ARTICLE 24

More Evidence for the '120 Polyhedron' As the 3-dimensional Realisation of the Inner Tree of Life and Its Manifestation in the $E_8 \times E_8$ Heterotic Superstring

by

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Abstract

Article 22 presented evidence that the **120 Polyhedron** represents the 3-dimensional manifestation of the exterior aspect of the 2-dimensional, inner form of the Tree of Life — the geometrical representation of "Adam Kadmon," or Divine Man. Its 62 vertices define 28 regular and semi-regular solids. Constructed from Pythagorean tetractyses, the template of sacred geometry, they are made up of 3360 hexagonal yods. This number is the number of yods in the seven enfolded, regular polygons forming half of the inner Tree of Life. This is further confirmation that the **120 Polyhedron** is the 3-dimensional realisation of the inner Tree of Life. Its manifestation in superstring space-time are the 3360 circularly polarised oscillations made during one complete revolution by the ten component closed curves of the $E_8 \times E_8$ heterotic superstring, as described 109 years ago by the Theosophists Annie Besant and C.W. Leadbeater.

1. Introduction

Articles 22 and 23 showed that the so-called '120 Polyhedron' and the '144 Polyhedron' that were part of the 'Pattern' observed by Lynnclaire Dennis during her NDE[1] in 1987 represent the exterior and the interior of what the author calls the 'inner form of the Tree of Life.' Through the equivalence between the (6n+1) yods of an n-sided regular polygon with its sectors turned into tetractyses and the (6n+1) Sephirothic emanations up to Chesed of the highest tree in n overlapping Trees of Life, this inner form can be shown[2] to encode the replication of its outer form to map all levels of reality, both physical space-time and superphysical realms. The seven enfolded, regular polygons constituting one half of the inner Tree of Life map what are known in Theosophy as the 49 subplanes of the seven planes of consciousness: physical, astral, mental, buddhic, atmic, anupadaka (or Monadic) and adi (or Divine), each subplane being represented

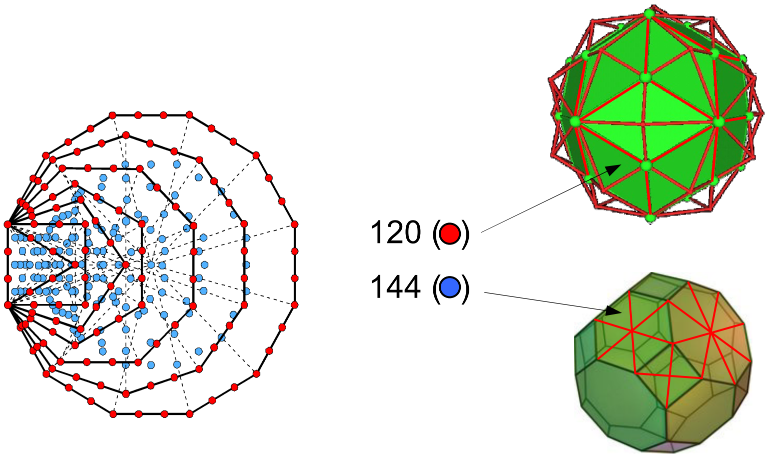


Figure 1. The 120 yods on the boundaries of the seven enfolded polygons symbolise the 120 faces of the outer **120 Polyhedron** (shown by red triangles) and the 144 internal yods of the inner Tree of Life symbolise the 144 faces of the **144 Polyhedron** lying inside it (these are shown as unraised, red triangular sectors of the square, hexagonal & octagonal faces of the truncated cuboctahedron).

