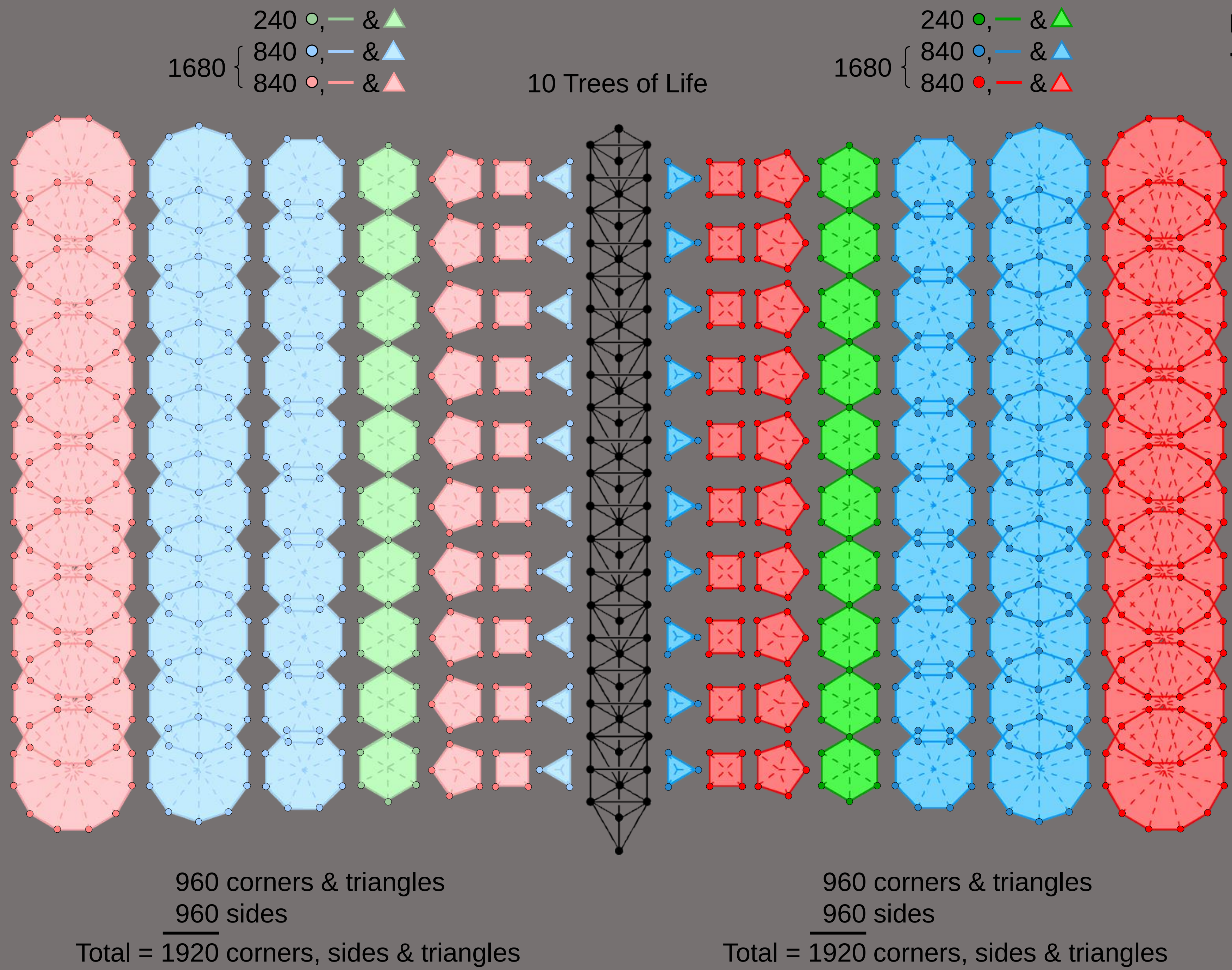
How the Inner Forms of the Tree of Life & 10 Trees of Life, the 5 Platonic Solids, the Disdyakis Triacontahedron, the Sri Yantra and the 4_{21} Polytope Embody the Holistic Parameters 3840 & 1920

Contents

Embodiment of the division: 3840 = 1920 + 1920 in the inner form of 10 Trees of Life



48 corners and 96 sides of **48** triangular sectors surround the centres of the 7 separate Type A polygons. These 192 geometrical elements comprise 24 geometrical elements in the green hexagon, 84 elements in the blue triangle, octagon & decagon and 84 elements in the red square, pentagon & dodecagon. Each element has its mirror-image counterpart in the set of 7 polygons on the other side of the Tree of Life. (192+192=384) geometrical elements surround the centres of the (7+7) separate Type A polygons.

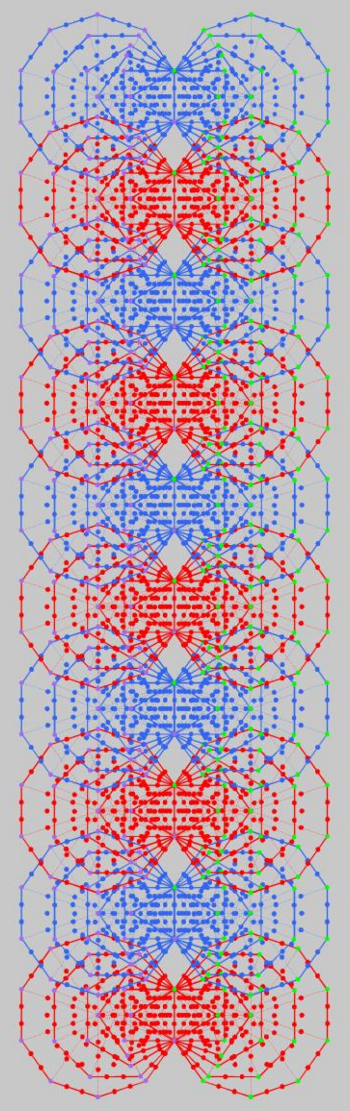
The inner form of 10 overlapping Trees of Life (or the 10-tree shown opposite) consists of (70+70) enfolded polygons. The centres of the **140** separate polygons are surrounded by 3840 geometrical elements. The 1920 geometrical elements surrounding the centres of the 70 separate polygons in each set comprise 240 elements in the 10 green hexagons, 840 elements in the blue triangles, octagons & decagons, and 840 elements in the red squares, pentagons & dodecagons. i.e.,

$$1920 = 240 + 1680,$$

where

$$1680 = 840 + 840.$$

The first 6 types of polygons enfolded in the inner form of 10 Trees of Life have (3840=1920+1920) yods



