Article 40

The Unification of All Sacred Geometries & Its Implication for Particle Physics

Part 2

by

Stephen M. Phillips, Ph.D.

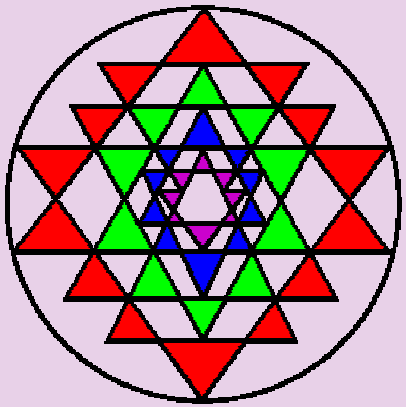
Flat 3, 32 Surrey Road South. Bournemouth. Dorset BH4 9BP. England.

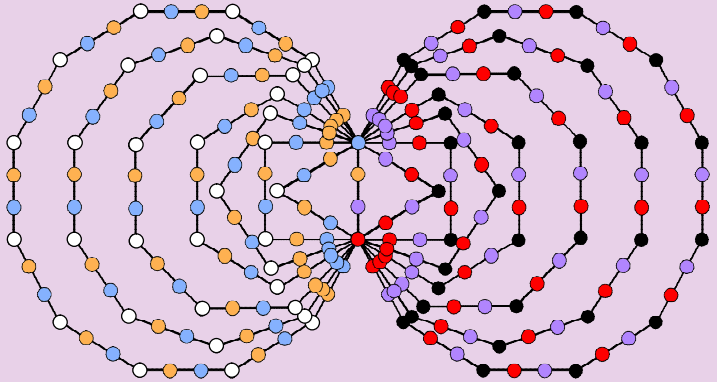
E-mail: stephen@smphillips.8m.com
Website: http://www.smphillips.8m.com

Figure 1

The 34 vertices of the 2-dimensional Sri Yantra and their 34 mirror images correspond to the 34 corners of the seven enfolded polygons outside their root edge and their 34 mirror images in the other set of polygons. The 42 edges and their 42 mirror images in the first three layers of triangles are the counterpart of 42 hexagonal yods on the edges of one set of polygons and their mirror images in the other set. The 42 edges & triangles in the fourth layer and their 42 mirror images are the counterpart of another 42 hexagonal yods on the edges of one set of polygons and their 42 mirror images in the other set.

Figure 1





(34+34) vertices

(42+42) edges in 1st three layers of triangles

(21+21) edges in 4th layer
(21+21) triangles

} 168

34 (●) +34 (○) corners outside root edge

42 (●) & 42 (●)

42 (●) & 42 (●)

} 168

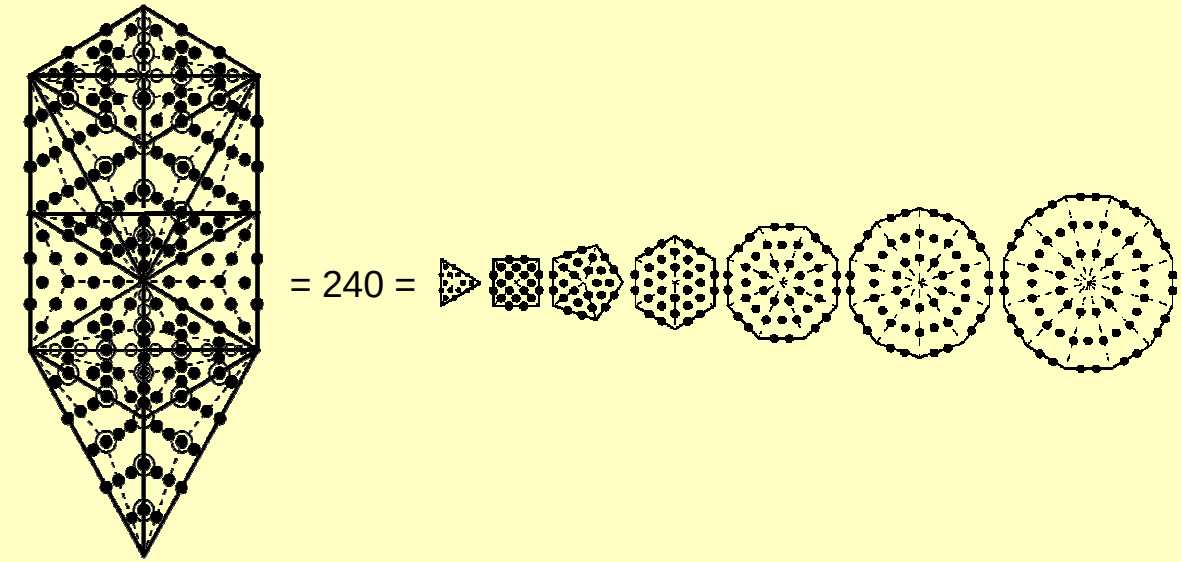
Correspondence between the geometrical composition of the four layers of the 2-d Sri Yantra and the boundary yods of the 14 polygons of the inner Tree of Life.

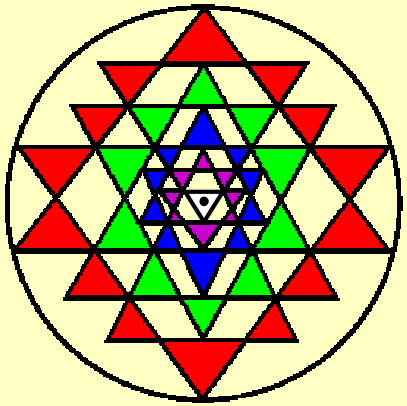
Figure 2

Just as 240 geometrical elements are needed to construct the 2-dimensional Sri Yantra, starting with the central bindu point, so 240 extra yods are needed to construct the 19 triangles of the lowest Tree of Life from tetractyses and 240 extra yods are needed to construct the sectors of the polygons in the inner Tree of Life from tetractyses.

Figure 2

(circles are yods behind other yods)





The lowest Tree of Life needs 240 extra yods to construct each of its 19 triangles from three tetractyses. The inner Tree of Life needs 240 extra yods to turn its 48 sectors into tetractyses.

The 2-d Sri Yantra has 240 geometrical elements surrounding the central bindu.

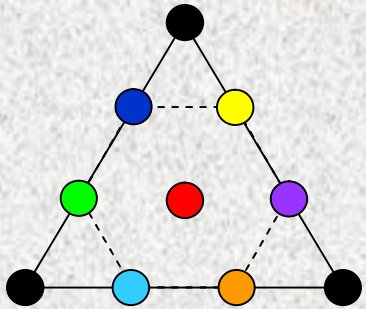
The number 240 is a structural parameter of the Sri Yantra, the Tree of Life and its inner, polygonal form.

Figure 3

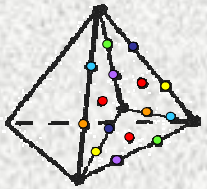
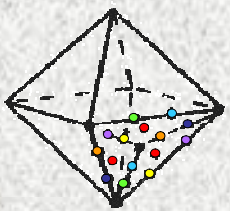
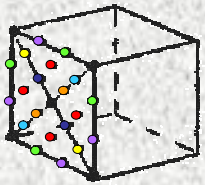
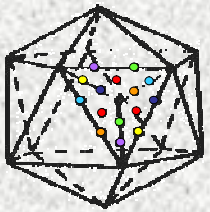
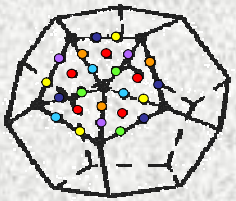
When constructed from tetractyses, the first three Platonic solids have 240 hexagonal yods, as do the icosahedron and the dodecahedron. The number 240 is a structural parameter of holistic systems like the five possible, regular polyhedra.