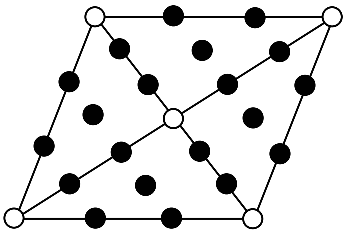
by its own Tree of Life. The 120 yods on the boundaries of the seven polygons signify the 120 faces of the outer **120 Polyhedron** and the 144 yods inside them denote the 144 faces of the **144 Polyhedron** (Fig. 1). This was identified in Article 23 as the truncated cuboctahedron (one of the 13 Archimedean solids), its 48 corners determining the 48 "cones of light" and the 144 triangular sectors of its 26 square, hexagonal and octagonal faces becoming its 144 faces when raised above these faces. As evidence that the truncated version of the cuboctahedron is the correct geometry of the **144 Polyhedron** rather than the cuboctahedron per se, Article 23 showed that

1. the truncated cuboctahedron is unique among the Archimedean solids in having 48 corners;
2. it is unique in having 144 faces;
3. constructed from tetractyses, it is unique in having a yod population that is an integer multiple of 10, the number of yods in a tetractys. Moreover, this multiple is the number value of the Godname Adonai assigned to Malkuth, the last Sephirah of the Tree of Life, signifying the outer, physical form of any basic manifestation of this universal blueprint. In other words, the Godname of the most *appropriate* Sephirah actually prescribes the yod population of the truncated cuboctahedron;
4. the yod population of the truncated cuboctahedron is the number of yods associated with each half of the inner Tree of Life and generated by conversion of each of its 47 triangular sectors into three tetractyses.

These properties are powerful pieces of evidence supporting the claim made in Articles 22 and 23 that the **120 Polyhedron** is the 3-dimensional manifestation of the exterior of the 2-dimensional inner form of the Tree of Life, as indicated by the 120 yods on its boundaries, and that the **144 Polyhedron** is the 3-dimensional manifestation of its interior, the 144 internal yods of which are the counterpart of the 144 triangular faces of the **144 Polyhedron**.

2. Polyhedral Content of the 120 Polyhedron

The 62 corners of the **120 Polyhedron** define the corners of 28 regular and semi-regular solids: ten tetrahedra, five cubes, five octahedra, one icosahedron, one dodecahedron, five rhombic dodecahedra and one rhombic triacontahedron. A rhombic



5 corners (○)
20 hexagonal yods (●), (12 internal)

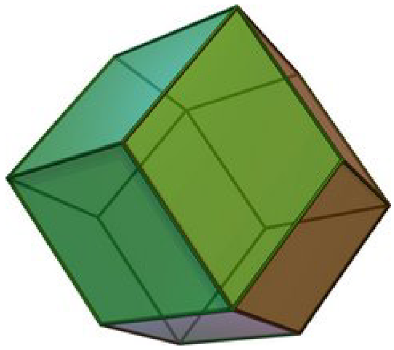


Figure 2. The 12 faces of the rhombic dodecahedron contain 48 hexagonal yods on its 24 edges and 144 internal hexagonal yods.

dodecahedron (Fig. 2) is an Archimedean solid with 14 vertices, 24 edges and 12 rhombic faces. Constructed from four tetractyses, each of the 12 rhombic faces has 12 internal hexagonal yods, whilst two hexagonal yods lie on each of its 24 edges. The

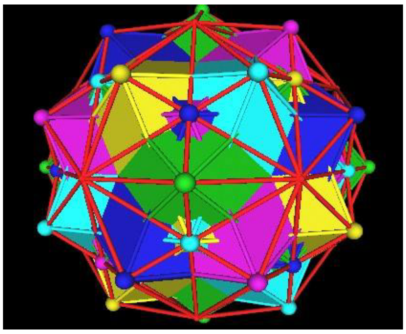


Figure 3. The 30 unshared corners of the five rhombic dodecahedra coincide with the apices of the pyramids with the golden rhombic faces as bases (shown as coloured balls), leaving their shared corners at the 32 corners of these faces, two per corner (shown as a pair of intersecting coloured lines). (From a private communication with Lynnclaire Dennis).

number of hexagonal yods in the rhombic dodecahedron is therefore 2×24 + 12×12 = 192 (see Article 18 for the significance of this number vis-à-vis the I Ching table and the Bode numbers of the planets). When the five, separate rhombic dodecahedra group, their 70 separate corners become the 62 corners and raised centres of the 30 golden rhombic faces of the **120 Polyhedron**, their 30 unshared corners coinciding with the centres of these faces and their 32 shared corners coinciding with their corners (Fig. 3). Each rhombic dodecahedron has six unshared corners and eight shared corners that are corners of these faces. Each face corner coincides with two corners of different dodecahedra:

A_1B_1	B_3C_3	C_5D_5	D_7E_7
A_2C_1	B_4D_3	C_6E_5	D_8E_8
A_3D_1	B_5E_3	C_7D_6	
A_4E_1	B_6C_4	C_8E_6	
A_5B_2	B_7D_4		
A_6C_2	B_8E_4		
A_7D_2			
A_8E_2			

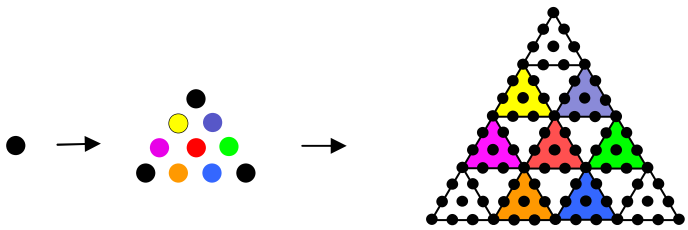
where the letters label the five dodecahedra and the numbers indicate their corners.

Let us now construct the 28 solids from tetractyses — the template of sacred geometry — and then work out their populations of hexagonal yods. The significance of the latter is that the seven hexagonal yods of the tetractys symbolise the seven Sephiroth of Construction, the formative degrees of freedom expressing the 'objective' aspects of God). The hexagonal yod populations of the 28 solids in the **120 Polyhedron** are:[3]

tetrahedron:	10×48 = 480
cube:	5×96 = 480
octahedron:	5×96 = 480
icosahedron:	1×240 = 240
dodecahedron:	1×240 = 240
rhombic dodecahedron:	5×192 = 960
rhombic triacontahedron:	1×480 = 480
	Total = 3360

This result is truly astounding for two complementary reasons:

1. Divine Unity symbolised by the Pythagorean Monad, or mathematical point ("0th-order tetractys"), differentiates, firstly, into the familiar tetractys ("1st-order tetractys") with 10 yods (three corners, seven hexagonal yods), secondly, into the "2nd-order tetractys" with 85 yods (15 corners, 70 hexagonal yods), and so on:



3360 is the number of yods in the seven enfolded, regular polygons constituting the

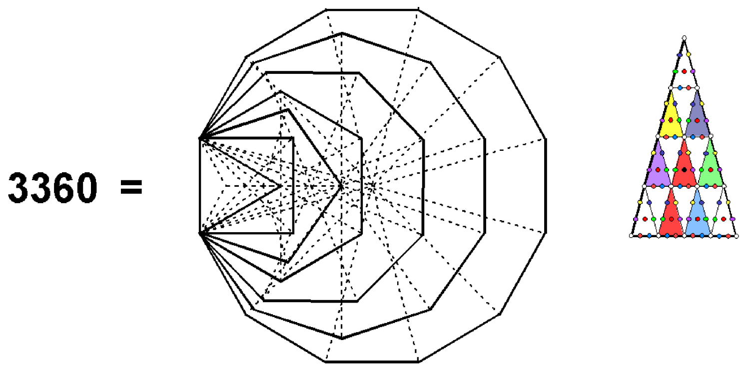
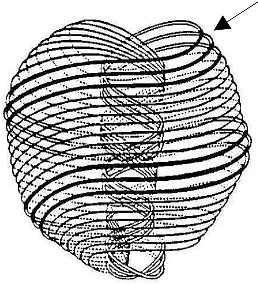


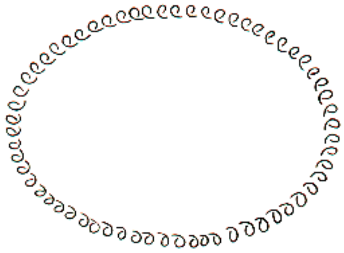
Figure 4. Constructed from 2nd-order tetractyses, the seven enfolded regular polygons constituting the inner form of the Tree of Life contain 3360 yods. This is the number of hexagonal yods in the 28 regular and semi-regular solids generated by the 62 corners of the **120 Polyhedron**.

