What is the primary relationship of MAN to THAT in which he finds himself? How does he perceive this Otherness which at times is also himself? In what ways does he categorize and synthesize his feelings, thoughts, and intuitions about this apparent dichotomy? Each major religion of the world has sprung from such an attempt to understand and cope with the appearance of separation between man and THAT other. Superficially, there are many differences among these religious views. By penetrating through the surface to the roots from
which they sprang, these religious views are discerned as similar in origin and nourished continually by the same esoteric source. The soil from which they grew is the common ground of man's consciousness. The nutrients and foodstuffs are built from his imagination, while the plant itself is structured from his conceptualizations.

Man finds himself at the center of a metaphysical-physical universe. Whether peering outward telescopically or nakedly, man experiences an all-around perception extending to his vision's limits. This telescope-assisted omni-perception of cosmic otherness is designated "Universe" and re-presents all that is experimentally verifiable in the physical universe. The
physical "world" for each man is his own microcosmic shell of existence-perception. There also exist non-separately, metaphysical spheres, which are not presently verifiable by physical means. All that is, physical and metaphysical, macrocosmic and microcosmic, is designated THAT. Man is born into a dichotomy of two realities, with the boundary being approximated by his skin envelope. In the continuous attempt to integrate the otherness of THAT "out there" with his internal reality, homo sapiens wonders, imagines, perceives, conceptualizes, and strives to "know" -- to taste of the wisdom-sap of sameness. The urge to merge the
objective otherness with the subjective selfness propels man to his greatest creative heights in search of unity.

Three fundamental tools of cognition are imagination, consideration, and conceptualization. In Imagination, man seeks to mentally imitate that which is beyond his concrete sensorial grasp. He fashions an image. This image formation begins with points at various loci which may appear dynamic or static. Then, in his seeking to "understand" these seed thoughts, he "stands under" this heavenly array, turns his eyes upward, and *considers*
"with stars" (com-sidus), the various images produced by taking together certain groups of star-thoughts.

Once perceived, this imagino-mental connect-the-dots game is re-played until a concept is formed. A concept is recognized by its arbitrary partial division of THAT into an outsideness and insideness. That is, certain items become excluded while others are, included. Concepts define a part of universe as "limited from" the remainder. It is with the aid of these concepts that man fashions his world of particulars. This stylizing of the phenomenal world is not a creation out of nothing, but rather a molding of THAT into segments and parts with boundaries. This imposition of finitude on a portion of THAT is a necessary step in the eventual realization of the Unity of the whole.

R. Buckminster Fuller suggests that four is the minimum number of points defining an inside-outsideness. This quaternary array, when exhaustively interconnected, produces the tetrahedron, having four vertices, six inter-connecting edges and four triangular faces. Similarly, when stacking four equal size spheres, a tetrahedron is formed. Fuller points out that a minimum of four spheres provides structural stability for inside-outsideness; whereas, a combination of one, two or three spheres produces a structure wherein each ball may freely rotate inside to outside to inside. The fourth sphere placed in the nest of the previous three locks all of them in place (Figure 1).
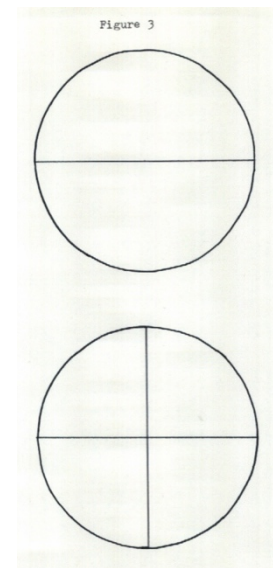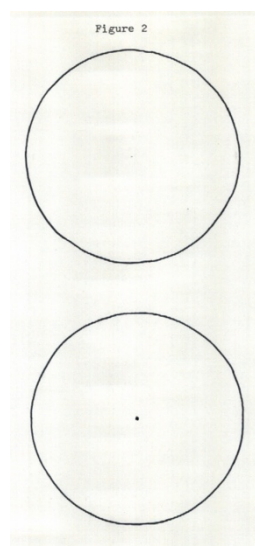
Figure 1
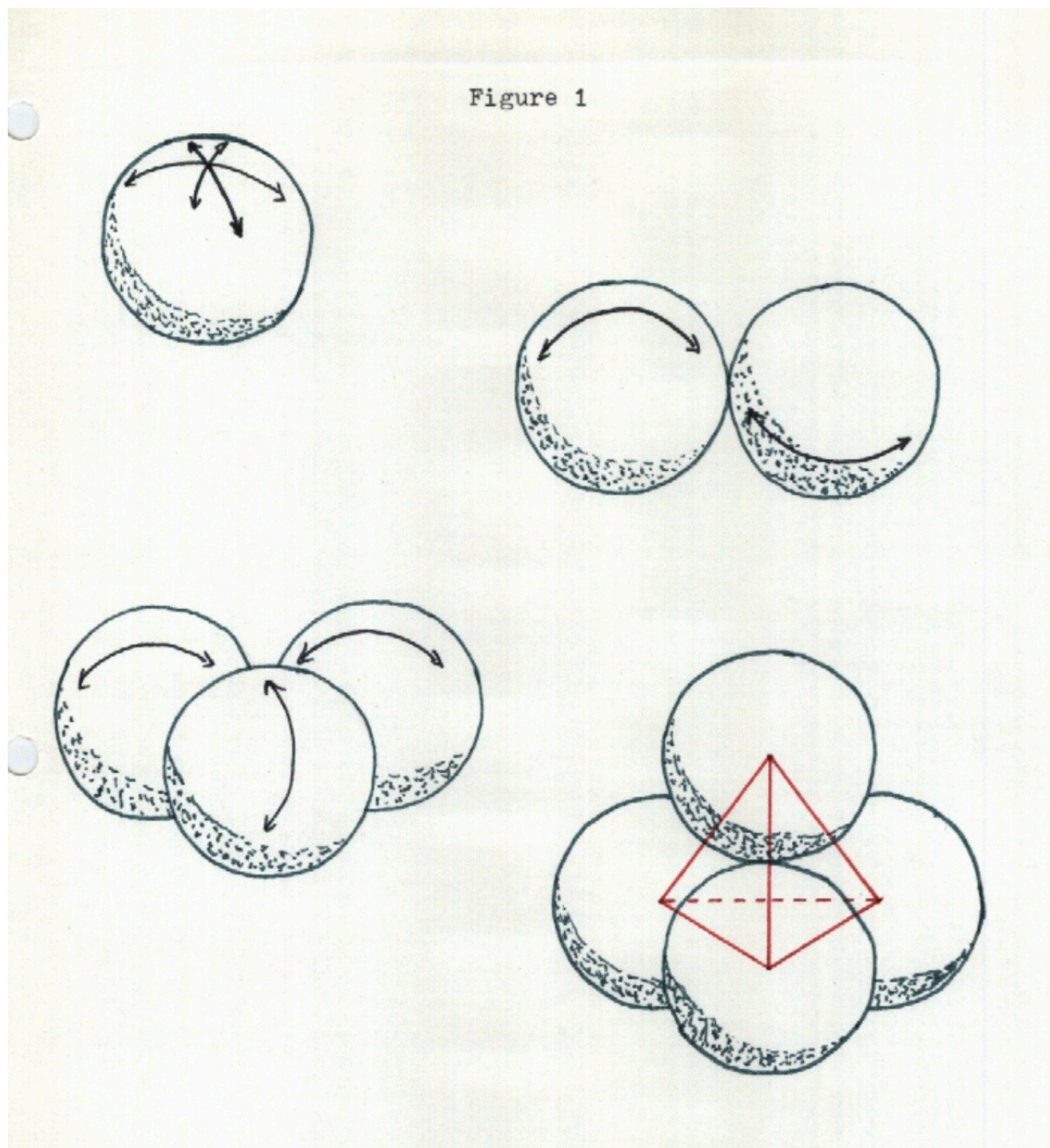
The most fundamental unit-piece in man's imagination scenario is the point. This quantum may be discerned as a mere spot, a crossing of lines, or a center. Man's mental and physical universe has experientially demonstrated its composition as quantized and not continuous. It is forever experimentally impossible to verify the hypothesized infinity of dimension-less points as the primary building blocks of existence. These points have no spatial dimension in physical reality and no temporal dimension in mental reality. It is suggested that these points be considered as spheres for this discussion, thus being more readily available and experimentally demonstrable, while not being constrained with any maximum-minimum limit of radius. A minimum radius sphere may approach the dimensionless point while a maximum radius sphere does not ceil our imaginative soaring.