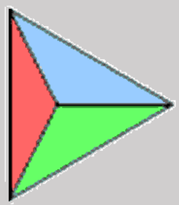
The first 6 enfolded polygons are the triangle, square, pentagon, hexagon, octagon & decagon. Separately, they have **36** corners; enfolded, they have **26** corners, of which **21** are outside the root edge and unshared with the outer Tree of Life. The first (6+6) enfolded polygons have **50** corners. This is how the Godnames EHYEH with number value **21**, YAHWEH with number value **26**, ELOHIM with number value **50** and ELOHA with number value **36** prescribe this subset of the 7 polygons making up the inner form of the Tree of Life. The number of yods in a Type A n-gon = 6n +1. The number of yods in the first 6 separate polygons = ∑(6n+1) = 6×**36** + 6 = 222. When they are enfolded, the corner of the pentagon coincides with the centre of the decagon and the triangle overlaps a sector of the hexagon, causing 6 yods to disappear; (5×4=20) yods on the sides of 5 of the 6 polygons that coincide with the shared root edge when they are enfolded, likewise, disappear. The number of yods in the first 6 enfolded polygons = 222 − 1 − 6 − 20 = 195. They comprise **26** corners of polygons and 169 other yods. The number of yods in the first (6+6) enfolded polygons = 386. They include the topmost corners of the two hexagons, which coincide with the lowest corners of the two hexagons enfolded in the next higher Tree of Life. Therefore, **194** yods are intrinsic to the first 6 enfolded polygons and (386−2=384) yods are *intrinsic* to the first (6+6) polygons enfolded in each successive Tree because they are not shared with the polygons enfolded in the next higher Tree. They include (**50**−2=**48**) corners and (384−**48**=336) other yods. Associated with either set of the first 6 enfolded polygons are (384/2=192) such yods; they include (**48**/2=24) corners and (336/2=**168**) other yods. The divisions:

384 = 192 + 192,
192 = 24 + **168**,

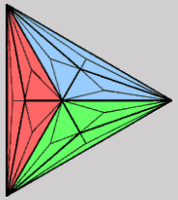
characterise all holistic systems (*see* **The holistic pattern**). This indicates that the subset of the complete set of 7 polygons consisting of the first 6 types of polygons constitutes a holistic system in itself.

The 10 sets of 12 polygons of the first 6 types enfolded in the inner form of 10 overlapping Trees of Life consist of 3840 yods that are intrinsic to these Trees. 1920 yods are associated with each set of 60 polygons. As there are (24+24) corners and (**168**+**168**) other yods per set of (6+6) enfolded polygons, the 1920 yods comprise 240 corners (coloured green on the right and violet on the left in the diagram opposite) and 1680 other yods (840 red yods and 840 blue yods in alternate sets of 6 polygons). These 1680 yods fill up the *body* of the 60 polygons whose shapes are marked out by the 240 corners that are associated with them. The 5:5 division in the 10 Trees generates the division: 1680 = 840 + 840. It manifests in the UPA (the subquark state of the $E_8 \times E_8$ heterotic superstring) as the 840 1st-order spirillae in each outer or inner half of a revolution of each whorl, which makes 10 such half-revolutions around its axis of spin (5 half-revolutions in its outer spiral from its apex to its nadir and 5 half-revolutions in its inner, narrower spiral). Each Tree maps a half-revolution of each whorl, 5 Trees representing the outer section of a whorl and 5 Trees representing its inner section. Yods in polygons enfolded in successive Trees are shown as alternating in colour in order to distinguish them.

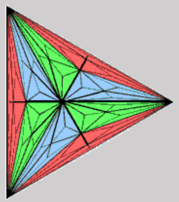
1st-order triangle



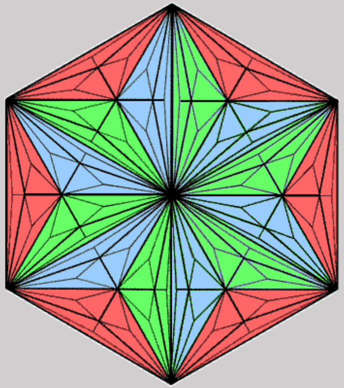
3rd-order triangle



4th-order triangle



4th-order hexagon



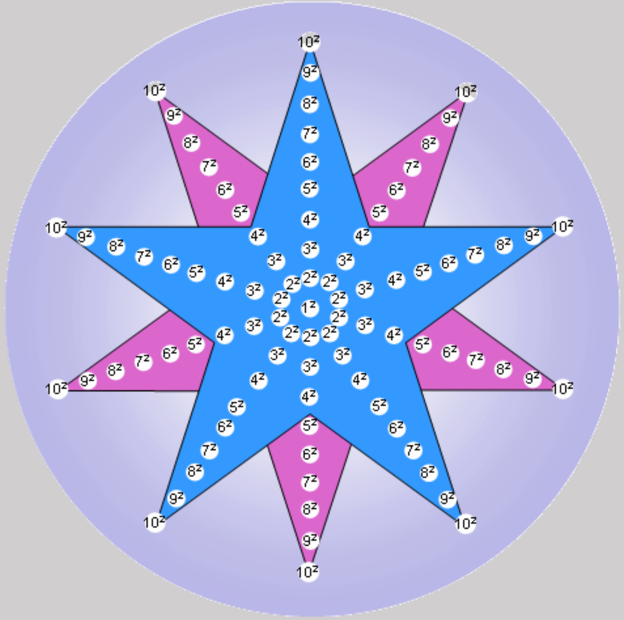
Type A triangle contains 3 triangles with 6 sides.

Type C triangle contains 27 triangles with 42 sides.

Type D triangle contains 81 triangles with 123 sides.

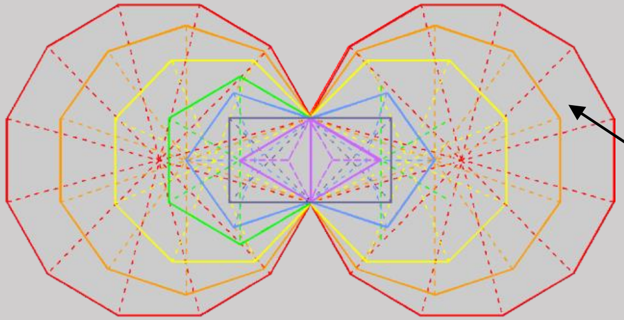
Type D hexagon contains 162 triangles with **246** sides. 240 sides are unshared with the Type A triangle forming part of its left-hand sector.