inner form of the Tree of Life when their 47 sectors are each turned into the 2nd-order tetractys (Fig. 4).[4] As proposed in Articles 22 & 23, the 120 yods along the edges of the seven enfolded polygons symbolise the 120 triangular faces of the **120 Polyhedron**, whilst the 144 internal yods denote the 144 faces of the **144 Polyhedron**, which is inside the former. We now see that the seven types of solids terminating in the **120 Polyhedron** contain 1680 hexagonal yods (as shown on p. 14 of Article 22[5]), whilst the actual numbers for the seven types of solids in the **120 Polyhedron** total 3360 hexagonal yods, where 3360 = 2×1680. This is the total number of yods making up the polygonal, inner form of the Tree of Life constructed from the template of the 2nd-order tetractys. The number 3360 expresses a holistic structure *both* in the 2-dimensional space of the polygons and in the 3-dimensional space of the **120 Polyhedron**. This is a marvellous, beautiful property of the **120 Polyhedron** clearly demonstrating its Tree of Life basis!

2. 3360 is the number of circularly polarised standing wave oscillations made during each of the five revolutions of the ten closed curves making up the $E_8 \times E_8$ heterotic superstring, as described by Annie Besant and C.W. Leadbeater in 1908, when they used anima to magnify subatomic particles (Fig. 5), whilst 1680 is the number of such oscillations in each curve. What this means is that, as the *completion* of the seven-fold sequence of regular and semi-regular polyhedra, the **120 Polyhedron** *has* to be made

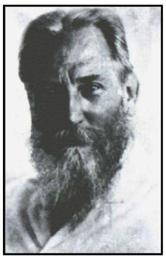


The UPA/superstring (from *Occult Chemistry*, 3rd ed., by Annie Besant and C.W. Leadbeater (Theosophical Publishing House, India, 1952).



The helical whorl has 1680 coils.

Annie Besant



C.W. Leadbeater

Figure 5. The Theosophists Annie Besant and C.W. Leadbeater observed subatomic particles with the aid of a yogic siddhi called anima. The basic particle of matter (identified by the author as the $E_8 \times E_8$ heterotic superstring constituent of up and down quarks) consists of ten closed curves, or 'whorls,' that make five revolutions. Each whorl is a helical coil with 1680 turns. The number (3360) of such turns in each revolution of the ten whorls of the UPA/superstring is the number of yods in the seven enfolded polygons with 2nd-order tetractyses as their sectors.

up of the *same* number of formative degrees of freedom (hexagonal yods) as there are yods needed to represent its 2-dimensional counterpart, namely, the seven enfolded, regular polygons. Far from being a coincidence, the presence of the *same* number in two superficially different contexts reveals in an unambiguous way the **beautiful mathematical design of a transcendental, creative Intelligence.** To discover this mathematical harmony, we need to understand 'sacred geometry' — not the distorted version found in many books, which lack understanding of the fundamental principles — but the only geometry worthy of being called 'sacred,' namely, that of the Tree of Life.

Each of the 42 sides of the seven enfolded polygons has 11 yods between their ends, which number 36. The number of yods forming the boundaries of the polygons = 11×42

+ 36 = 498. In other words, 496 yods form the sides of the polygons *between* the two endpoints of the root edge that generates them. This is the number value of the Hebrew word 'Malkuth' signifying the last Sephirah of the Tree of Life. It is yet another confirmation that the **120 Polyhedron** is the outer (or Malkuth) aspect of the inner Tree of Life. As discovered by physicists Michael Green and John Schwarz[6] in 1984, 496 is the dimension of the non-abelian gauge symmetry group defining superstring interactions that are free of quantum anomalies. We therefore encounter the following amazing property of the polygonal form of the inner Tree of Life blueprint: it encodes not only the oscillatory pattern of the $E_8 \times E_8$ heterotic superstring but also the number of gauge bosons that transmit its unified force — the first as its yod population and the second as the number of yods forming its boundary between the endpoints of its generative root edge.