The sphere or its two-dimensional analog the circle, is the most general and fundamental symbol for THAT. All symbols have limitations as well as an inherent ambiguity in meaning. Thus, the reasons for choosing a sphere-circle may be listed for consideration. THAT is unknown and forever unknowable in a definitive, materially quantitative way. The sphere-circle's volume-area Is similarly unknowable. The factor of pi (π) in the volume ($V = (4/3) \pi r^3$) precludes any exact determination of ether volume or area ($A = \pi r^2$). Regardless of the accuracy of measurement, a determined "content" or "sum value" of THAT must forever remain an approximation.

The sphere can be seen to contain no exhaustively knowable content. Further, the sphere as represented symbolically by the circle has no given radius. Thus, the symbolic sphere-circle may expand at great speeds, pulsate, and represent a very large or very small "within". In this sense, the sphere best symbolizes THAT as both objective macro-cosmos and subjective micro-cosmos. When man seeks to define or think "about" THAT, the perfectly smooth sphere-circle, devoid of lines or points, must be partially, but symmetrically delineated. In theory, this would occur as soon as the dimensionless points on the sphere's surface became small spheres. Thus connecting their centers would produce tiny lines forming a spherical network.

L. Gordon Plummer illustrates the following geometrical progression from circle to decagon. Begin with a circle representing THAT and symbolizing both a Void and a fullness and neither one nor the other. Every circle has a center which is potentially -- if not manifestly visible. This center point is made manifest in the next stage. The point then moves from center to edges and produces a diameter. This divides THAT into two.

Next a line perpendicular to the first line bisects it and continues to the other side dividing the circle into quarters. (Figures 2 and 3)


Figure 2

Figure 3

The direction of the last line continues downward dropping another equal-sized circle below. Using arcs as a spider would swing from one point to another, a decagon (ten-sides) is inscribed in the lower circle. (Figure 4) This illustrates and implies an interesting evolution for the number ten. This sequence of figures can be symbolically interpreted from various religious cosmologies. From the view of simple progression, the tetraktys illustrates a ten-ness as well as the gradual progression, one to four (Figure 5). This figure was considered holy by the Pythagoreans and will be shown to be quite extensive in its possible symbolic content. The interplay of number as form will be further considered in later chapters.