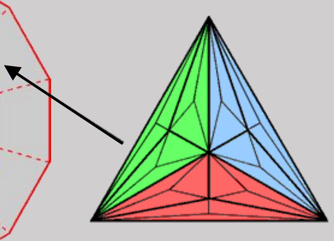
3840 =



$3840 = 10\times(2^2+3^2+4^2+5^2+6^2+7^2+8^2+9^2+10^2)$

Number of sides of $47\times3^{n-1}$ triangles in 7 enfolded, nth-order polygons ≡ $S_n = ½(35 + 47\times3^n)$.
S_4 = 1921 (1920 outside their root edge).
The (7+7) enfolded, 4th-order polygons have 2538 triangles with (1920+1920=3840) sides outside their root edge.





3rd-order triangle has 27 triangles with 42 sides

The inner Tree of Life

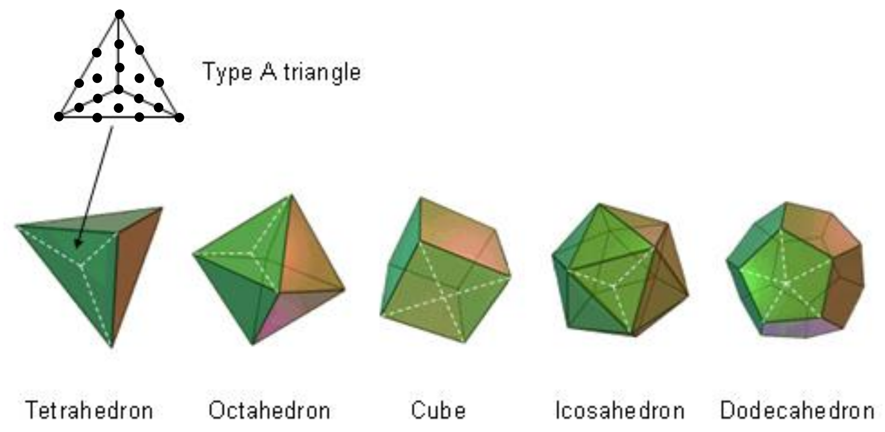
(1920+1920=3840) sides of 2538 triangles are outside the root edge of the (7+7) enfolded 4th-order polygons. The hexagon contains 240 sides and the 6 other polygons in each set of 7 contain 1680 sides.

According to Table 9 on #45 of **The Tree of Life**, the number of sides of the triangles making up the 7 enfolded, nth-order polygons = $½(35 + 47\times3^n)$. The triangles in the 7 4th-order polygons have 1921 sides (1920 outside the root edge). The (7+7) enfolded, 4th-order polygons have 2538 triangles with 3841 sides. This is the sum of the 91 squares of the numbers 1-10 forming a 10-fold array, showing how the Decad determines the number of sides of triangles forming the inner Tree of Life. The central square 1^2 corresponds to the root edge. Outside the root edge are 3840 sides. In each set of 7 enfolded polygons are 1920 sides. According to Table 1 of **Properties of the polygons/Collective properties**, the number of sides in the $3^{n-1}N$ triangles making up an nth-order N-gon = $½(3^n+1)N$. The 1st-order triangle contains 6 sides, the 4th-order triangle contains 123 sides & the 4th-order hexagon contains **246** sides. Therefore, the lattermost contains (**246**−6=240) sides other than the 3 sides of one sector of the hexagon occupied by the 4th-order triangle in the set of 7 enfolded polygons and the 3 sides of its own red, green & blue sectors. Being a 3rd-order triangle, each sector of the 4th-order hexagon contains 42 sides (41 outside the root edge). Therefore, the 4th-order triangle contains (123−42=81) extra sides. If the hexagon is regarded as containing 240 sides, the 4th-order triangle has (81+5=86) sides in the enfolded state (outside the root edge in both cases). The 6 enfolded, Type D polygons other than the hexagon contain 1680 sides. The numbers of sides in the 7 polygons outside the root edge are:

triangle	square	pentagon	hexagon	octagon	decagon	dodecagon
86	163	204	240	327	409	491

The triangle, square, pentagon & octagon contain 780 (=78×10) sides and the decagon & dodecagon contain 900 (=90×10) sides. This reproduces the respective gematria number values of *Cholem* (78) and *Yesodeth (90)*, the two Hebrew words that make up the Kabbalistic name of the Mundane Chakra of Malkuth, which has number value **168**.

1920 yods line axes & tetractyses in the faces of the 5 Platonic solids



On average, (192+192) yods line axes and tetractyses in the faces of the five Platonic solids with Type A triangles as sectors.

The 5 Platonic solids have **50** vertices, **50** faces and 90 edges. Their faces can be divided into 180 sectors. When these sectors are Type A triangles, i.e., when their faces are regular Type B polygons, the number of corners of tetractyses in the faces of the 5 Platonic solids = **50** + **50** + 180 = **280**. This is the number value of *Sandalphon*, the Archangel of Malkuth. Inside each sector are three sides of tetractyses. The number of sides of the (3×180=540) tetractyses in all the faces = 90 + 180 + 3×180 = 810. The number of hexagonal yods lining these sides = 2×810 = 1620. The number of yods lining them = **280** + 1620 = 1900. This is 10×sum of first 19 integers, where 19 is the 10th odd integer, showing how the Decad determines the number of yods that line all the tetractyses needed to construct the faces of the 5 Platonic solids from Type A triangles. Each edge is the base of an internal triangle created by joining the two vertices at its end to the centre of the Platonic solid. This triangle, too, has three sectors that, for the sake of consistency, must be regarded as Type A triangles. The straight line passing through any two diametrically opposite vertices and the centre of a Platonic solid serves as its axis (in the case of the tetrahedron, which is the only Platonic solid that is not mapped to itself by point inversion, the axis is no longer straight because the tetrahedron lacks central symmetry, i.e., it does not have point symmetry). The axis of a Platonic solid is formed by two sides of two internal triangles, so that two hexagonal yods lie on each side when the triangles are Type A. The axes of the 5 Platonic solids are lined by (5×4=20) hexagonal yods. Therefore, (20+1900=1920) yods line these axes and all sides of the 540 tetractyses in the **50** Type B polygonal faces.