3. The Rhombic Dodecahedron and Rhombic Triacontahedron

The rhombic dodecahedron has 12 rhombic faces (Fig. 6). The longer diagonal of each face (shown as a red line in Fig. 6) is the edge of a cube and the shorter diagonal (shown as a blue line) is the edge of an octahedron. The ratio of the lengths of the longer and shorter diagonals is √2 = 1.414... . These Platonic solids are dual to each

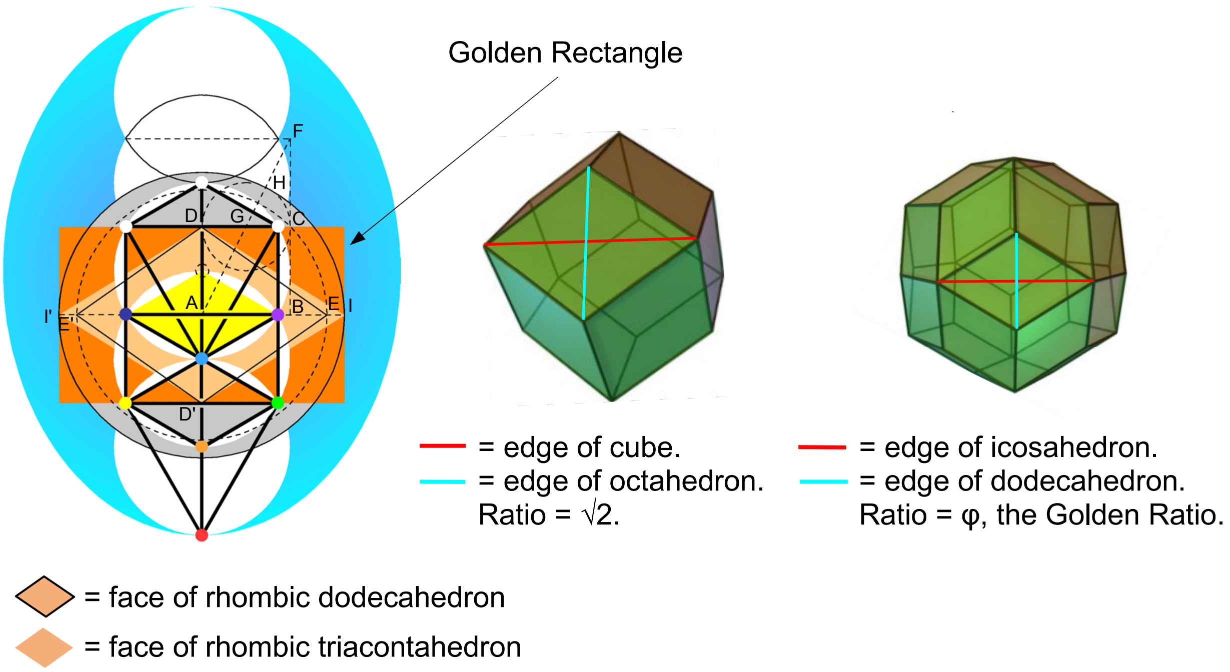


Figure 6. The faces of the rhombic dodecahedron and the rhombic triacontahedron are generated by the geometry of the Tree of Life.

other. The two other Platonic solids that are dual to one another — the icosahedron and the dodecahedron — share an analogous property in that their edges are, respectively, the longer and shorter diagonals of the faces of the rhombic triacontahedron. Their ratio is the Golden Ratio φ = 1.618… .These rhomboids are generated in a simple way by the geometry of the Tree of Life. Fig. 6 indicates how the ten Sephiroth are the centres or points of intersection of a column of white circles. Let us take their radii as one unit. The central Pillar of Equilibrium intersects the path joining Chesed and Geburah at a point A that is one unit away from the vertical right-hand tangent BC to these circles. ABCD is a square with sides of length 1. Therefore, its diagonal AC = $\sqrt{(1^2 + 1^2)} = \sqrt{2}$. With A as centre, draw a circle passing through C of radius √2 (shown as a dashed line in Fig. 6). It intersects the line drawn along AB at E. E' is the corresponding point on the other side of the central pillar. EE' = 2√2. The central pillar intersects the path joining Netzach and Geburah at D'. DD' = 2. Therefore, EE'/DD' = 2√2/2 = 2. We find that the rhombus DED'E' has the same shape as the rhombic face of the rhombic dodecahedron.