Figure 4

TETRAKTYS IN THREE SPHERES

Figure 5

TETRAKTYS OF THE PYTHAGOREANS
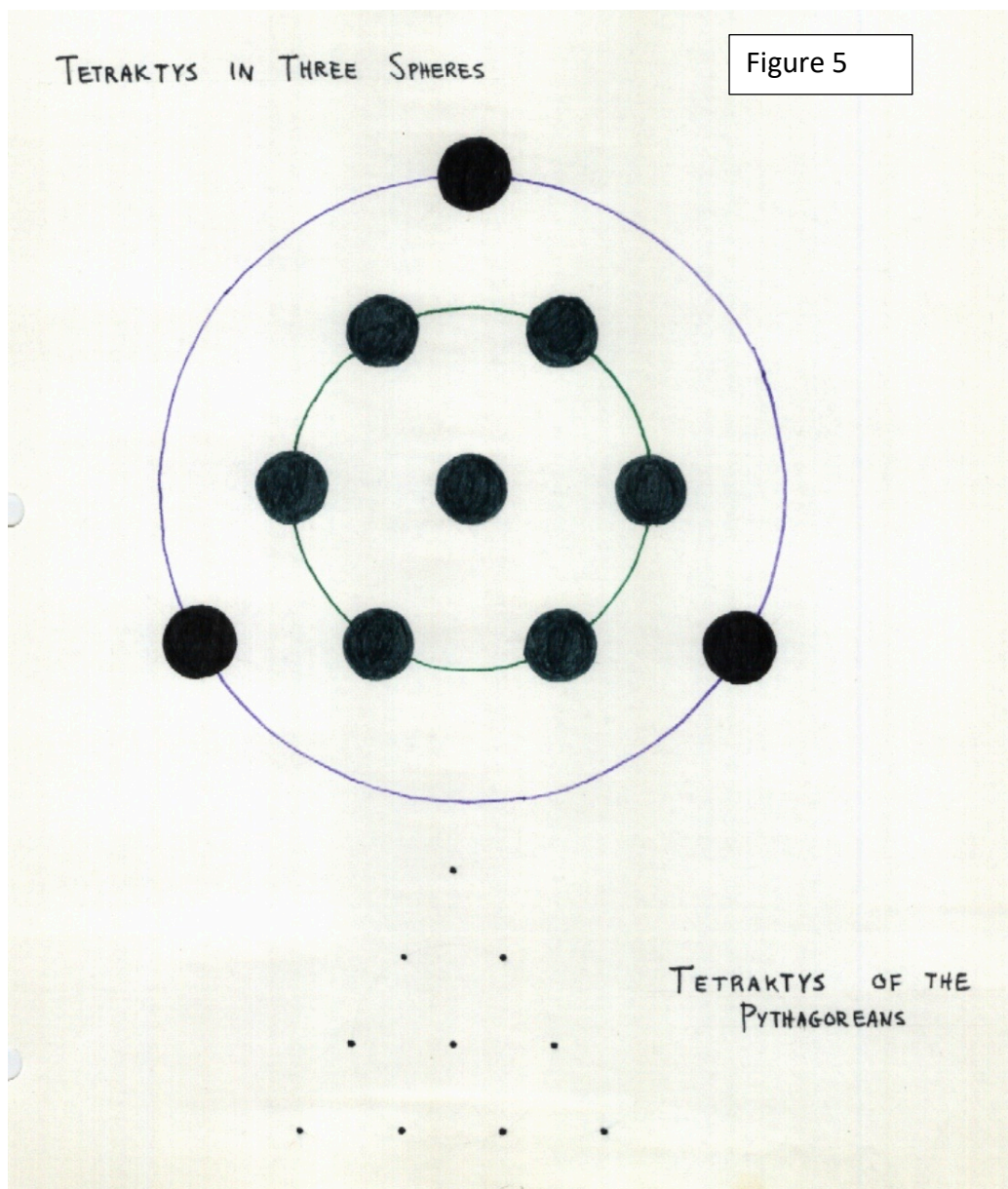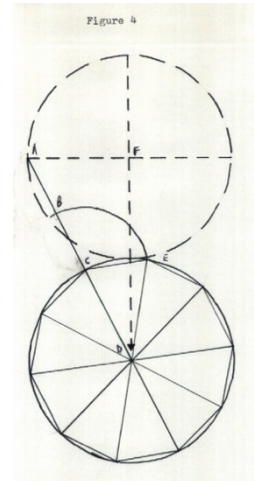
Reconsidering man's place in the center of THAT which he perceives, the question of choosing appropriate but basic imagery becomes important. Utilizing spheres as the fundamental building block of imagery experientially shows that twelve is the number of spheres in closest-packed surrounding of any one central sphere of the same size. This structure of thirteen spheres is called the vector equilibrium and has 30 edges, 20 faces and 12 vertices. If the central sphere shrinks in size, the 12 surrounding spheres "fall" inward to a closer-packed arrangement which is omnistable, and omnisymmetrical. Like the vector equilibrium, it has 30 edges, 12 vertices, and 20 faces, but in this case the faces are all equilateral triangles. This "icosaledron" (20-faces) differs from the locally asymmetrical vector equilibrium which contains eight square faces and 12 triangular faces.

These two figures are formed by peripherally interconnecting the sphere center points. (Figure 6) Whereas the tetrahedron is the minimun conceptualization needed to define THAT into outside-inside, the vector equilibrium is the maximum conceptualization possible to contain an equal omniperception of THAT, commensurate with a co-equal viewing-man sphere looking out in each of 12 directions. As man learns that his presence should not intrude or include a "thirteenth sphere", co-equal to the other surrounding 12, thus forcing the perceived THAT into local asymmetry and disharmony, he will humbly shrink his presence and allow the formation of the icosahedon. The icosahedron is here suggested as the archetype of man's conception of THAT. The icosahedron, as the primary model for man's relationships in consciousness, manifests in pure form only at the most subtle level of awareness. Thus, it is only in an occasional mind of great clarity, that the fundamental relationships patterned in this archetype are brought forth to a conscious level.