Figure 3

Coloured yods are hexagonal yods



Number of hexagonal yods

Tetrahedron		48	240
Octahedron		96	
Cube		96	
Icosahedron		240	
Dodecahedron		240	

The structural parameter 240 defining holistic systems is found in the Platonic solids as the number of hexagonal yods in the faces of the icosahedron or dodecahedron when they are tessellated with tetractyses

Figure 4

There are 13 semi-regular polyhedra (Archimedean solids). They have 13 duals – the Catalan solids – in which each vertex is replaced by a face and vice versa. The two tables list the number of vertices, edges & triangles in their faces. The most complex of the Catalan solids is the disdyakis triacontahedron. 2400 corners, edges & triangles surround an axis through any two opposite vertices when its faces are divided into three triangles and 1680 geometrical elements when its faces are single triangles. This is ten times the corresponding numbers for the triakis tetrahedron, the simplest Catalan solid. The disdyakis triacontahedron is the polyhedral counterpart of the inner Tree of Life, embodying the structural parameter 240. As shown later, 168 and 1680 are also parameters embodied in any manifestation of the Tree of Life blueprint.

Case A: triangular face as tetractys

Case B: triangular face as 3 tetractyses

C = number of corners
E = number of edges
F = number of faces

N = number of corners, edges & triangles surrounding the axis (case A)
N' = number of corners, edges & triangles surrounding the axis (case B)

Figure 4

Tables of properties of the Archimedean and the Catalan solids

N'	F	E	C	Archimedean solid
244	8	18	12	truncated tetrahedron
322	14	24	12	cuboctahedron
490	14	36	24	truncated cube
490	14	36	24	truncated octahedron
646	26	48	24	rhombicuboctahedron
802	38	60	24	snub cube
802	38	60	24	snub cube (chiral partner)
808	32	60	30	icosidodecahedron
882	26	72	48	truncated cuboctahedron
1228	32	90	60	truncated icosahedron
1228	32	90	60	truncated dodecahedron
1618	62	120	60	rhombicosidodecahedron
2008	92	150	60	snub dodecahedron
2008	92	150	60	snub dodecahedron (chiral partner)
2458	62	180	120	truncated icosidodecahedron

Catalan solid	F	E	C	N	N'
triakis tetrahedron	12	18	8	168	240
rhombic dodecahedron	12	24	14	-	324
triakis octahedron	24	36	14	336	480
tetrakis hexahedron	24	36	14	336	480
deltoidal icositetrahedron	24	48	26	-	648
pentagonal icositetrahedron	24	60	38	-	816
pentagonal icositetrahedron (chiral partner)	24	60	38	-	816
rhombic triacontahedron	30	60	32	-	810
disdyakis dodecahedron	48	72	26	672	960
triakis icosahedron	60	90	32	840	1200
pentakis dodecahedron	60	90	32	840	1200
deltoidal hexacontahedron	60	120	62	-	1620
pentagonal hexacontahedron	60	150	92	-	2040
pentagonal hexacontahedron (chiral partner)	60	150	92	-	2040
disdyakis triacontahedron	120	180	62	1680	2400

2400 geometrical elements surround the axis of the disdyakis triacontahedron constructed from triangles. This is 10 times that for the triakis tetrahedron, the simplest Catalan solid. It illustrates how the number 240 characterizes holistic systems like the disdyakis triacontahedron.

Figure 5

The Tree of Life parameter 240 appears in superstring physics as the number of non-zero roots of the Lie algebra of E_8, the superstring gauge symmetry group. The parameter 168 appears as the number of non-zero roots of E_8 that are not non-zero roots of its exceptional subgroup E_6.

The 240 non-zero roots of the superstring gauge symmetry group E_8.

The roots of the E_8 algebra are described in terms of eight orthonormal unit vectors $\{u_i\}$.

Figure 5

Eight zero roots correspond to points at the centre of the root diagram and 240 non-zero roots all have length $\sqrt{2}$. They are given by

$$\pm u_i \pm u_j \qquad (i, j = 1, 2, \ldots 8)$$

and

$$\tfrac{1}{2}(\pm u_1, \pm u_2, \ldots \pm u_8) \qquad \text{(even number of +'s)}$$

Their explicit forms as 8 -tuples and their numbers are listed below:

$(1, 1, 0, 0, 0, 0, 0, 0)$ 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 = $2\times\binom{8}{2} = 56$;

$(-\tfrac{1}{2},-\tfrac{1}{2},\tfrac{1}{2},\tfrac{1}{2},\tfrac{1}{2},\tfrac{1}{2},\tfrac{1}{2},\tfrac{1}{2})$ and all permutations. Number = $\binom{8}{2} = 28$;

$(-\tfrac{1}{2},-\tfrac{1}{2},-\tfrac{1}{2},-\tfrac{1}{2},-\tfrac{1}{2},\tfrac{1}{2},\tfrac{1}{2},\tfrac{1}{2})$ and all permutations. Number = $\binom{8}{2} = 28$;

$(-\tfrac{1}{2},-\tfrac{1}{2},-\tfrac{1}{2},\tfrac{1}{2},\tfrac{1}{2},\tfrac{1}{2},\tfrac{1}{2},\tfrac{1}{2})$ and all permutations. Number = $\binom{8}{4} = 70$;

$(\tfrac{1}{2}, \tfrac{1}{2}, \tfrac{1}{2}, \tfrac{1}{2}, \tfrac{1}{2}, \tfrac{1}{2}, \tfrac{1}{2}, \tfrac{1}{2})$. Number = 1;

$(-\tfrac{1}{2}, -\tfrac{1}{2}, -\tfrac{1}{2}, -\tfrac{1}{2}, -\tfrac{1}{2}, -\tfrac{1}{2}, -\tfrac{1}{2}, -\tfrac{1}{2})$. Number = 1.

168

72

240

Figure 6

There are 260 vertices, edges & triangles in the 3-dimensional Sri Yantra. 168 geometrical elements are in the first three layers of triangles.

Figure 6

	Vertices	Edges	Triangles	Total
Bindu	1	0	0	1
▽	3	3	1	7
Subtotal	4	3	1	8
▲	2×8 = 16	3×8 = 24	8	48
▲	2×10 = 20	3×10 = 30	10	60
▲	2×10 = 20	3×10 = 30	10	60
▲	2×14 = 28	3×14 = 42	14	84
Subtotal	84	126	42	252
Total	88	129	43	260

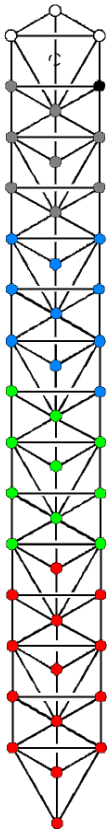
168

Geometrical composition of the 3-d Sri Yantra.