Of the **280** corners of tetractyses in the faces, 40 are vertices surrounding pairs of vertices that lie on the axes. Therefore, (**280**−40=240) corners are not vertices that shape the 5 Platonic solids. They comprise 10 vertices on axes, **50** centres of faces & 180 corners inside sectors of faces. There are (1920−240=1680) yods left that consist of the 40 vertices, the 20 hexagonal yods lining axes and the 1620 hexagonal yods lining sides of tetractyses. Therefore,

$$1920 = 240 + 1680.$$

On average, the axis and tetractyses in the faces of half a Platonic sold are lined by 192 yods other than its centre. They comprise 24 corners of 54 tetractyses that are not vertices surrounding its axis and **168** other yods. On average, a Platonic solid has (192+192=384) yods lining its axis and the 108 tetractyses in its faces. They comprise **48** corners of 108 tetractyses that are not vertices surrounding its axis and 336 other yods, where:

$$384 = 192 + 192 = \mathbf{48} + 336,$$

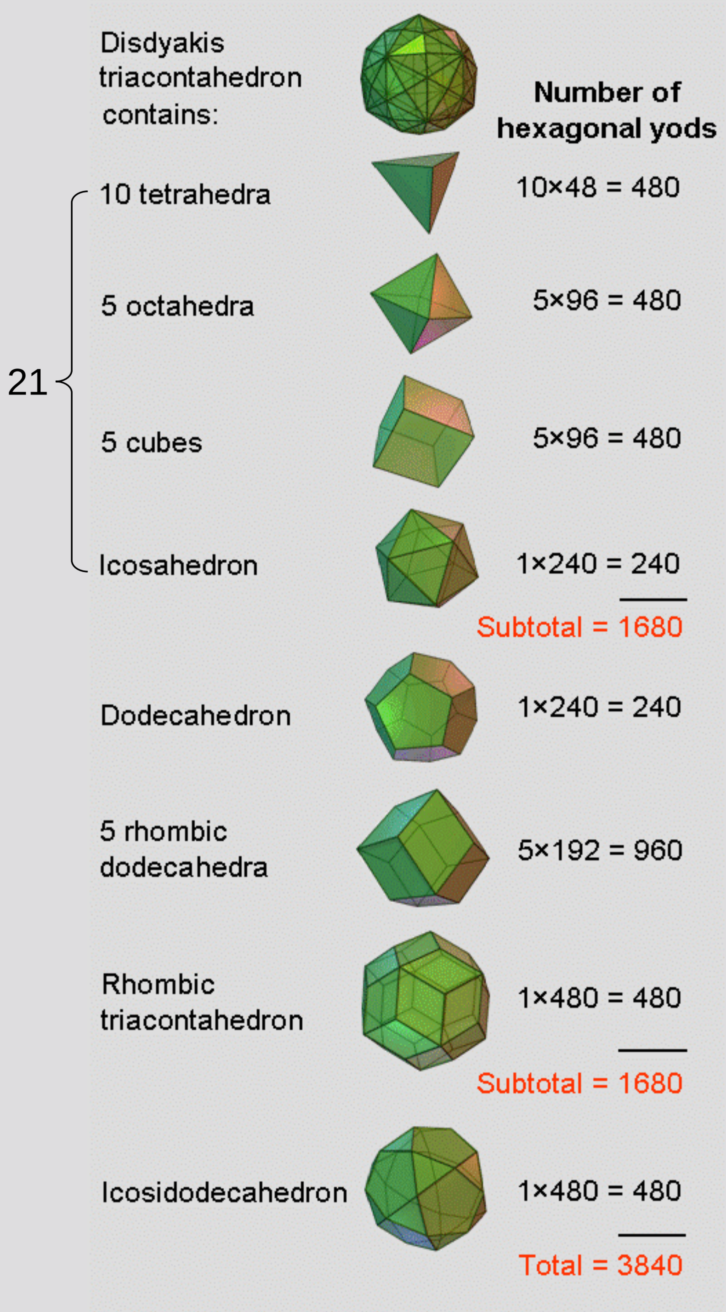
$$192 = 24 + \mathbf{168},$$

$$\mathbf{48} = 24 + 24,$$

$$336 = \mathbf{168} + \mathbf{168}.$$

Including its centre, the average number of yods lining the axis and tetractyses in a Platonic solid = 385 = $1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2 + 7^2 + 8^2 + 9^2 + 10^2$.

The disdyakis triacontahedron fits 29 polyhedra with (3840=1920+1920) hexagonal yods in their faces



Article 3 shows that, when their faces are Type A polygons, the tetrahedron has **48** hexagonal yods, the octahedron and the cube each has 96 hexagonal yods, and the icosahedron and the dodecahedron each has 240 hexagonal yods (see also #2 of **Superstrings as sacred geometry/Platonic solids**).

The **62** vertices of the disdyakis triacontahedron can accommodate 10 tetrahedra, 5 octahedra, 5 cubes, an icosahedron, a dodecahedron, 5 rhombic dodecahedra, a rhombic triacontahedron and an icosidodecahedron (the dual of the lattermost) — see pages 5, 6, 7 & 9 at **Superstrings as sacred geometry/Disdyakis triacontahedron**. When their faces are divided into their sectors and each sector turned into a tetractys, i.e., the faces are regarded as Type A polygons, the **21** Platonic solids other than the dodecahedron contain 1680 hexagonal yods. The letter values of EHYEH, the Godname of Kether with number value **21**, denote the numbers of each type of Platonic solid:

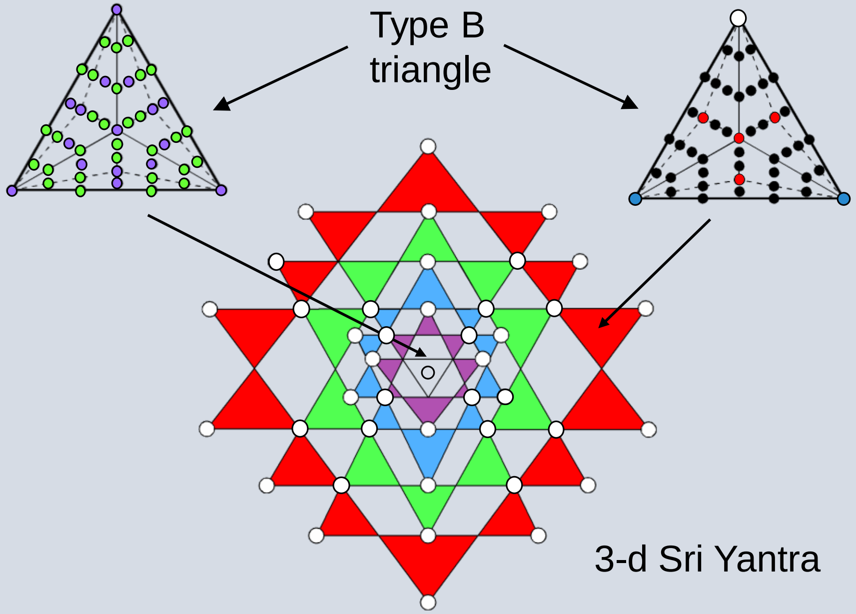
AHIH = **21**
A = 1 → one icosahedron;
H = 5 → 5 cubes;
I = 10 → 10 tetrahedron;
H = 5 → 5 octahedra.