Figure 6

TWELVE SPHERES AROUND ONE

VECTOR EQUILIBRIUM

SHRINK/ REMOVE CENTRAL SPHERE

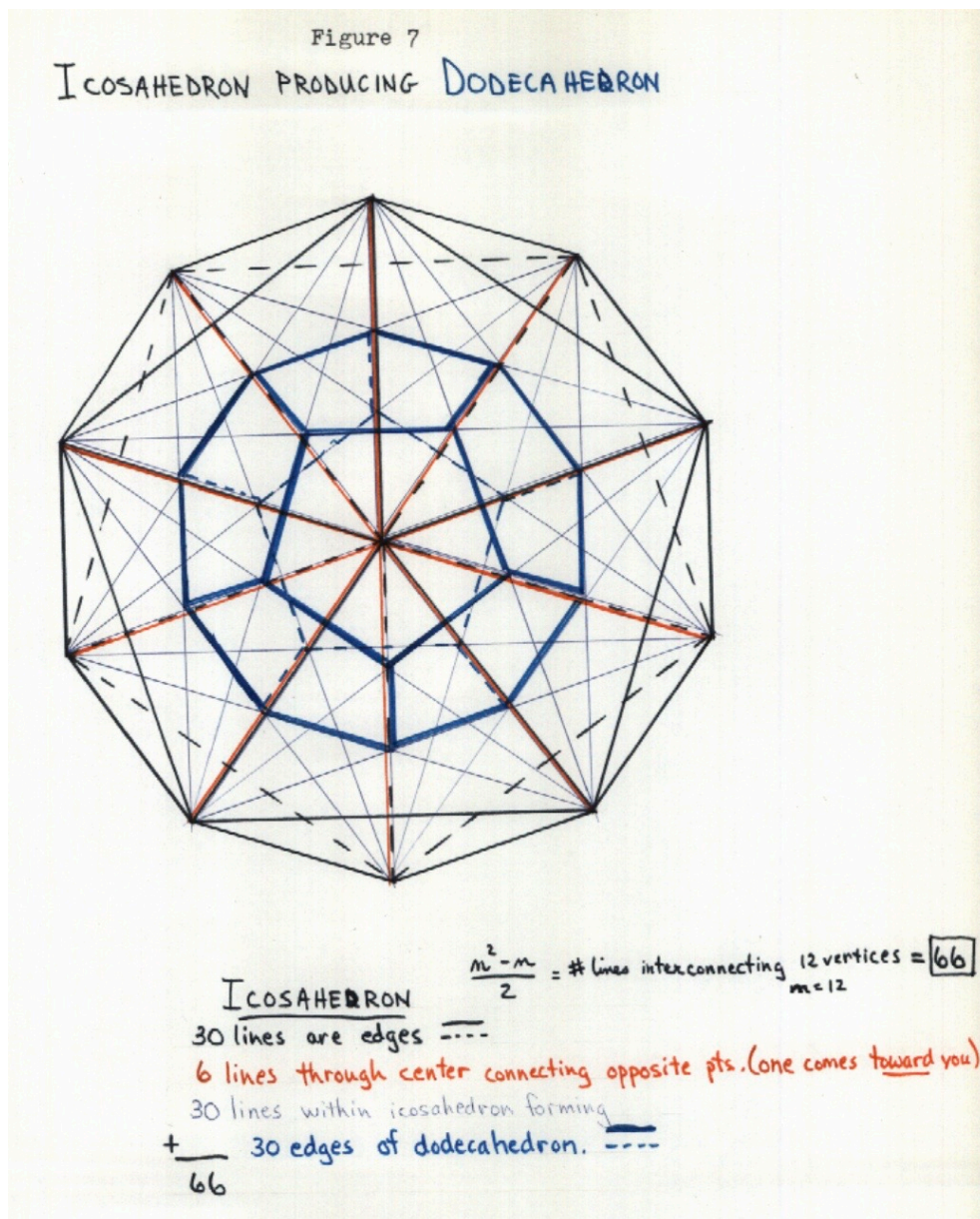COLLAPSE INWARD FORMS ICOSAHEDRON

Usually, the emergence of any concept of THAT to the conscious mind has resulted in the lavish accouterment of the concept in preparation for ratiocinative battle. This exoteric cosmetic differs from person to person, religion to religion, but a thorough cleansing begins to reveal THAT which is beneath. As the fundamental, primal form of THAT conception, the icosahedron engenders other forms which are also primal, but to a lesser degree. These other forms, when dressed and surfaced, are consciously confused with icosahedron as the most original form of THAT.
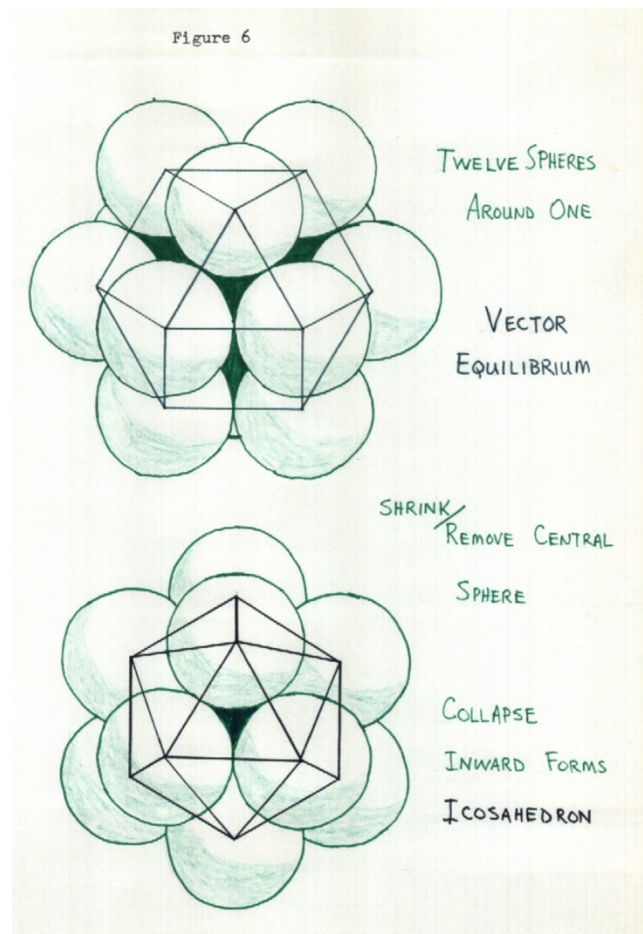
Beginning with the icosahedron, let each vertex interconnect with all other vertices, as if in self-reflection. The 12 vertices interconnected all possible ways produce 66 lines (# possible lines = (n²-n) / 2, where n = # vertices); of which 30 are the edges of the icosahedron. (Figure 7)

The lines going directly through the center connecting opposite vertices number six. The remaining 30 lines within the icosahedron cross at 20 foci producing a figure with 20 vertices, 30 edges and 12 pentagonal faces. Such a figure is called a dodecahedron (12-faces).

Figure 7

ICOSAHEDRON PRODUCING DODECAHEDRON

$$\frac{n^2 - n}{2} = \text{# lines interconnecting } 12 \text{ vertices} = \boxed{66}$$
$$n = 12$$