Figure 7

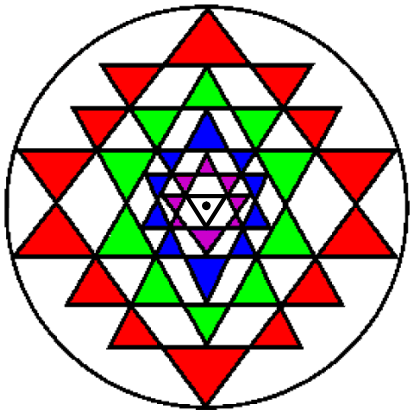
As confirmation that the 2-dimensional Sri Yantra is the counterpart of seven overlapping Trees of Life, compare their geometrical compositions. The seven overlapping Trees of Life are composed of 260 vertices, edges, triangles & tetrahedra. The 3-dimensional Sri Yantra has 260 vertices, edges & triangles. They are *both* composed of 260 geometrical elements. The seven overlapping Trees of Life are a map of the seven planes of consciousness. The number value 26 of YAHWEH, Godname of Chokmah, prescribes these two maps of the seven planes.

Figure 7



Number of vertices of triangles in n Trees of Life = 6n + 4
Number of edges of triangles = 16n + 6
Number of triangles = 12n + 4
Number of tetrahedra = n + 1

The 3-d Sri Yantra is the counterpart of 7 Trees of Life mapping the 7 planes of consciousness.



Number of vertices = 46
Number of edges = 118
Number of triangles = 88
Number of tetrahedra = 8
Total = 260

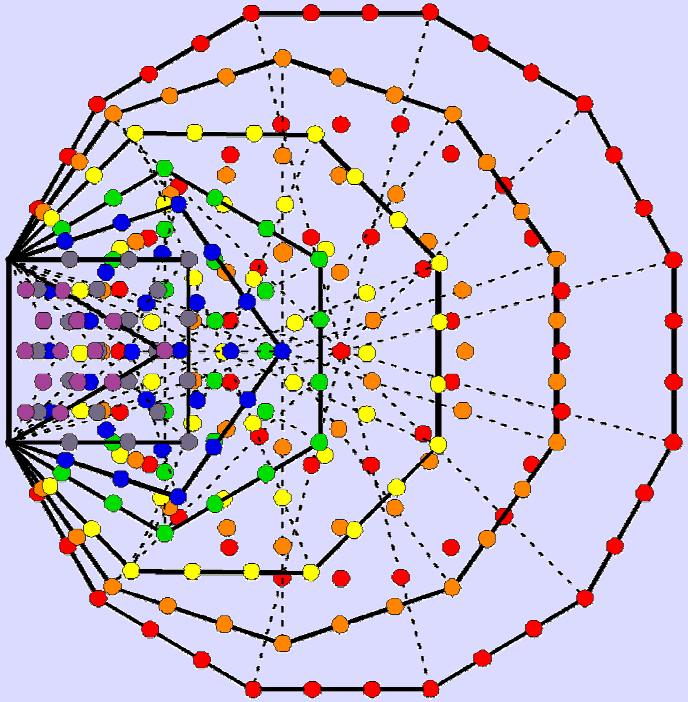
Number of vertices = 88
Number of edges = 129
Number of triangles = 43
Total = 260

Figure 8

Constructed from tetractyses, the seven enfolded polygons have 260 yods outside their shared root edge. Each yod symbolizes one of the geometrical elements composing the 3-dimensional Sri Yantra. This demonstrates that the inner Tree of Life and the Sri Yantra are equivalent representations of holistic systems.

Figure 8

260 =

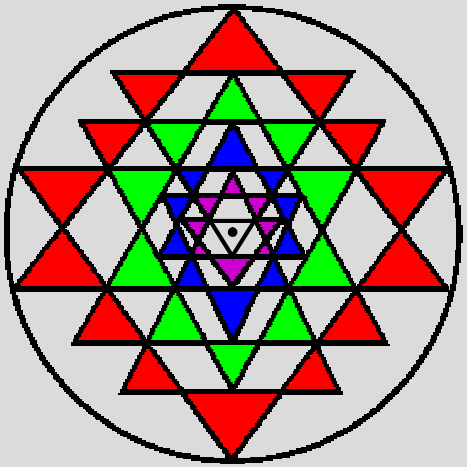


The inner Tree of Life is composed of 260 yods outside its root edge. This demonstrates its identity to the 3-d Sri Yantra, which comprises 260 geometrical elements. Each yod symbolizes an element.

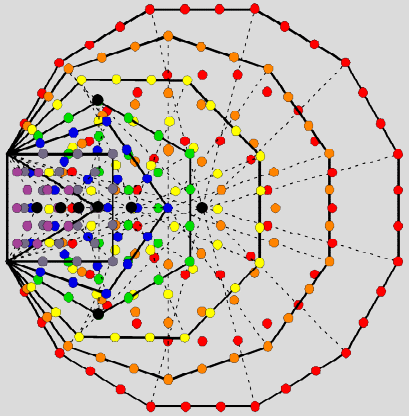
Figure 9

The 260 geometrical elements of the Sri Yantra comprise the eight elements making up the central bindu point and innermost triangle and the 252 elements of the eight layers of triangles. Their counterparts in the inner Tree of Life are the eight yods that are either centres of polygons or Sephiroth of the Tree of Life and the 252 other yods outside the shared root edge of the polygons.

Figure 9



= 260 =



3-d Sri Yantra

Bindu + innermost triangle:

4 vertices + 3 edges + 1 triangle

= 8 geometrical elements

4 layers of triangles:

84 vertices + 126 edges + 42 triangles

= 252 geometrical elements

Total = 260

Inner Tree of Life

8 yods (●) are either centres of polygons or locations of Sephiroth of the outer Tree of Life;
has 252 coloured yods

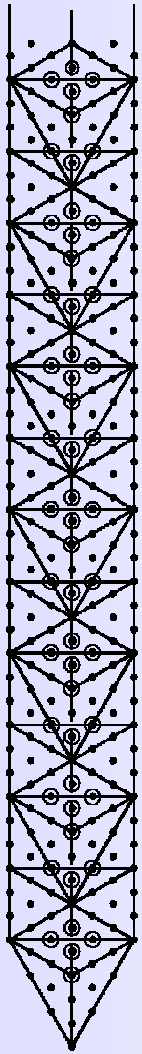
Total = 260

The correspondence between the Sri Yantra and the inner Tree of Life.

