of 12 spheres triangularly surrounding one, inwardly-outwardly precessed pulsations cannot distribute energy further inwardly than the nuclear sphere's prime volume, ergo nucleus-free, and only geometrically approximatable center of volume; whereafter it can only be distributed outwardly.

1002.12   With 12 omnidirectional, equally-most-economical, alternative-move options accommodating each event, each multiplied in optional diversity by myriads of alternate frequencies-of-occurrence rates, it is inherent to the "game" of Universe that complex redistribution of event identities swiftly ensues, as with a vast omnidirectionally observed kaleidoscope in ever-accelerating acceleration of pulsatively intertransformed pattern continuities.

1002.13   Because there are spaces between closest-packed spheres, energy can be imported syntropically all the way inward to the prime nuclear domain, which thereafter can only be articulated outwardly—ergo, as entropy. The omnidirectional grid of the isotropic vector matrix, whose vertexes always coincide with the sphere centers of all closest-sphere packings, always provides the new spherical reference system that spontaneously accommodates the observer's omnirational accounting of all Universe relations by providing an omnidirectionally observing observer's nuclear-sphere viewpoint; and all the other relevantly-to-be-identified nuclear (star) sphere centers all inherently interpositioned in omnispherical, uniradius, isotropic matrix array with omnivectorially accommodated, omnidirectionally permitted intertransformability, apprehendibility, and discrete vectorially quantated and angularly identified comprehensibility of all intertransformative transactions.

1003.10   **Isotropic-Vector-Matrix Reference**

1003.11   *Isotropic* means everywhere the same, which also means omnidirectionally the same. The isotropic vector matrix provides the actual and only systematic scheme of reference that agrees with all the experimentally disclosed behaviors of nature, while also disclosing only whole-number increments of nature's and individual's special-case objectifications of the often only subjectively apprehended information regarding the generalized principles being employed by nature. All the isotropic-vector-matrix identifications of experience are expressible in terms of angle and frequency. The angles are independent of size and absolutely generalized. The frequencies are all special-case, time-space-limited specifics and identify relative sizes and magnitudes of eternally conceptual generalizations.

1004.10   **An Omnisynergetic Coordinate System**

1004.11   The omnirational, omnidirectional, comprehensive coordinate system of Universe is omnisynergetic. The name *synergetic* refers specifically to the cosmically rational, most omnieconomic coordinate system with which nature interaccommodates the whole family of eternal generalized principles that are forever omni-interaccommodatively operative. This coordinate system is ever regenerative in respect to the nuclear centers, all of which are rationally accounted for by synergetics.
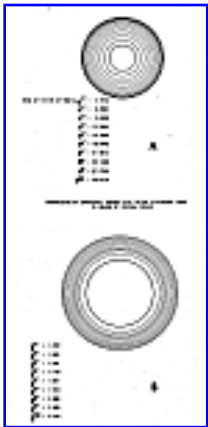
1005.10   **Inventory of Omnidirectional Intersystem Precessional Effects**

1005.11   Precession has been thought of only as an angularly reoriented, single-plane resultant of orbiting forces, as expounded, for instance, in the author's 1940 article on the gyroscope (see footnote at Sec. 1009.60). Sun's planets are precessed to orbit in a plane generated at 90 degrees to the axis of its poles. In synergetics, we discover omnidirectional precession as in tensegrity geodesic spheres. When we push inwardly on any two diametrically opposite points of a tensegrity geodesic sphere, the whole sphere contracts symmetrically; when we pull outwardly from one another on any two diametrically opposite and islanded compression members of a geodesic tensegrity sphere, the whole sphere is precessionally and symmetrically expanded. Precession is not an exclusively single-plane, 90-degree reorientation, for it also operates omnidirectionally, as do all electromagnetic wave phenomena, which can, however, be reflectively concentrated and unidirectionally beamed. The fact that waves can be reflectively and refractively focused does not alter the fact that they are inherently omnidirectional.

1005.12   While all great circles of a sphere always cross each other twice, any two such orbits precess one another into 90-degree-polar crossings, while three-way great- circling interprecesses to equiangularly intertriangulate and thus interstabilize each other.