ICOSAHEDRON

30 lines are edges ----
6 lines through center connecting opposite pts. (one comes toward you)
30 lines within icosahedron forming
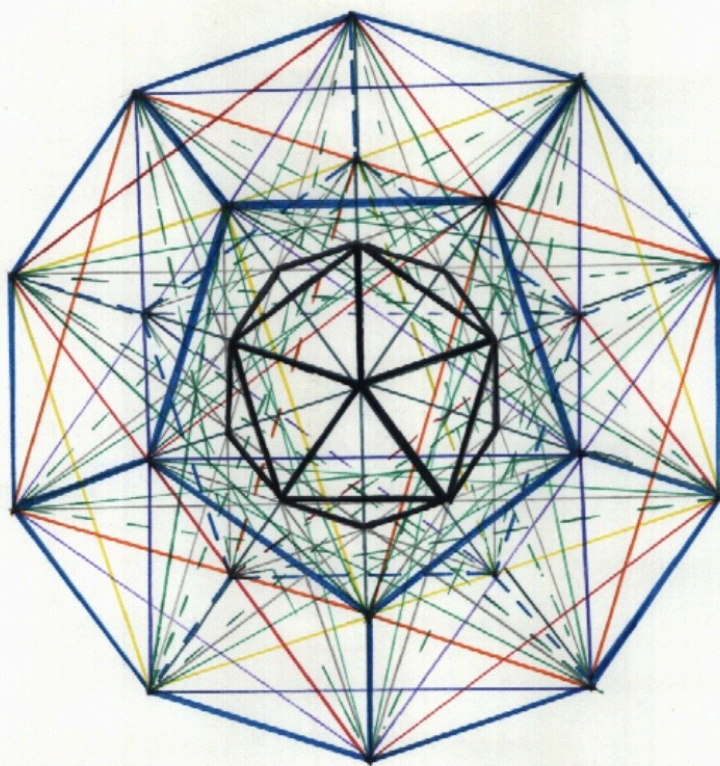+____   30 edges of dodecahedron. ----
66

Interconnecting all 20 vertices of the dodecahedron produces 190 lines, 30 of which compose the edges of the dodecahedron and 60 which form stars on the pentagonal faces while forming five interlaced cubes with 12 edges each. (Figure 8)

Of the remaining 100 interior lines, 10 connect opposite vertices and pass through the center, 60 connect to form diagonals on the faces of the five cubes, and 30 remain to form an inner icosahedron within the dodecahedron.

The inner icosahedron is perfectly aligned with the outer icosahedron. Clearly, here is illustrated an infinite series of icosahedra-dodecahedra, each forming the other in larger or smaller sizes.
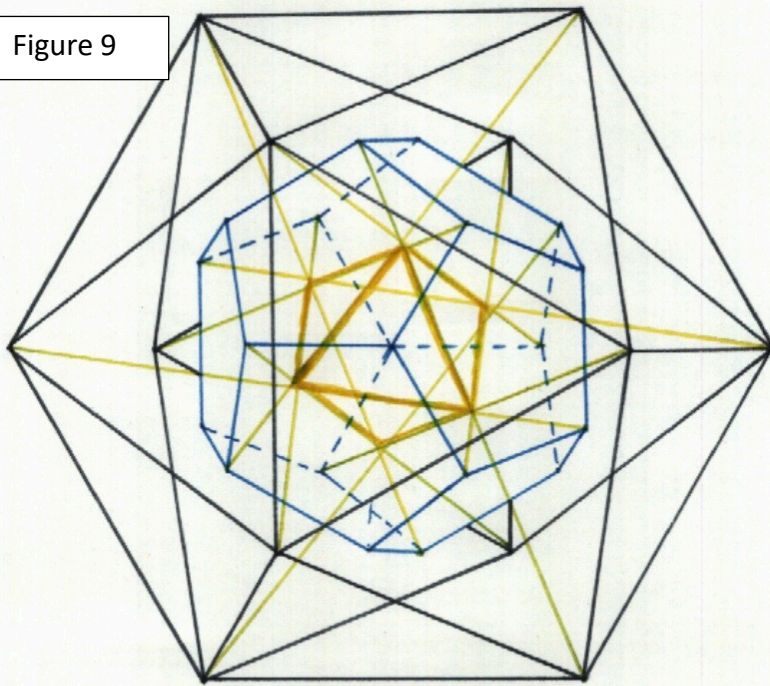

Figure 8

DODECAHEDRON PRODUCES ICOSAHEDRON

DODECAHEDRON $\frac{n^2 - n}{2} = 190$ lines, where $n = 20$

30 lines are edges ----
60 lines form stars on pentagonal faces
10 lines connect opposite points, pass thru center
60 lines connect to form diagonals on the face of each cube.
30 lines remain as edges for icosahedron.
190

At this stage, the dodecahedron and icosahedron seem co-equal in primacy. A difference arises when forming a third solid within the dodecahedron. An octahedron is formed by passing lines from each of the 12 vertices of the icosahedron **through** the dodecahedron to the (nearly) opposite vertex of the dodecahedron. (Figure 9)

This occupies 12 of the 20 dodecahedral vertices, uses all the icosahedral vertices, and produces a figure with 12 edges, six vertices, and eight faces called the octahedron (eight-faces).

As it is, the octahedron is suspended inside the dodecahedron without touching it. This creates three spheres of existence.

Figure 9

ICOSAHEDRON PENETRATES DODECAHEDRON

To FORM OCTAHEDRON

The octahedron may attach to the dodecahedron by forming eight tetrahedra, on each of its eight triangular faces, which will exactly touch the dodecahedron at the eight unused points remaining after the icosahedron's penetration to form the octahedron. These eight points can be interconnected to form a cube with the eight attaching tetrahedra plus the octahedron giving the cube internal structure and diagonal lines on each of its six faces.