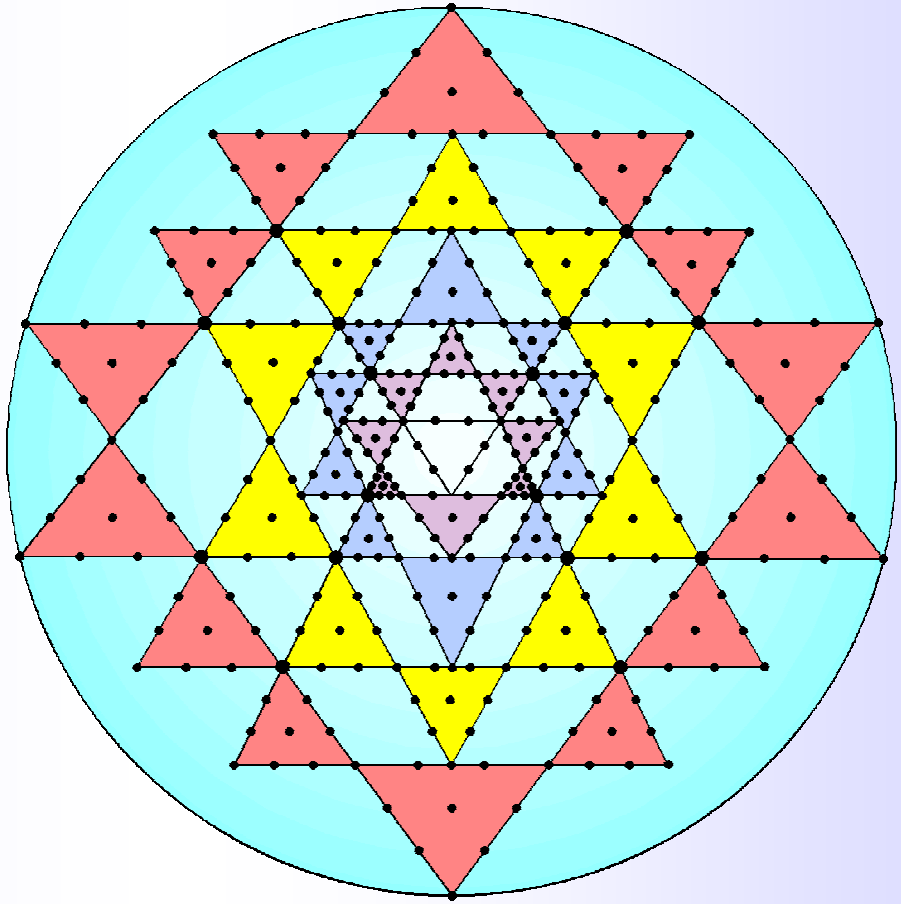
Figure 10

When their triangles are turned into tetractyses, there are 384 yods up to the top of the seventh, overlapping Tree of Life. The 42 triangles of the Sri Yantra have 378 yods, whilst the central triangle has six hexagonal yods on its edges, a total of 384 yods. This numerical correlation is not an accident but indicates that the Sri Yantra and the seven Trees of Life are isomorphic representations.

Figure 10



= 384 =



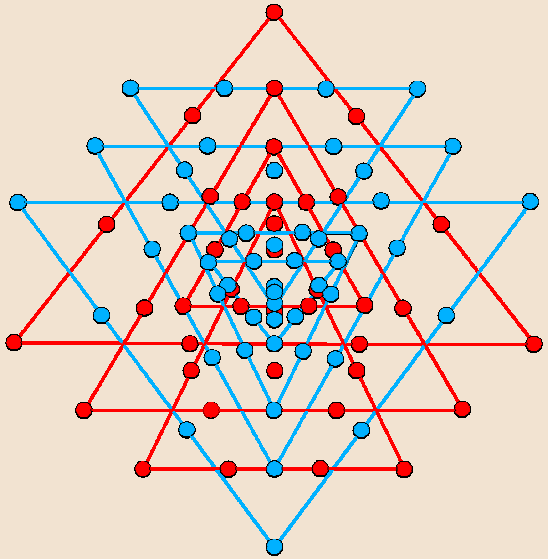
The Sri Yantra is equivalent to the lowest 7 Trees of Life because it comprises as many yods as there are yods up to the top of these trees.

Figure 11

According to Plato, the celestial sphere was designed in the proportions of the squares of the numbers 1, 2 & 3. Arranged in the shape of the Greek letter lambda, this set of seven integers (the so-called “Lambda”) is but two sides of a tetractys array of 10 integers (let us call it the “Lambda Tetractys”) that add up to 90. The four integers 1, 3, 9 & 27 on one side of the array add up to 40. The sum of the remaining integers is 50. The Sri Yantra is formed from five downward-pointing triangles expressing the Shakti (feminine) aspect of creation and four upward-pointing triangles expressing its Shiva (masculine) aspect. If each triangle is considered a tetractys, the number of yods in the nine tetractyses is 90, which is the sum of the integers in the tetractys extension of Plato’s Lambda. The four Shiva triangles/tetractyses have 40 yods and the five Shakti triangles/tetractyses have 50 yods. The source of the Sri Yantra therefore conforms to the Lambda Tetractys pattern, confirming its archetypal quality.

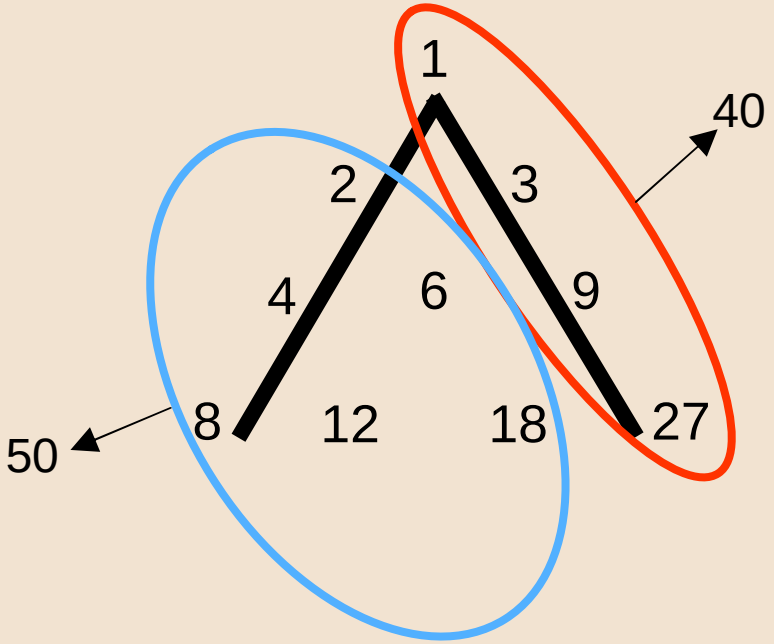
The four integers adding to 40 are all odd integers. The six integers adding to 50 are all even. The Pythagoreans regarded even integers as female and odd integers as male. This is consistent with the five triangles that embody the Shakti creative energy (female principle) having 50 yods and the four triangles that embody the Shiva energy (male principle of creation) having 40 yods. The division of the Lambda Tetractys into even and odd integers matches precisely its counterpart as five Shakti triangles and four Shiva triangles. The Lambda Tetractys is an arithmetic expression of the paradigm underlying different sacred geometries.

Figure 11



50 (●) in 5 Shakti triangles/tetractyses

40 (●) in 4 Shiva triangles/tetractyses



Lambda Tetractys

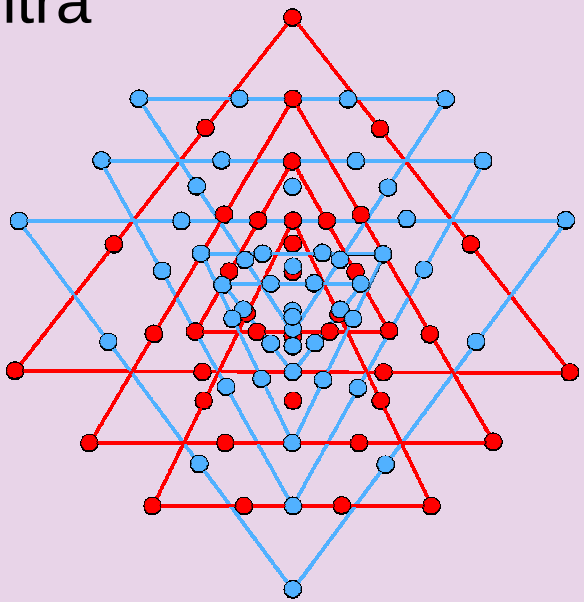
The 50:40 division of the Platonic Lambda Tetractys corresponds in the Sri Yantra to the 50:40 division of yods in the 5 Shakti triangles/tetractyses representing the feminine aspect of the creative process and the 4 Shiva triangles/tetractyses that represent the male aspect. 40 is the sum of the four odd integers and 50 is the sum of the six odd integers. This is consistent with the ancient Pythagorean view of the odd integers as male and the even integers as female.