The dodecahedron, the rhombic dodecahedra and the rhombic triacontahedron also have 1680 hexagonal yods, whilst the icosidodecahedron has 480 hexagonal yods. The faces of the 29 polyhedra have 3840 hexagonal yods, which divide into the 480 hexagonal yods of the icosidodecahedron and the 3360 hexagonal yods of the other 28 polyhedra:

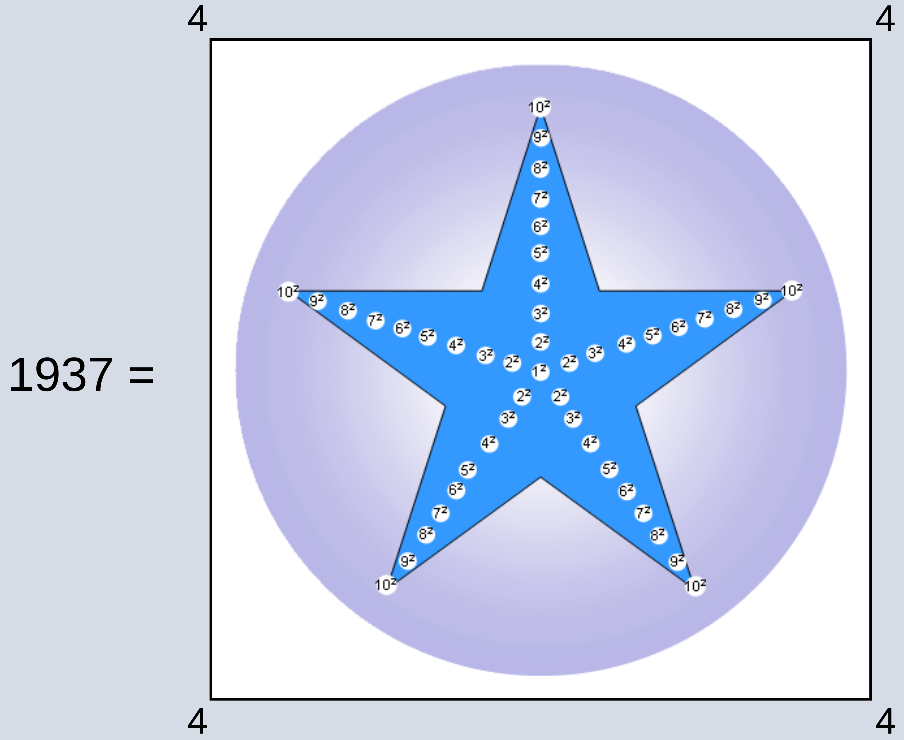
$$3840 = 480 + 3360.$$

There are 1920 hexagonal yods in one set of halves of the 29 polyhedra and 1920 hexagonal yods in their other halves. They comprise 240 hexagonal yods in each half of the icosidodecahedron and 1680 hexagonal yods in each set of halves of the other 28 polyhedra. The reason why the number 480 should be associated with the icosidodecahedron rather than with its dual, the rhombic triacontahedron, which also has 480 hexagonal yods, is not merely that it is the only Archimedean solid amongst the 29 polyhedra. The more persuasive, *arithmetic* reason is that the set of polyhedra containing 1680 hexagonal yods must include either the icosahedron or the dodecahedron with 240 hexagonal yods because each of the other polyhedra contains 480 hexagonal yods and 480 is not a factor of 1680. Therefore, even though 1920 hexagonal yods are in the 22 Platonic solids that can be fitted in the disdyakis triacontahedron and 1920 hexagonal yods are in the Archimedean & Catalan solids, this assignment cannot generate the required division: 1920 = 240 + 1680, leaving the assignment discussed above as the only possible one.

The 3-d Sri Yantra embodies the division: 1920 = 240 + 1680



The 3-d Sri Yantra consists of 42 triangles with 84 corners and 126 sides that surround a central triangle, above which is a single point, or bindu (○). When each triangle is Type B, it has 46 yods (7 corners & 39 hexagonal yods in 9 tetractyses). 30 hexagonal yods (●) line their **15** sides (12 internal).
The number of external corners of the 42 Type B triangles = 2×42 = 84.
The number of their internal corners = 42×4 = **168**.
Total number of corners = 84 + **168** = 252.
Number of their internal sides = 42×12 = 504.
Total number of sides = 126 + 504 = **630**.
Number of hexagonal yods lining sides = 2×630 = **1260**.
Number of hexagonal yods at centres of (42×9=378) tetractyses = 378.
Total number of hexagonal yods = **1260** + 378 = 1638.
Number of yods in 42 triangles = 252 + 1638 = 1890.
Number of yods in 43 triangles other than 16 corners & centres of 9 tetractyses in central triangle = 30 + 1890 = 1920 = $5\times(2^2 + 3^2 + 4^2 + 5^2 + 6^2 + 7^2 + 8^2 + 9^2 + 10^2)$.
Including the bindu and the 16 corners & centres, the total number of yods = 1 + 16 + 1920 = 1937. This number can be represented by a 5-fold array of the squares 1^2-10^2 enclosed by a square array of the number 4. The 46 squares add up to 1921, which is the number of yods (including the bindu but excluding the 16 corners & centres) in the 3-d Sri Yantra whose 43 triangles are Type B triangles with 46 yods. There are (4+46=**50**) numbers in the representation of the total yod population 1937. This shows how ELOHIM with number value **50** prescribes the 3-d Sri Yantra.