The five Platonic solids (Figure 10) form the Lesser Maze as described by L. Gordon Plummer. (Figure 11) This maze follows simply from reflection of points of the icosahedron and like maya, veils understanding initially until the thread of intuition is gathered following Ariadne's lead. In one sense, this Lesser Maze represents archetypally the physical and meta-physical universal creation.
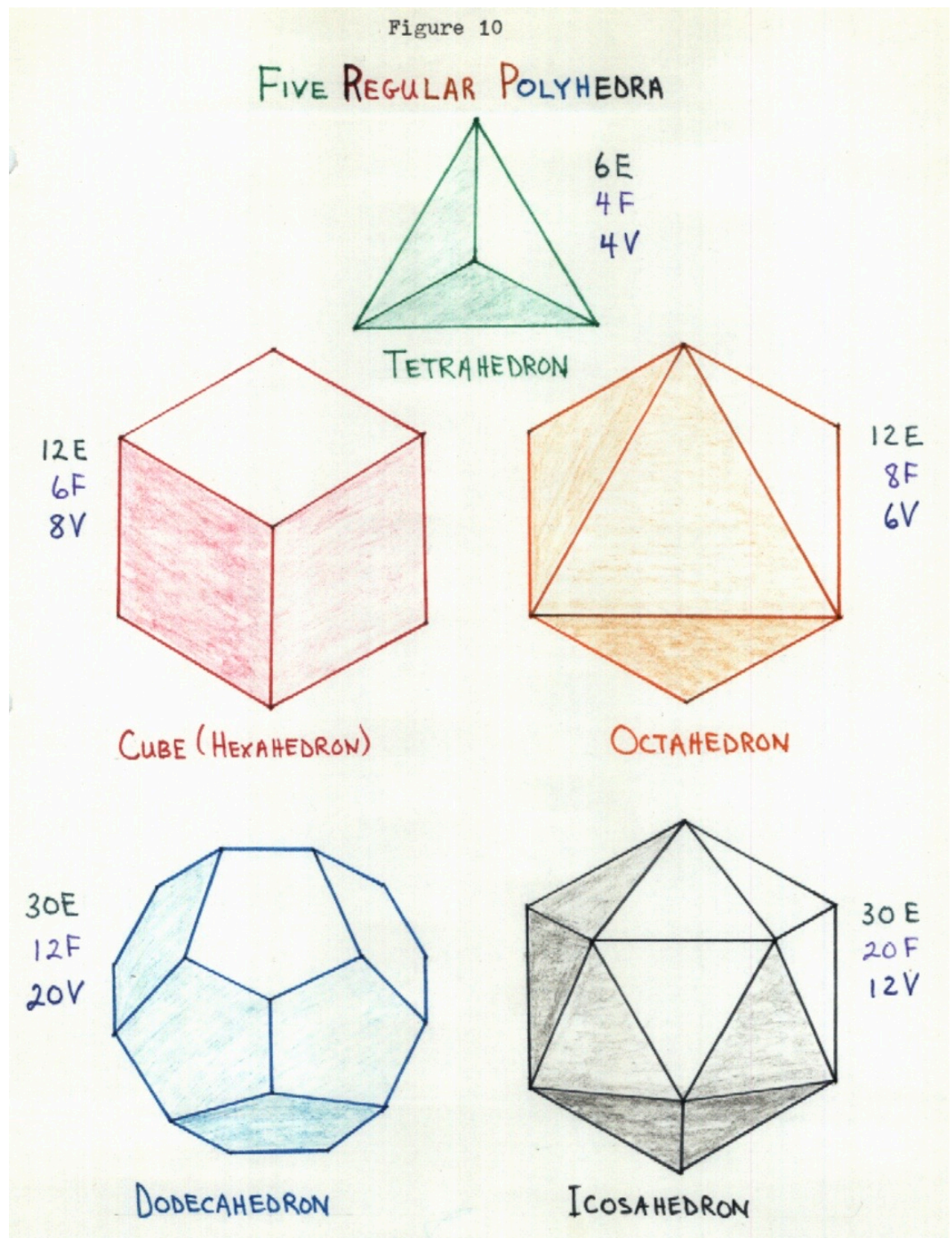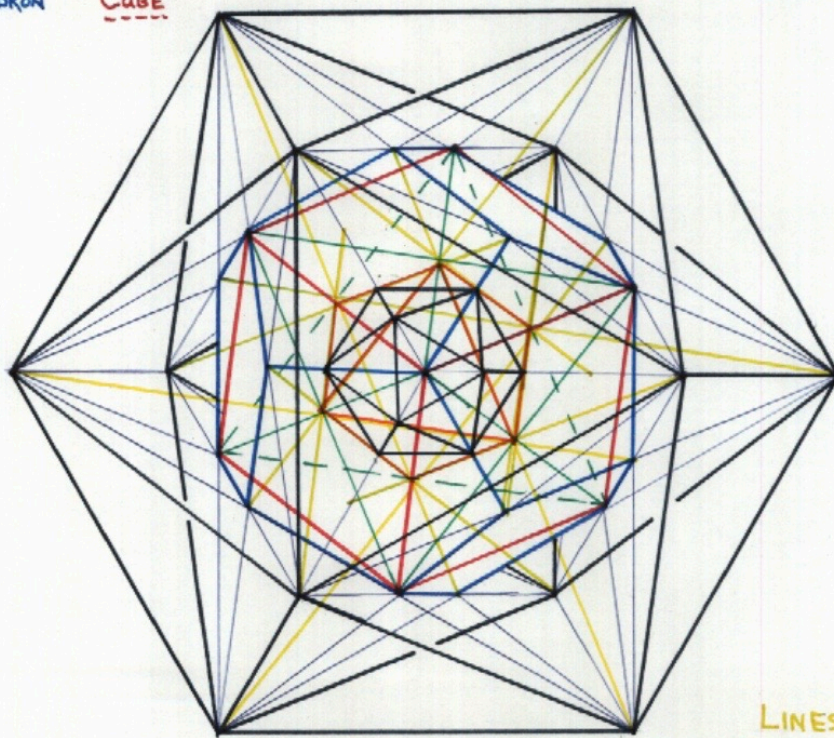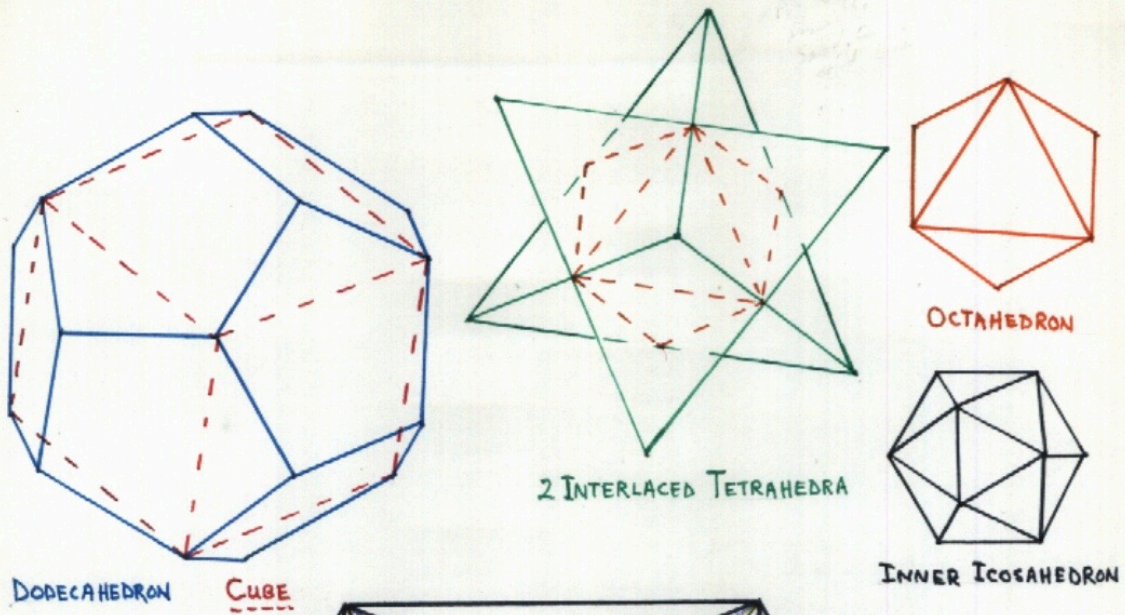