1005.13   Today, society is preoccupied with exclusively linear information inputs.
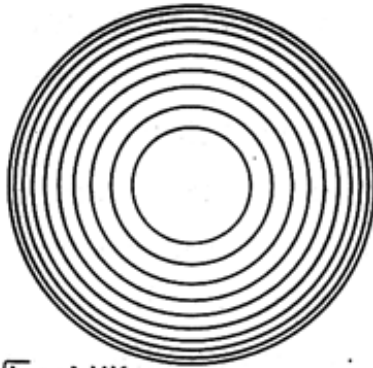
1005.14   Pushing on one individual pole of a tensegrity geodesic sphere is the same as pushing on two poles, because you only have to push at one point for the inertia of the system to react against your pushing. This point produces a spherical wave set that if uninterfered with, will travel encirclingly around the sphere from any one starting point to its 180-degree antipodes. It is like dropping a pebble into the water: the crest is the expanded phase of Universe, and the trough is the contracted phase of Universe. Looking at the ripples, we see that they are the locally initiated expanding-contracting of whole Universe as a consequence of local energy-event inputs. This is why tensegrity and pneumatic balls bounce. Contracting as they contact, their equally violent expansion impels them away from the—relative to them—inert body of contact.

1005.15   **Volume and Area Progressions:** Omnidirectional precession involves both volumetric progressions and areal progressions that are interaccommodative as radial (volumetric) precessions and circumferential (surface) precessions resulting per given unit of energy input into the system. The ratios of these concentric progressions are illustrated at Figs. 1005.15A-D.
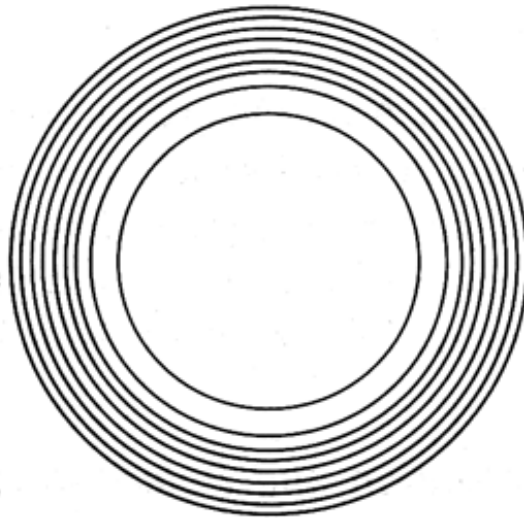
Fig. 1005.15

Next Section: 1005.20

Area of Circle of Radius $\sqrt{1}$ = 3.1416
$\sqrt{2}$ = 6.2832
$\sqrt{3}$ = 9.4248
$\sqrt{4}$ = 12.5664
$\sqrt{5}$ = 15.7080
$\sqrt{6}$ = 18.8496
$\sqrt{7}$ = 21.9912
$\sqrt{8}$ = 24.1328
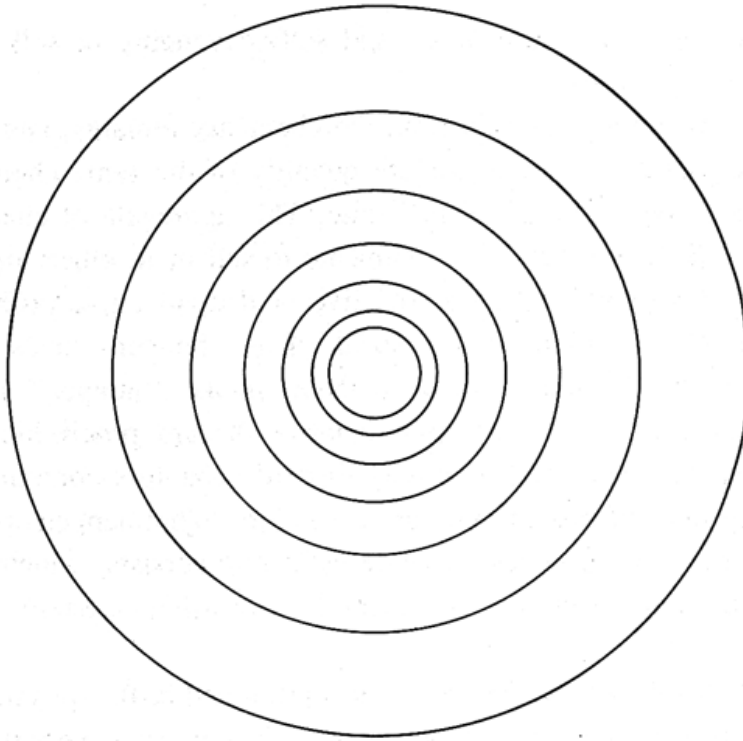$\sqrt{9}$ = 27.2754
$\sqrt{10}$ = 30.4170