The 7 corners of the 9 tetractyses in each Type B triangle comprise its unshared point (○), the two corners (●) shared with adjacent triangles in its own layer (one per triangle) and 4 internal corners (●). The 42 Type B triangles have (42×9=378) tetractyses with 42 shared corners and (42×5=210) unshared corners that comprise 42 unshared points and (42×4=**168**) internal corners. There are (30+210=240) yods other than shared corners that are either hexagonal yods (●) lining sides of the central triangle, unshared points or corners (●) inside the 42 triangles:

240 = 30 (●) + 42 (○) + **168** (●) = **72** (●,○) + **168** (●).

These 240 yods symbolise the 240 roots of the rank-8 exceptional Lie group E_8 that appears in $E_8\times E_8$ heterotic superstring theory. The **72** yods correspond to the **72** roots of its exceptional subgroup E_6 and the **168** yods correspond to the remaining **168** root of E_8. They comprise 24 hexagonal yods inside the central triangle, 6 hexagonal yods on its sides and 42 points, i.e., **48** yods; they denote the **48** roots of F_4, an exceptional subgroup of E_6. The number of hexagonal yods (●) and shared corners (●) in the 42 triangles = 1890 − 210 = 1680. Therefore,

1920 = 240 + 1680.

Apart of the Pythagorean factor of 10, this is the pattern that is characteristic of holistic systems (see **The holistic pattern**). The number 1680 is the number of circular turns in a helical whorl of the UPA, the subquark state of the $E_8\times E_8$ heterotic superstring, as counted by C.W. Leadbeater, using micro-psi vision (see #11 of **Occult Chemistry**).

The 4_{21} polytope embodies the division: 1920 = 240 + 1680

$E_8 \times E_8$

240 8-tuples of coordinates of 240 roots of E_8

(1, 1, 0, 0, 0, 0, 0, 0) and all permutations. Number = $\binom{8}{2}$ = 28;
(-1, -1, 0, 0, 0, 0, 0, 0) and all permutations. Number = $\binom{8}{2}$ = 28;
(1, -1, 0, 0, 0, 0, 0, 0) and all permutations. Number = 2×$\binom{8}{2}$ = 56;
(-½, -½, ½, ½, ½, ½, ½, ½) and all permutations. Number = $\binom{8}{2}$ = 28;
(-½, -½, -½, -½, -½, -½, ½, ½) and all permutations. Number = $\binom{8}{2}$ = 28;
(-½, -½, -½, -½, ½, ½, ½, ½) and all permutations. Number = $\binom{8}{4}$ = 70;
(½, ½, ½, ½, ½, ½, ½, ½). Number = 1;
(-½, -½, -½, -½, -½, -½, -½, -½). Number = 1.

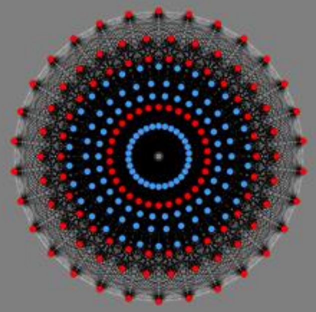
} 240

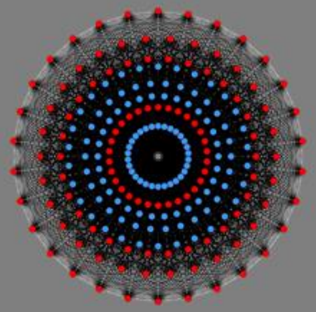
240 8-tuples of coordinates of 240 roots of E_8

(1, 1, 0, 0, 0, 0, 0, 0) and all permutations. Number = $\binom{8}{2}$ = 28;
(-1, -1, 0, 0, 0, 0, 0, 0) and all permutations. Number = $\binom{8}{2}$ = 28;
(1, -1, 0, 0, 0, 0, 0, 0) and all permutations. Number = 2×$\binom{8}{2}$ = 56;
(-½, -½, ½, ½, ½, ½, ½, ½) and all permutations. Number = $\binom{8}{2}$ = 28;
(-½, -½, -½, -½, -½, -½, ½, ½) and all permutations. Number = $\binom{8}{2}$ = 28;
(-½, -½, -½, -½, ½, ½, ½, ½) and all permutations. Number = $\binom{8}{4}$ = 70;
(½, ½, ½, ½, ½, ½, ½, ½). Number = 1;
(-½, -½, -½, -½, -½, -½, -½, -½). Number = 1.

} 240

E_8 Coxeter plane projection of the 240 vertices of the 4_{21} polytope





E_8 Coxeter plane projection of the 240 vertices of the 4_{21} polytope

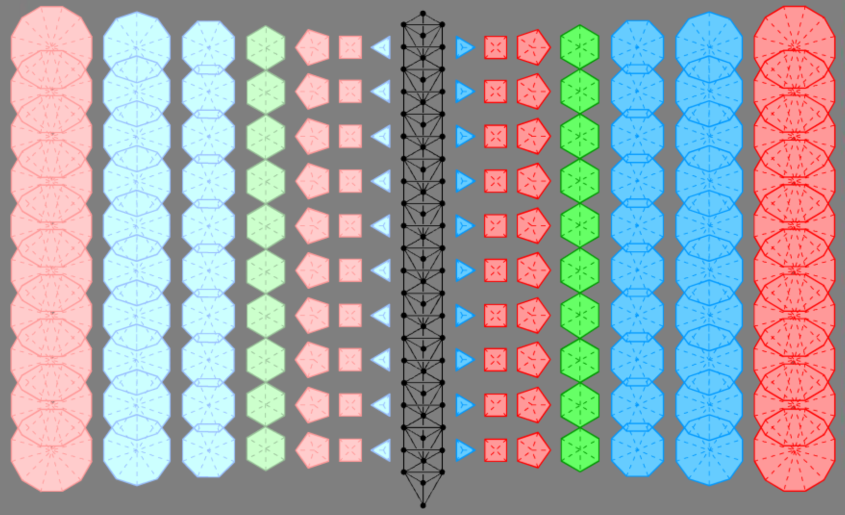
In 8-dimensional space:
120 ● vertices → 960 coordinates
120 ○ vertices → 960 coordinates
Total = 1920 coordinates

The 30 corners of each triacontagon denote vertices with (8×30=240) coordinates

Number of corners, sides & triangles

hexagon	240
square, pentagon, dodecagon	840 } 1680
triangle, octagon, decagon	840 }

Total = 1920



In 8-dimensional space:
120 ● vertices → 960 coordinates
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The 30 corners of each triacontagon denote vertices with (8×30=240) coordinates

Number of corners, sides & triangles

hexagon	240
square, pentagon, dodecagon	840 } 1680
triangle, octagon, decagon	840 }

Total = 1920

(1920+1920=3840) geometrical elements surround the centres of the (70+70) separate polygons making up the inner form of 10 Trees of Life (or the 10-tree)

$E_8 \times E_8$ conforms to the 192:192 division of 384 characteristic of holistic systems because its (240+240) roots are mapped by two 4_{21} polytopes whose (240+240) vertices have 8-d position vectors with (1920+1920=3840) Cartesian coordinates. These correspond to the (1920+1920=3840) sides of the 2538 triangles in the inner Tree of Life with 4th-order polygons (see diagram #4).