Figure 12

As tetractyses, the nine primary triangles generating the Sri Yantra have 27 yods at corners and nine central yods, i.e., 36 yods. The sum of the integers at the corners of the Lambda Tetractys is 36 (the largest of its integers is 27). The nine tetractyses have 54 hexagonal yods. The sum of the seven integers in the Lambda Tetractys arranged at the corners and centre of a hexagon is 54. This further demonstrates that the Lambda Tetractys arithmetically expresses the geometrical origin of the Sri Yantra. The integers 1 and 8 at two corners of the Lambda Tetractys denote, respectively, the central yod of the unpaired Shakti tetractys (the smallest, downward pointing, blue tetractys and the eight central yods of the four pairs of Shiva & Shakti tetractyses forming Stars of David. The integer 27 at the third corner of the Lambda Tetractys is the number of yods at the corners of the nine tetractyses.

Figure 12

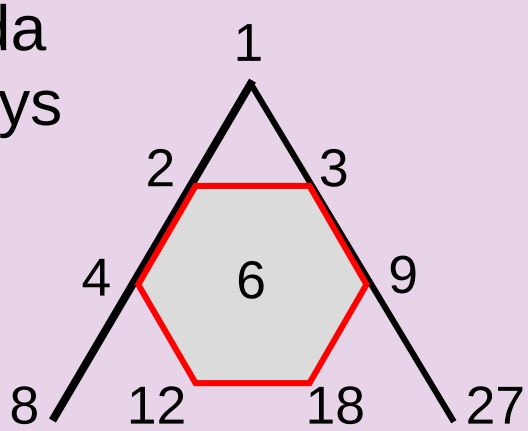
Sri Yantra



27 corners and 9 centres = 36

54 hexagonal yods in 9 tetractyses

Lambda Tetractys



Sum of integers at corners = 27 + 8 + 1 = 36 (8 + 1 = 9)

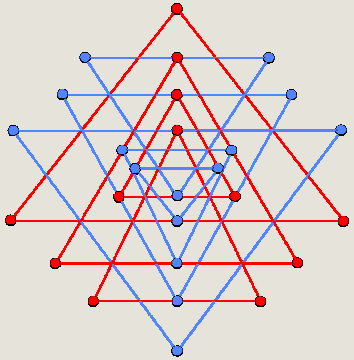
Sum of 7 integers in hexagon = 54

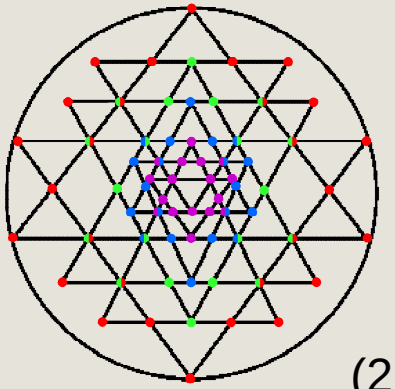
The Lambda Tetractys arithmetically defines the creation of the Sri Yantra from 9 triangles/tetractyses.

Figure 13

The nine triangles with 27 vertices overlap to form the 3-dimensional Sri Yantra whose 43 triangles have 87 vertices. 60 *new* vertices are generated. This is comparable with the Tree of Life when its 16 triangles with 10 vertices are turned into tetractyses made up of 70 yods: 60 *new* yods appear.

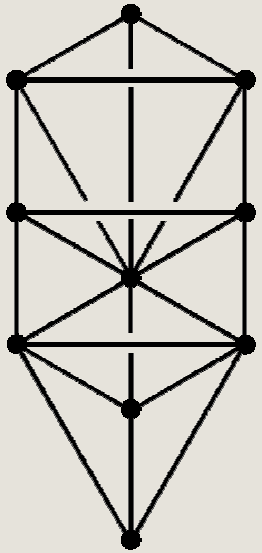
Figure 13

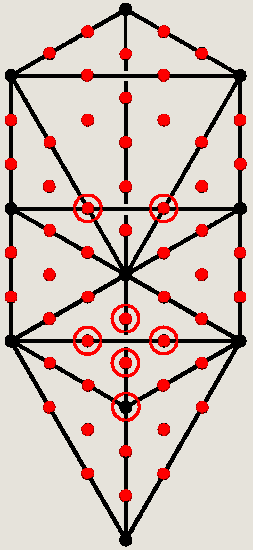




27 vertices

(27+60=87) vertices





10 (●)

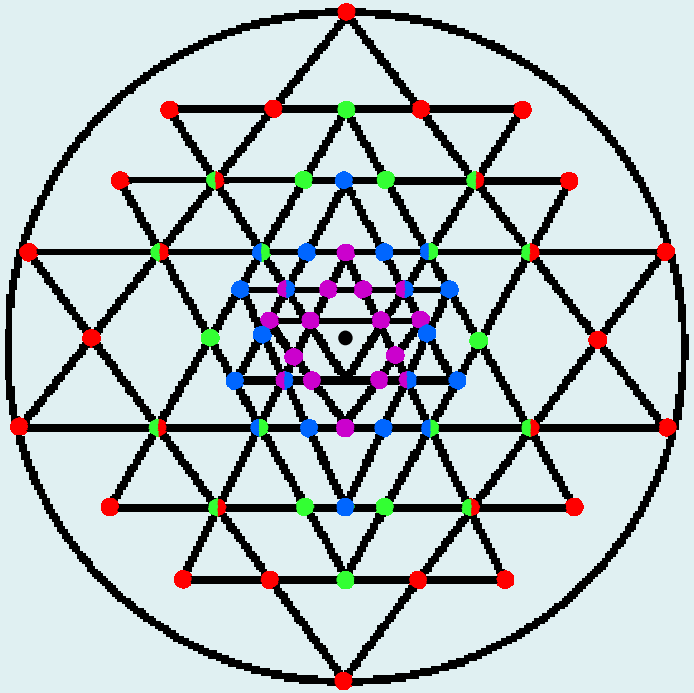
10 (●) + 60 (●)

60 new vertices are generated when 9 triangles with 27 vertices form the 3-d Sri Yantra with 87 vertices in its 43 triangles. Likewise, 60 yods are created by turning the 16 triangles of the Tree of Life into tetractyses.

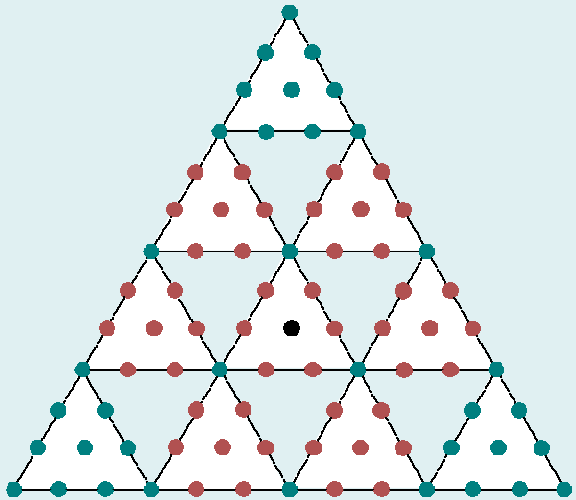
Figure 14

The four layers of triangles in the 3-dimensional Sri Yantra have 84 vertices. This is the number of yods surrounding the centre of the 2nd-order tetractys. The 24 triangles of the outer two groups have 48 vertices. This is the number of hexagonal (brown) yods in the seven tetractyses arranged in a hexagon that surround the centre. The two inner groups of triangles have 36 vertices. 36 yods in the 2nd-order tetractys do not belong to these tetractyses. These correlations show how the Sri Yantra is equivalent to the 2nd-order tetractys – a higher differentiation of the tetractys symbolizing the 10-fold nature of Divine Unity.