Extend the tangent at B to the point F, where BC = CF = 1. Then, BF = 2 and AF = √(2^2 + 1^2) = √√5. The line AF intersects CD at G, where AG = GF = √√5/2. With G as centre, draw a circle of radius ½. It intersects AF at H, where AH = √√5/2 + ½ = (√√5 + 1)/2 = φ, the Golden Ratio. With A as centre, draw a circle of radius AH. It intersects the extension of AB at I, where AI = φ. I' is its counterpart on the other side of the central pillar. II' = 2φ. Therefore, II'/DD' = 2φ/2 = φ. The rhombus DI D'I' has the same shape as the rhombic face of the rhombic triacontahedron. What manifests finally as the fruit of the Tree of Life, namely, the **120 Polyhedron** with golden rhombic faces, was within it as their seed shape from the very beginning!

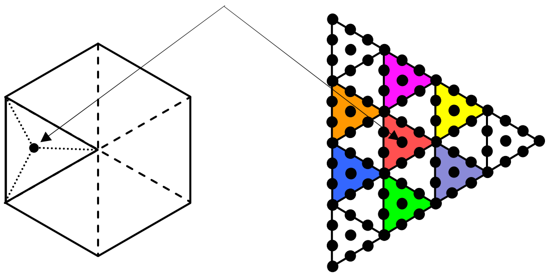
References

[1] http://www.mereon.org/nde.pdf

[2] Phillips, Stephen M. "The Image of God in Matter" (unpublished).

[3] The hexagonal yod populations of these solids are taken from Article 22: "The '120 Polyhedron' As the 3-dimensional Counterpart of the Inner Tree of Life," Stephen M. Phillips, http://www.smphillips.8m.com, p. 6.

[4] Proof: The 2nd-order tetractys has 85 yods, of which 13 yods line each of its sides. When each of the n triangular sectors of an n-sided, regular polygon are turned into a 2nd-order tetractys, there are (85 – 13 = 72) independent yods per sector of the polygon. Its yod population = 72n + 1, where "1" denotes the yod at the centre of the polygon. The polygonal form of the inner Tree of Life consists of a triangle, square, pentagon, hexagon, octagon, decagon and dodecagon. They are enfolded in one another and share the same base, or what the author has called the "root edge," as they should be thought of as growing out of this fundamental line joining Daath and Tiphareth in the Tree of Life. When the seven separate polygons are superposed on one another in their enfolded state, corresponding members of the set of 13 yods forming what becomes their shared side coincide and therefore must not be counted separately in a calculation of their yod population. Below are listed the yod populations of each polygon and (except for the triangle) their numbers of yods outside the root edge:



Polygon	n	Number of yods = 72n + 1	Number of yods outside root edge
triangle	3	217	
square	4	289	289 – 13 = 276
pentagon	5	361	361 – 13 = 348
hexagon	6	433	433 – 13 = 420
octagon	8	577	577 – 13 = 564
decagon	10	721	721 – 13 = 708
dodecagon	12	865	865 – 13 = 852
			Total = 3385

Inspection of Fig. 4 reveals that the tip of the triangle viewed with the root edge as its base is also the centre of the hexagon (the triangle is simply a triangular sector of the hexagon). Similarly, the tip of the pentagon is the centre of the decagon. With 2nd-order tetractyses as their sectors, the centroid of the triangle where corners of its three 2nd-order tetractyses meet is also the central yod of the tetractys at the centre of the 2nd-order tetractys constituting a sector of the hexagon (see diagram above). The 11 yods between corners on each of the two sides of the triangle outside its shared base coincide with yods on the sides of this sector of the hexagon. There are (1 + 1 + 1 + 2×11 = 25) yods in the total population calculated above that coincide with yods belonging to other polygons (these are the only yods occupying the same positions). In determining the yod population when the separate polygons are superposed, these yods must be subtracted in order to avoid double-counting Therefore, the yod population of the seven enfolded polygons constructed from 2nd-order tetractyses = 3385 – 25 = 3360.

[5] Ref. 3, p. 14.

[6] Green, M.B. & Schwarz, J.H. "Anomaly cancellations in supersymmetric d = 10 gauge theory and superstring theory." Physics Letters, B149, 117.