Surrounding the centre of an n-gon divided into its sectors are n corners, n sides, n internal sides & n triangles, i.e., 4n geometrical elements. The 7 types of separate polygons of the inner form of the Tree of Life have (4×**48**=192) geometrical elements surrounding their centres. The hexagon (n=6) has 24 geometrical elements surrounding its centre. The square, pentagon & dodecagon have **21** corners with (4×**21**=84) geometrical elements surrounding their centres, as do the triangle, octagon & decagon. (192×10=1920) geometrical elements surround the centres of the 70 separate polygons making up the inner form of 10 Trees of Life. They comprise (24×10=240) corners of hexagons, 840 corners of squares, pentagons & dodecagons and 840 corners of triangles, octagons & decagons. (1920+1920=3840) geometrical elements surround the centres of both sets of 70 polygons, where

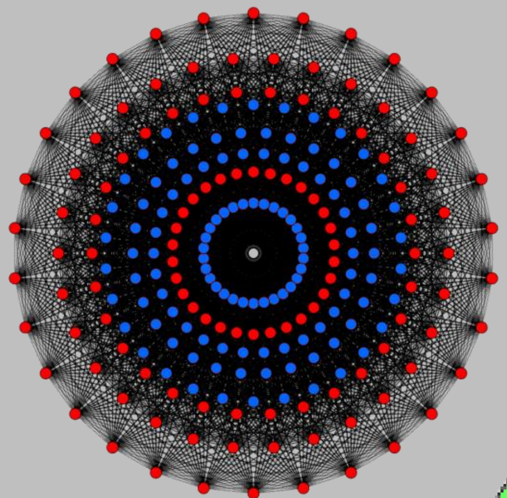
$$3840 = 240 + 240 + 1680 + 1680 = 480 + 3360.$$

The Tetrad (4) determines both 1920 and 3840 because:

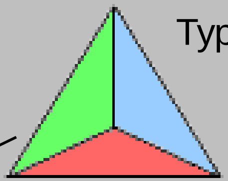
$$3840 = 16\times240 = 4^2(1+2+3+4)\times1\times2\times3\times4,$$
$$1920 = 4^3(1^2+2^2+3^2+4^2) = 8^2 + 16^2 + 24^2 + 32^2.$$

(1920+1920=3840) lines & triangles make up the Type B Petrie polygons in the Coxeter projections of the two 4_{21} polytopes representing $E_8 \times E_8$

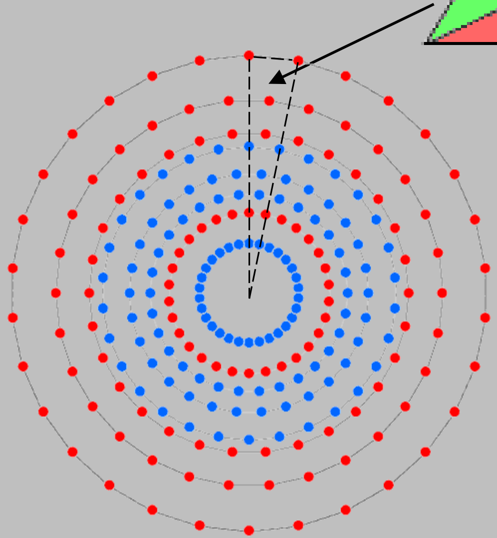
4_{21} polytope



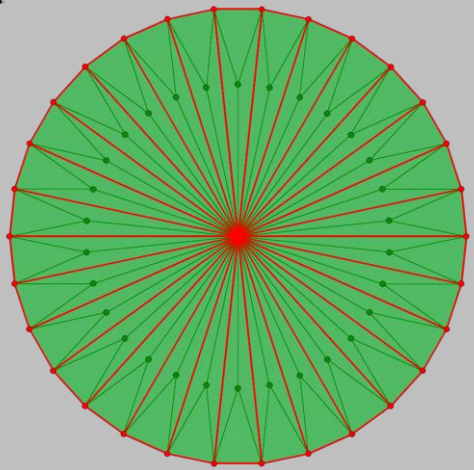
E_8 Coxeter projection of the 240 vertices (red & blue dots) of the 8-d 4_{21} polytope, which has 6720 edges & 60480 triangular faces. Its Petrie polygon is the triacontagon with 30 corners, so that the projection consists of 8 concentric triacontagons. Four triacontagons have 120 red dots denoting the vertices of a 600-cell; the 120 blue corners of the 4 other triacontagons denote the 120 vertices of a smaller 600-cell sharing the same centre.



Type A triangle



8 concentric triacontagons



Type B triacontagon

A Type B 30-gon has 30 sectors that are Type A triangles. The Type A 30-gon has 30 red corners & 60 red sides of sectors. One green corner & 3 green sides of 3 green triangles, i.e., 7 geometrical elements, are added to each sector of the Type B 30-gon, which has 10 geometrical elements (5 sides and 5 corners & triangles). This 3:7 division corresponds to the distinction in the Tree of Life between the Supernal Triad and the 7 Sephiroth of Construction and in the tetractys to the 3 yods at its corners and its 7 hexagonal yods. The corner inside each sector corresponds to Malkuth (central hexagonal yod of the tetractys) and the 2 sets of 3 lines/triangles correspond, respectively, to the two triads: Chesed-Geburah-Tiphareth & Netzach-Hod-Yesod (the two triangular sets of 3 corners formed by the 6 hexagonal yods on the sides of the tetractys). (240×10=2400) corners, sides & triangles surround the centres of the 8 triacontagons; they comprise (240×3=720=**72**×10) red corners & sides and (240×7=1680=**168**×10) green corners, sides & triangles. In terms of the root composition of E_8, the division: 240 = **72** + **168** signifies the **72** roots of E_6 and the remaining **168** roots. 240 (=24×10) red corners and 24×10 red lines form the sides of the 8 triacontagons; 24×10 red lines and **168**×10 green corners, sides & triangles are inside them. Therefore, (240+240=480=**48**×10) corners & lines are external and (240+1680=1920) corners, sides & triangles are internal, where

240×10 = **48**×10 + 192×10 = **48**×10 + 24×10 + 168×10.