Figure 14



≡



2nd-order tetractys

48 (● & ●)

36 (● & ●)

48 (●)

36 (●)

(coloured semicircles denote two vertices, one of which lies directly above the other)

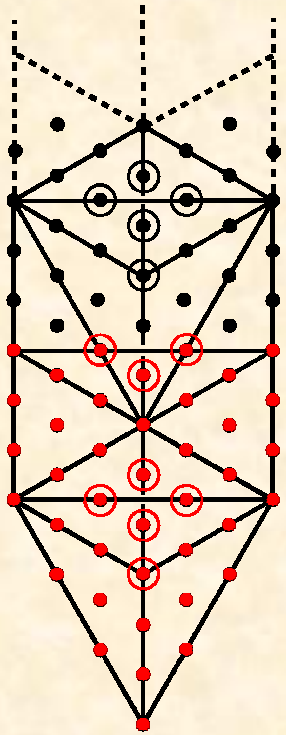
Correspondence between the 84 vertices in the 4 layers of triangles of the 3-d Sri Yantra and the 84 yods surrounding the centre of the 2nd-order tetractys.

Figure 15

When the lowest Tree of Life is constructed from tetractyses, there are 84 yods up to the top of the lowest Tree of Life. They correspond to the 84 corners of the 42 triangles of the Sri Yantra. The third and fourth layers of triangles have 48 corners corresponding to the 48 yods up to Chesed, the first Sephirah of Construction, and the first and second layers have 36 vertices corresponding to the 36 yods between Chesed and the top of the lowest tree.

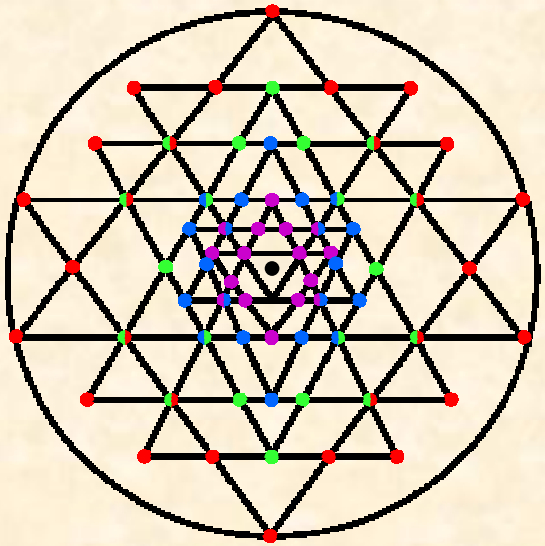
Figure 15

The 84 yods up to the top of the lowest Tree of Life correspond to the 84 vertices of the four layers of triangles in the 3-d Sri Yantra. The 48 yods up to Chesed, the first Sephirah of Construction, correspond to the 48 vertices in the 3rd & 4th layers of triangles, and the 36 yods above Chesed correspond to the 36 vertices in the first two layers of triangles.



← top of lowest Tree of Life

= 84 =



48 (●)
36 (●)

48 (●&●)
36 (●&●)

Correspondence between the Tree of Life and the 3-d Sri Yantra.

Figure 16

336 yods lie on the edges of the 42 triangles of the Sri Yantra. 168 yods form the edges of each half. 168 yods also lie on the edges of the 14 triangles in the lowest layer.

Figure 16

Numbers of yods in the Sri Yantra

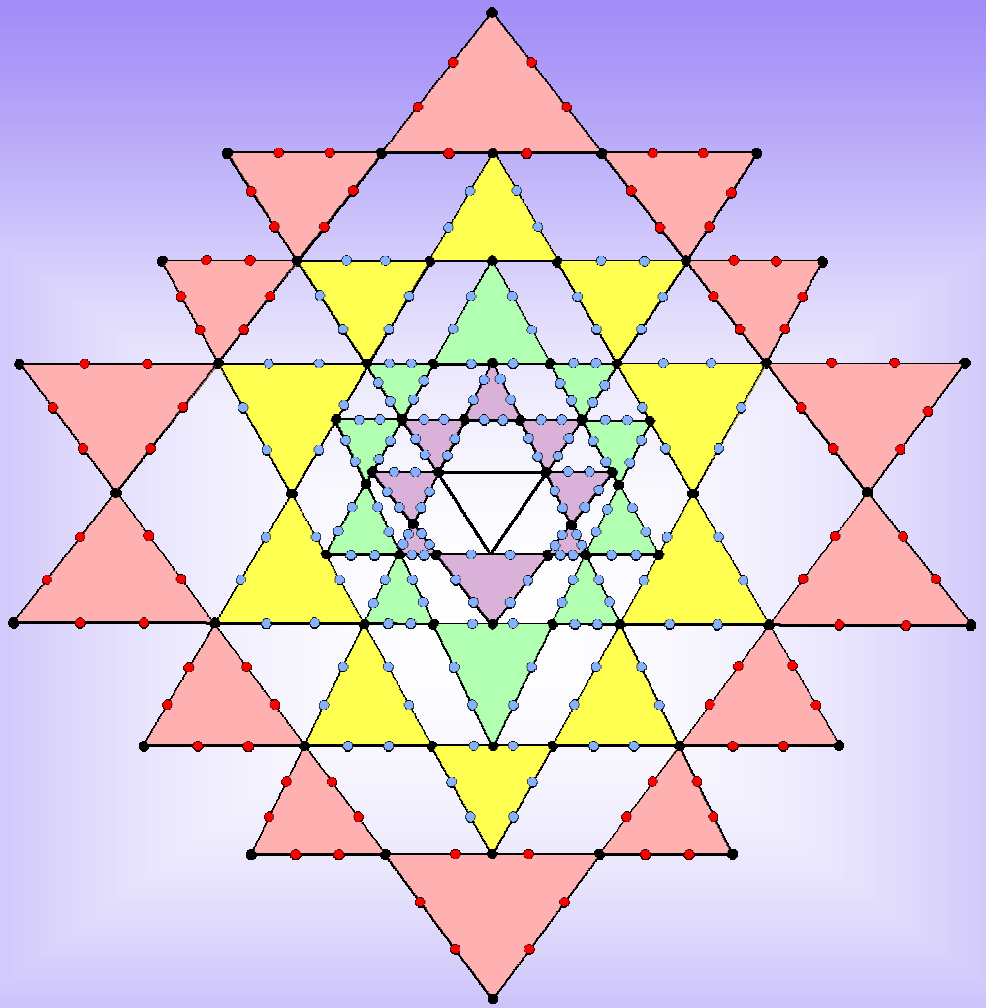
	Vertices	Hexagonal yods on edges		Yods on boundaries of triangles
▲	8×2 = 16	8×3×2 = 48		16 + 48 = 64
▲	10×2 = 20	10×3×2 = 60	168	20 + 60 = 80
▲	10×2 = 20	10×3×2 = 60		20 + 60 = 80
▲	14×2 = 28	14×3×2 = 84		28 + 84 = 112
Total	84	252		84 + 242 = 336

168

336 yods lie on the 126 edges of the 42 triangles of the 3-d Sri Yantra. 168 yods lie on the edges of one half and 168 yods lie on the edges of the other half. Remarkably, the *same* number of yods also lie on the edges of the 14 triangles in the lowest layer of the Sri Yantra, whilst 168 hexagonal yods lie on the edges of the 28 triangles in its first 3 layers.