Figure 10

FIVE REGULAR POLYHEDRA

TETRAHEDRON
6E
4F
4V

CUBE (HEXAHEDRON)
12E
6F
8V

OCTAHEDRON
12E
8F
6V

DODECAHEDRON
30E
12F
20V

ICOSAHEDRON
30E
20F
12V

Figure 11

DODECAHEDRON   CUBE

2 INTERLACED TETRAHEDRA

OCTAHEDRON

INNER ICOSAHEDRON

LESSER MAZE

LINES FROM ICOS.
TO DODEC. FORMING
OCTAHEDRON.

The Lesser Maze, as well as the more complex Greater Maze, symbolically contains all the fundamental relationships and inherent features of man's relation to and in THAT. As man seeks first understanding and then meaningful relation with THAT, he progressively surfaces with various pearls of wisdom following his intuitional dives beneath the waves of illusion. He places these pearls in a proper setting depending on his predisposition, culture, and epoch. This brilliant piece of jeweled setting often obscures the simple pearls. Gradually, different design themes develop and men find that they prefer to construct their setting like certain others. There arise minor variations on each theme, but several basic themes become widespread. Man compares and argues over who has the best setting and the purest pearl. After a time, many men forget the pearl in the center and concentrate on enhancing the jeweled setting. Some men dive repeatedly, looking for a larger, purer pearl with which to increase the relative value of their jewelry. There are those few who realize the futility of such enterprises and simply dive. These men dive repeatedly deeper and deeper. They do not dive to bring part of the sea to the surface, but to *be* a part of the sea. They seek knowledge of how the pearls come to be. They seek to be ONE with this ocean of being and non-being.

Those few attaining to this ONE-NESS <u>and</u> returning to the surface display an infinite compassion for others still struggling in the shallows and on the shore. This unconditional love serves as a magnet to draw others into greater states of realization. The difficulty arises when they must express or manifest the nature of ONE-NESS to others. They each express the ONE-NESS in slightly different ways, but most of the people continue to compare it to something they already have in hand. When analyzing the various descriptions of the major religious views as taught by their respective masters, a common relational pattern is discerned. This pattern can be symbolized by the geometrical maze. Perhaps this is because religion, as geometry, is simply another aspect which mirrors the Unity in the nature of THAT.

What is here suggested is that the two-dimensional symbols of the circle, cross, tetraktys, and others, as well as the three-dimensional analogs, are symbols on a very fundamental level. The mind, when pondering the nature of its own being and becoming, returns eventually to these same models. This return is not to a concrete model, but to a set of basic relationships which seem inherent in all thought. These relationships are symbolically modeled in various geometrical forms. This appears to be universal and applicable to a postulated universal Mind as well as to the many minds of men, each in the process of composing their own relational structures.

It would be worthwhile to here draw the parallel between number and geometric form (as archetypes) and the outside physical world. As discussed by M. L. von Frans, numbers are preconceived and pre-arranged in the unconscious, before they become conscious, called forth by some need. The natural numbers are not man's conscious inventions for calculation's expediency, but are rather spontaneous, unconscious produce like other archetypes arising in the depths of the psyche. The natural numbers are the only remaining, non-removable attribute of material objects. Their multiplicity or quantity remains after other attributes like color, temperature, size and shape are gone. Thus numbers appear to be a useful bridge between the spheres of matter and psyche.

As numbers enter into relationship with each other, forms are born. Whether it is the simple progression of one to two to three to four in the tetraktys of the Pythagoreans, or the more complex geometry of the Maze, the concepts of mathematics and thus the language of science are derived from such form-all numerical interplay. It is this numerical improvisation on a standard theme that produces the music of the spheres. The improvisation is accomplished in the highest sense of controlled spontaneity. The discipline and regulation of numerical vibratory law is brought alive with the creative impetus of love and desire for union in Oneness. All multiplicity seeks unity. Numbers produce multiplicity and this manifests as frequency and vibration. Modulated vibratory frequencies manifest creation. All creation is vibration and man is sensorially tuned "in to it". Potentially, he may intuit the entire symphony of "sound" creation, but this must follow a struggle to expand his birth-given narrow-band sense capabilities.

Returning once again to the mental constellar set of points, relationships are drawn. These seed thoughts have trajectories which liken them to night-time fireworks and produce patterned spaces and crossings. The mind is left with various after-images to con-template. Depending on the number involved, the geometries may imply simple operational steps or form a concept with minimum of four crossings. In this way, the language of mathematics has sprung up from the archetypal unconscious patterning of seed thoughts.

The display of seed thought trajectories is similar to a bubble chamber tracing cosmic particle paths. Man, in his micrososmic consciousness, receives mental flux from beyond his own physically dimensioned brain. These are received, manifested and their trajectories traced forever in man's consciousness. In this context, several geometrical paradigms of basic arithmetical operations follow. The idea of addition might derive from superposition of images or the additive enlarging of a particular line segment. Subtraction might be this process in reverse resulting in a diminuitive form, or length, or set of points. Division occurs when any "whole" is parted. This may happen as one or more lines intersect another line, dividing the former into two or more parts. Multiplication might occur with replication of some unit line segment or polygon. This usually occurs in some type of series.