The division:

240 = 24 + **48** + **168**

signifies the **48** roots of F_4, a subgroup of E_6, the remaining 24 roots of E_6 and the **168** roots that are not roots of E_6, i.e., there are 192 roots that are not roots of F_4.

The division

1920 = 240 + 1680

appears in the 30 triacontagons making up the E_8 Coxeter projection of the second 4_{21} polytope representing the symmetries of the second E_8 group predicted by $E_8 \times E_8$ heterotic superstring theory. We see that this direct product of two E_8 groups is the manifestation in a superstring context of the divisions:

3840 = 1920 + 1920

and

384 = 192 + 192

existing for holistic systems and embodied in sacred geometries.

How sacred geometries embody the holistic parameters 1920 & 3840

<table>
<tr><th>Page</th><th>Specific conclusion</th><th>General conclusions</th></tr>
<tr><td>2</td><td>The (7+7) polygons of the inner form of the Tree of Life constitute a holistic system because (192+192=384) geometrical elements surround their centres. The division: 192 = 24 + 168 is due to the 24 geometrical elements in the hexagon and to the 168 remaining elements. (1920+1920=3840) geometrical elements surround the centres of the (70+70=140) polygons enfolded in 10 Trees of Life. The (10+10=20) hexagons have (240+240=480) geometrical elements and the (60+60=120) other polygons have (1680+1680=3360) geometrical elements.</td><td rowspan="8">The divisions:
3840 = 1920 + 1920
and
1920 = 240 + 1680,

i.e.,
3840 = 240 + 1680 + 240 + 1680 = 480 + 3360
characterise holistic systems such as sacred geometries. It manifests naturally in the 4_{21} polytope and in a pair of such polytopes, which is therefore a holistic object. As the 4_{21} polytope represents the 240 roots of E_8, this implies that $E_8 \times E_8$ conforms to this pattern exhibited by sacred geometries. They also imply the division:
2400 = 480 + 1920 = 480 + 240 +1680 = 720 + 1680.
The 240 roots of E_8 comprise the 72 roots of its exceptional subgroup E_6 and 168 other roots. The 72 roots contain the 48 roots of F_4 and 24 other roots. So, apart from the factor of 10, the division characteristic of sacred geometries mirrors the group-theoretical fact that the 240 roots of E_8 contain the 48 roots of F_4 and (24+168=192) other roots, whilst the 480 roots of $E_8 \times E_8$ contain (192+192=384) roots other than the (48+48=96) roots of the two F_4 groups. The factor of 10 arises from the 10 dimensions of superstring space-time, so that every one of the 240 Yang-Mills gauge fields coupling to the gauge charges associated with the 240 roots of E_8 has 10 space-time components. It means that there are 1680 space-time components of the 168 Yang-Mills gauge fields associated with the 168 roots of E_8 that are not roots of E_6. A connection is established between the superstring structural parameter 1680 reported by C.W. Leadbeater in his book Occult Chemistry for the UPA (subquark state of the $E_8 \times E_8$ heterotic superstring) and the root structure of E_8, which conforms to the holistic pattern exhibited by sacred geometries.</td></tr>
<tr><td>3</td><td>The (60+60=120) Type A polygons of the first 6 types enfolded in 10 Trees of Life have (1920+1920=3840) yods. They comprise (240+240=480) corners and (1680+1680=3360) other yods.</td></tr>
<tr><td>4</td><td>Outside the root edge of the (7+7) enfolded, Type D polygons are (1920+1920=3840) sides of (1269+1269=2538) triangles. The 2 hexagons have (240+240=480) sides besides the (6+6=12) sides of the sectors of the 2 enfolded triangles when they are Type A. The other (6+6) enfolded, Type D polygons have (1680+1680=3360) sides.</td></tr>
<tr><td>5</td><td>When the 50 faces of the 5 Platonic solids are Type A regular polygons, 1920 yods line their axes and sides of sectors. Of these, 240 yods are corners that are not vertices surrounding their axes. This leaves 1680 yods (840 yods in each set of 5 halves of the solids). On average, 384 yods line the axis and sides of tetractyses in the faces of a Platonic solid (192 yods in each half).</td></tr>
<tr><td>6</td><td>Twenty-nine polyhedra can be fitted to the 62 vertices of the disdyakis triacontahedron. When their faces are Type A polygons, they have 3840 hexagonal yods. Each set of halves of the 29 polyhedra has 1920 hexagonal yods (240 in the icosidodecahedron and 1680 in the other 28 polyhedra).</td></tr>
<tr><td>7</td><td>When they are Type B triangles, the 43 triangles in the 3-d Sri Yantra contain 1920 yods other than the 16 corners & centres of the 9 triangles in the central triangle. They comprise 240 yods that are either hexagonal yods of the central triangle, points of the 42 triangles or their internal corners, as well as 1680 yods that are either hexagonal yods in the 42 triangles or corners shared by adjacent triangles in each layer of triangles.</td></tr>
<tr><td>8</td><td>The 240 vertices of the 8-d 4_{21} polytope mark the positions in E_8 lattice space of the 240 non-zero roots of E_8, the rank-8 exceptional Lie group. They have (8×240=1920) coordinates. The (240+240=480) vertices of 2 similar, 4_{21} polytopes map the (240+240=480) roots of $E_8 \times E_8$. They have (1920+1920=3840) coordinates. Their counterpart in the inner form of 10 Trees of Life are the (1920+1920=3840) corners, sides & triangles surrounding the centres of the (70+70) separate polygons.</td></tr>
<tr><td>9</td><td>The Petrie polygon for the E_8 Coxeter plane projection of the 4_{21} polytope is the triacontagon with 30 corners. When Type B, the 8 concentric triacontagons making up this projection have (8×30×10=2400) corners, sides & triangles surrounding their centre. (8×30×2=480) points & lines form their sides, inside which are (8×30×8=1920) points, lines & triangles. They comprise 240 lines that are part of the 8 Type A triacontagons and (240×7=1680) additional points, lines & triangles.</td></tr>
</table>