Figure 17

When the 42 triangles of the Sri Yantra are converted into tetractyses, 168 yods lie on the edges of the 28 triangles in the first three layers. 168 yods lie on the edges of the 14 triangles in the fourth layer.



84 (●)
84 (●)
} 168
168 (○)

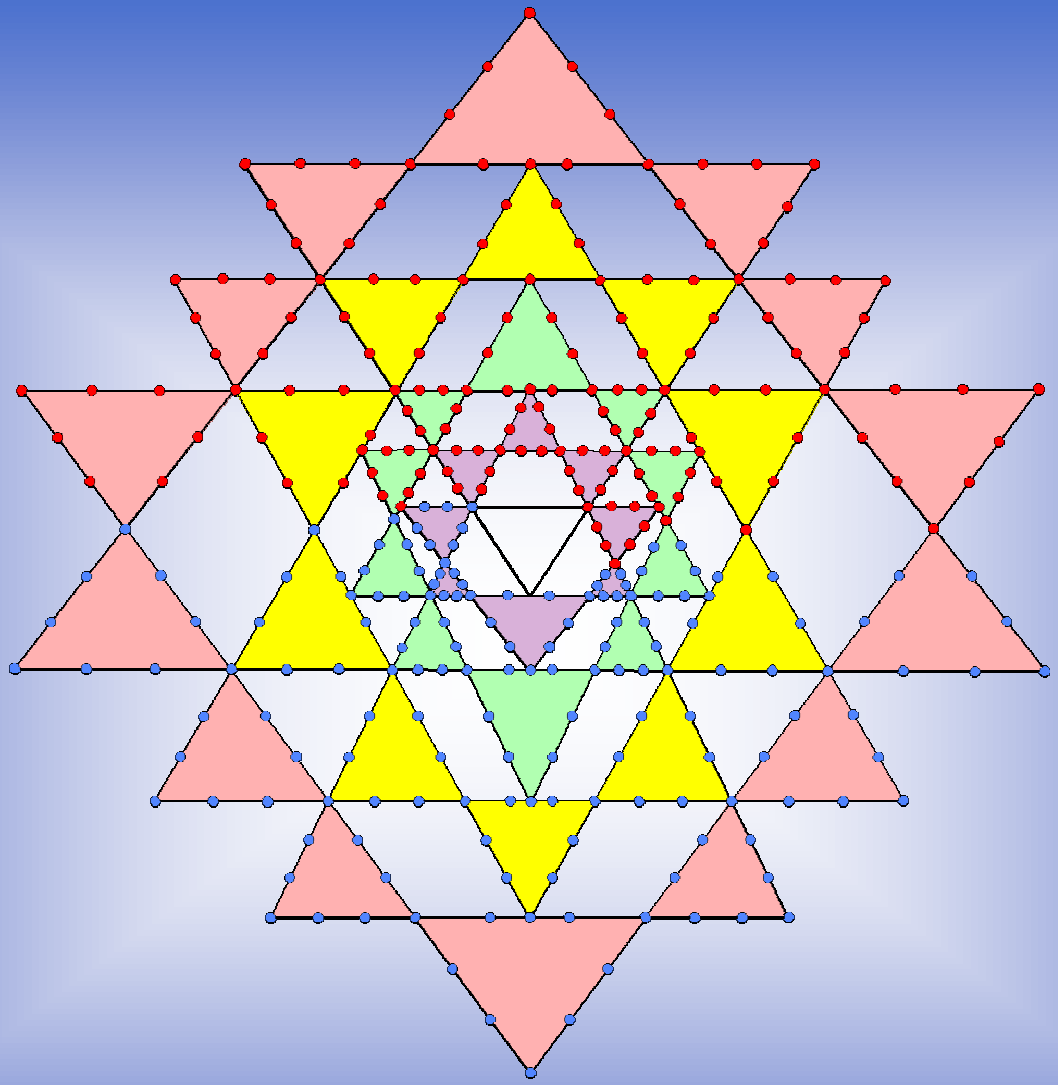
Figure 17

168 yods lie on 42 edges of 14 triangles in the 4th layer.

168 yods lie on 84 edges of 28 triangles in the 1st, 2nd & 3rd layers.

Figure 18

336 yods lie on the edges of the 42 triangles of the 3-dimensional Sri Yantra. 168 yods lie on the edges of the 21 triangles in one half and 168 yods lie on the edges of the 21 triangles in the other half.



168 (●)

168 (●)

Figure 18

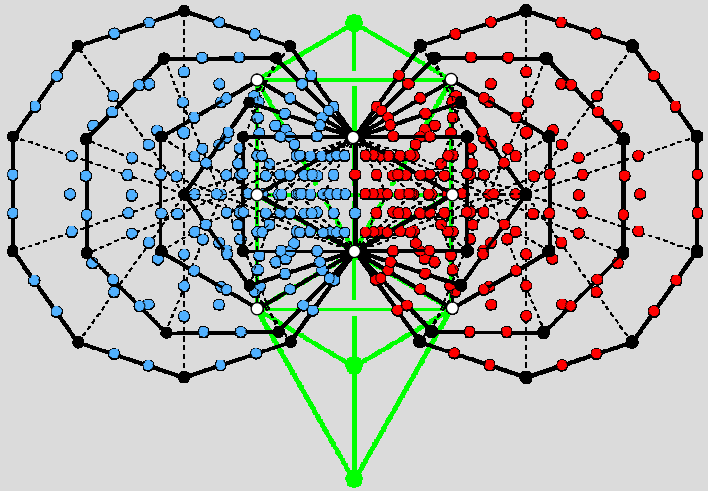
The superstring structural parameter 336 is the number of yods on the 126 edges of the 42 triangles of the 3-d Sri Yantra.

Figure 19

The first (6+6) enfolded polygons of the inner Tree of Life have 42 corners that do not coincide with Sephiroth of the outer Tree of Life. The eight corners that *do* coincide are shown as white yods (although not a Sephirah, Daath can be formally treated here as a Sephirah because it is Yesod of the next higher, overlapping Tree of Life). Each set of six polygons have 168 yods (red or blue) that are not corners. Compare this with the 42 centres of triangles and the 168 yods on the edges of each half of the Sri Yantra. The correspondence is complete if we include the seven hexagonal yods of the central triangle (corresponding to the seven Sephiroth whose positions coincide with corners) and the bindu, which corresponds to Daath.