A

PROGRESSION OF CONCENTRIC SPHERES WITH VOLUME DIFFERENCE EQUAL
TO VOLUME OF CENTRAL SPHERE

$\sqrt[3]{2}$ =. 1.259
$\sqrt[3]{3}$ = 1.442
$\sqrt[3]{4}$ = 1.587
$\sqrt[3]{5}$ = 1.710
$\sqrt[3]{6}$ = 1.817
$\sqrt[3]{7}$ = 1.913
$\sqrt[3]{8}$ = 2.000
$\sqrt[3]{9}$ = 2.080
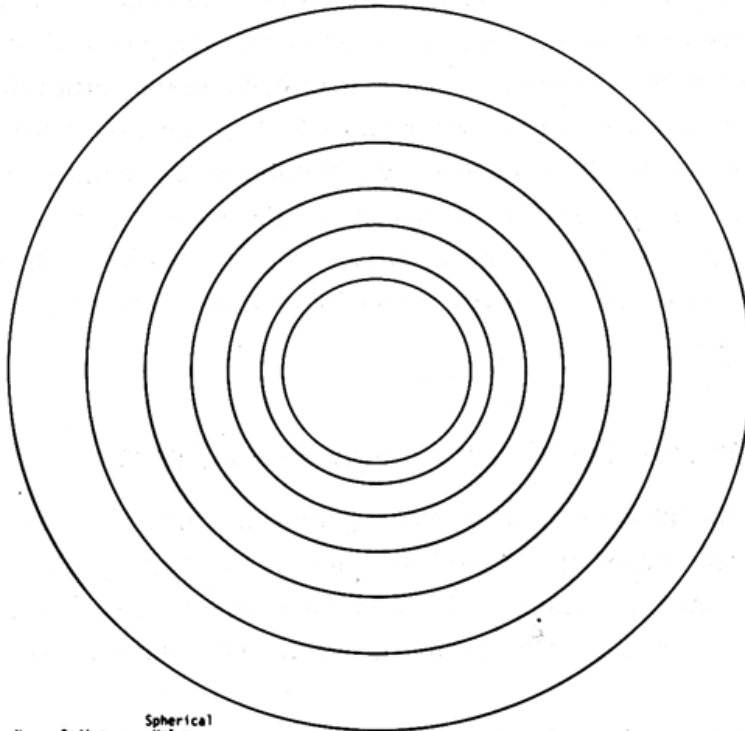$\sqrt[3]{10}$ = 2.154

B

DOUBLING AREAL OF PROGRESSIVE CONCENTRIC CIRCLES

N T	Radius
T	1.000
2	1.414
4	2.000
8	2.828
16	4.000
32	5.656
64	8.000

.C

DOUBLING VOLUMES OF PROGRESSIVE CONCENTRIC SPHERES

N T	Radius	Spherical Volume
T	1.000	4.1888
2	1.259	8.3776
4	1.587	16.7552
8	2.000	33.5104
16	2.519	67.0208
32	3.174	134.0416
64	4.000	268.0832

D

Fig. 1005.15 Omnidirectional Intersystem Precessional Effects: Volume and Area Progressions:

    A. Progression of concentric circles with area difference equal to area of central circle.
    B. Progression of concentric spheres with volume difference equal to volume of central sphere.
    C. Doubling areas of progressive concentric circles.
    D. Doubling volumes of progressive concentric spheres.