Powering, as discussed by Fuller, is directly related to successively larger concentric layers around three-dimensional solids. As the solid grows radially in size its outside area increases as the square of its radius. This occurs with variations for different polyhedra. This phenomenon can also be demonstrated with line segments re-orienting at right angles for each successive power.

line _____   square ⌷   cube ▱...
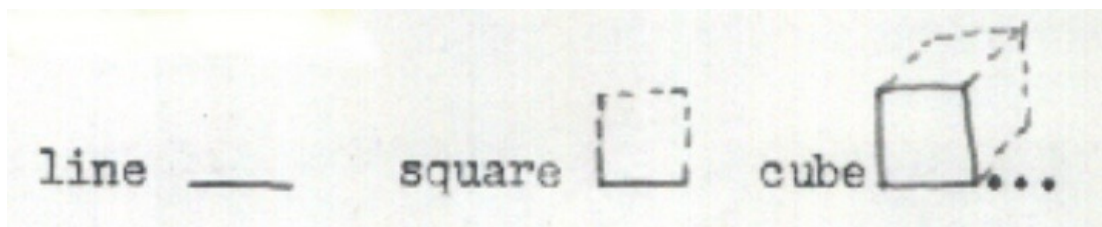
Man struggles to consciously retrieve the four, five and higher dimensional powering for visual inspection, when changing dimensions at right angles,

Mathematics is the only common language between the noumenal world of mental theory and the phenomenal world of observation. Thus, equations and formulae serve as the common ground for comparison of theory and practice. The attempts by man to relate, measure, correlate, attach, and master the assembled convention of universal "events" are inherently non-objective.
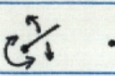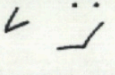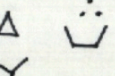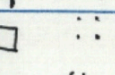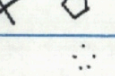
Man can in no way benignly observe or measure anything. His acts of mensuration invariably interfere with the event measured, as is implied by the Heisenberg Uncertainty Principle. What is the nature of these mensural attachments and what conceptual forms do they take in our consciousness?

The two basic tools emerging from the act of scientific experimentation are time and space. These are the prime entities responsible for our locally created Other. They sketch the external world's drawings no the veil of maya and make the forms shadow the walls of man's sphere-caves. Space is inextricably linked to time. The basic relationship of velocity illustrates this point. Velocity (constant motion) is the smallest unit of our perception of change. We cannot directly isolate and/or perceive space without time (to do so) nor perceive time without space. They lose their meaning for us unless paired. Velocity may stay constant, as for light, but the distance may shrink toward zero or the rate of time may slow down toward a stop. These two aspects of the one perception, velocity, vary in a most relative, non-absolute way. The duration-length of time-space is not invariant for different observers.

The ancient geometers employed only straight edge and compass to construct their forms. These two instruments are analagous to time and space. The compass inscribes arcs with the "angle" lying potential in the inscription act. A straight edge is used to actualize this angle and connect the origin point with the arc ends. R. Buckminster Fuller, in his treatise Synergetics, describes time as frequency. Algebraically, this makes velocity a product of distance and frequency. Frequency denotes vibration and vibration implies waves and radiation. No line is really straight, but each is wavilinear and actually slightly curved -- as an arc. The difference between space (arc/angle) and time (line) is that the former is drawn with two points (one still and one moving) and the latter is drawn with a rigid body standard. The common sense world of Newtonian physics led to the mistaken identity of time as an absolute standard. There are intimate relationships between light's electromagnetic radiation propagating at a constant, high speed and man's concept of time. Simply imagine a world where light traveled at speeds near that of sound.

To sum up, it has been indicated what man's mind attempts a conceptual understanding of the universe around him. This universe-in-the-round takes the perceptual form of a sphere with a varying radius depending on man's senses or instruments and his ability to insightfully penetrate with his vision. There is that aspect of Universe which cannot be conceptualized because it is at once part of Universe, part of man and flowing between the two. This aspect is not an "other" and so can not be grasped by the mind as an object of knowledge. Instead, man simply attains it here and now by his "being" in full.

The entire spectrum of mental and physical objects surrounding man in Universe are conceptualized and unconsciously dressed and embellished to suit his conscious needs. The fundamental relation for all awareness of "other" is <u>number</u>. The basic multiplicity begins with two -- observer and observed world. Then the two become more as objects change form and move. The basis in number is mentally and physically represented by points. These may be seed thoughts in the unconscious or particles in the conscious world. Man automatically connects these points in varying arrays seeking <u>one</u> pattern – a unity. This develops gradually and Jung's archetypes of the unconscious, as well as all consciously drawn symbols, are the partial result. What are "seen" fundamentally by dreamers, religious seers, and common man are the relationships of the nine regular polyhedra arranged in a maze. To most people, this is not seen clearly, but from unusual angles, incompletely constructed, and still covered over by the mental debris of anxiety and desire. Occasionally, a Buddha or other great mind will see clearly and rightly into the nature of all existence. The descriptions of such visions of how the world is constructed will be shown as highly correlated to the maze of the five regular polyhedra. Once aware of these geometrical relations, they can then serve us with their inherent richness as more <u>universal</u> symbols.

TABLE ONE   PHYSICAL HIERARCHY

Physical Entity	Symbols	Elements	Invariance Conditions, Conservation Laws	"Being" Level	"Becoming" Level	Projectile Path (Way)
<u>Spirit</u> = space-time, Matter, d = distance, t = time						
Space				1-D		
Time				2-D		
Mass (fundamental 'bit' of space-time. "seed")		Earth		3-D	1-D	stasis – move in time
<u>Momentum</u>/mass = $\dfrac{d}{t}$		Water	Space translation / Conserv. of Momentum (linear)	4-D	2-D	Euclidean move flat space, line between pts.
<u>Force</u>/mass = $\dfrac{d}{t \cdot t}$	Δ Y	Air	Rotation translation / Conserv. of Angular Momentum	5-D	3-D	geodesics – dependent on gravity + velocity
<u>Energy (Work)</u>/mass = $\dfrac{d \cdot d}{t \cdot t}$	□ X ◁	Fire	Time translation / Conserv. of Energy-matter	6-D	4-D	geodesics – light
<u>Power</u>/mass = $\dfrac{d \cdot d \cdot t}{t \cdot t}$	✳ ⬠	Ether		7-D	5-D	lines of will or love

Sources
Fuller, R. Buckminster *Synergetics* 1975, New York
Jung, Carl G. *Man and His Symbols* 1964, London
Plummer, L. Gordon *The Mathematics of the Cosmic Mind* 1970 Wheaton, Illinois