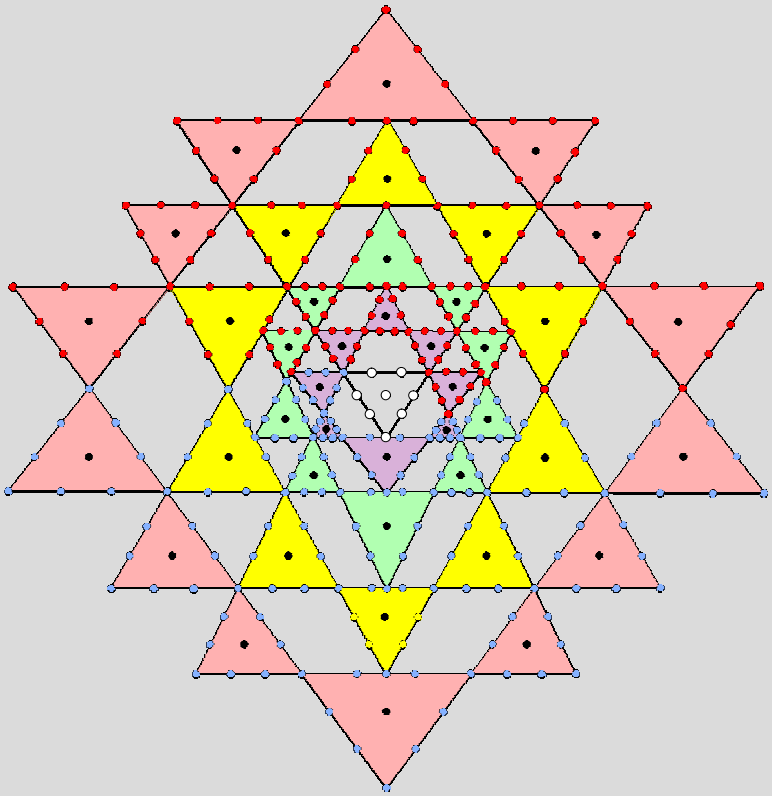
Figure 19

8 (○) yods are shared with the Tree of Life



168 (●) 8 (○) 42 (●) 168 (●)

≡



168 (●) 8 (○) 42 (●) 168 (●)

Correspondence between the inner Tree of Life and the 3-d Sri Yantra.

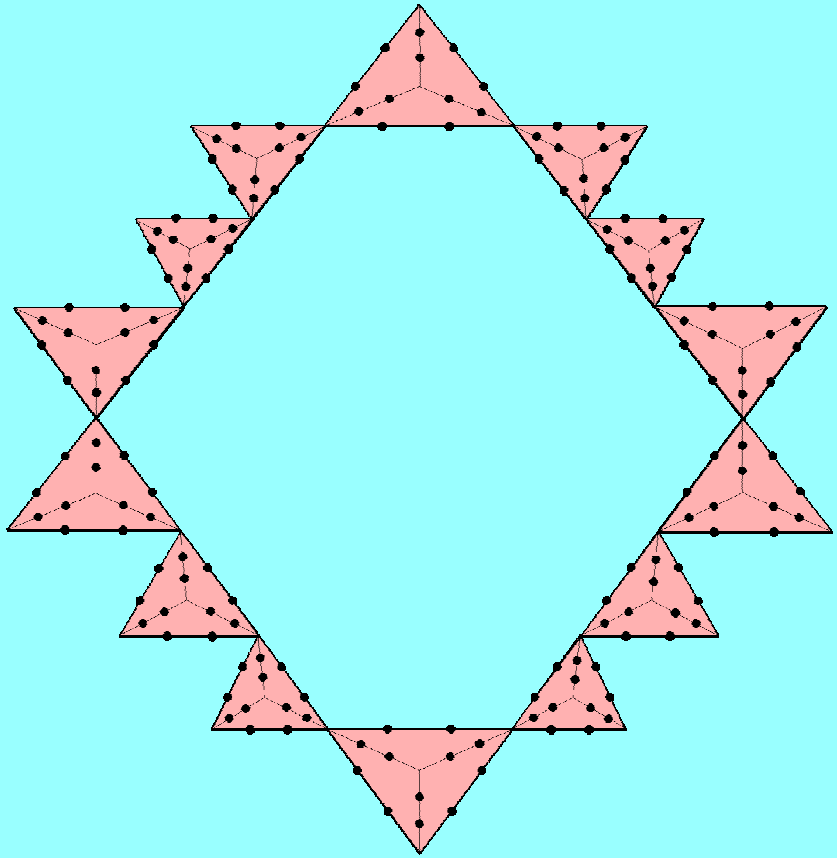
Figure 20

When the triangles of the Sri Yantra are each constructed from three tetractyses, its outermost 14 triangles have 168 hexagonal yods on the edges of their 42 tetractyses.

Figure 20

14×12

168 (●) =

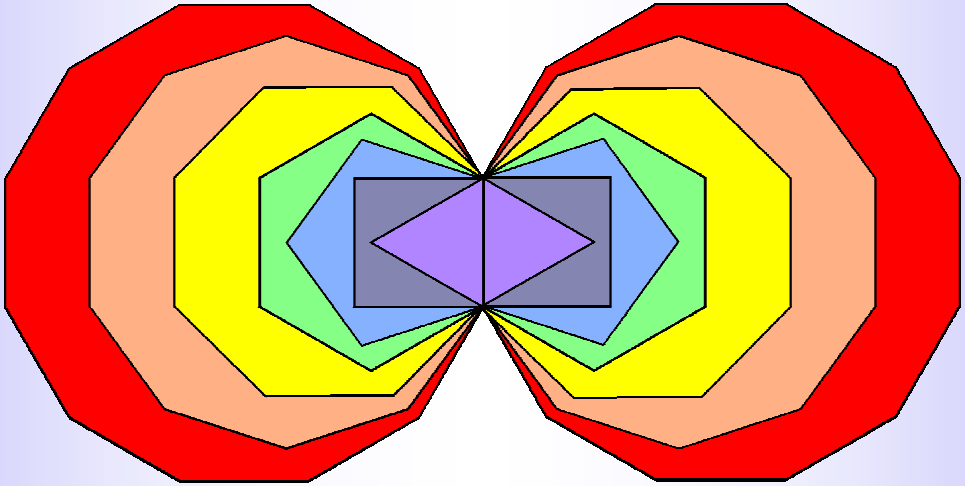


The 14 outermost triangles of the Sri Yantra embody the superstring structural parameter 168 as the number of hexagonal yods on the edges of their 42 tetractyses.

Figure 21

The dodecagon is the seventh and last of the regular polygons in the two sets that constitute the inner Tree of Life.

Figure 21



The inner Tree of Life

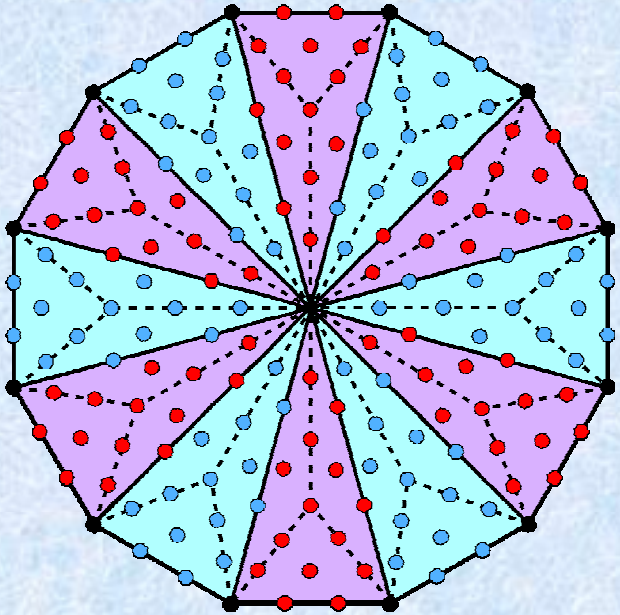
Figure 22

The dodecagon requires 168 extra yods when its sectors are divided into three tetractyses. 14 yods are added per sector. Therefore, six sectors have 84 extra yods. As the dodecagon is two hexagons rotated through 30°, the number 168 embodied in the dodecagon divides naturally into 84 and 84. This is the counterpart of the 84 vertices of the 42 triangles of the Sri Yantra and the 84 hexagonal yods on the edges of its outermost 14 triangles.

Figure 22

12×14 = 168

84 (●) + 84 (○) = 168 =



168 extra yods are needed to construct each of the sectors of the dodecagon from three tetractyses.