#### **ARTICLE 60**

# Some Properties of the (7+7) Type C Polygons of the Inner Tree of Life

by

#### **Stephen M. Phillips**

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

Website: http://smphillips.mysite.com

#### Abstract

According to the Tetrad Principle, the seven regular polygons making up the inner Tree of Life should acquire a special status when they are Type C because this variety of polygon is the fourth, starting from a bare polygon. This article analyses each Type C polygon and the sets of seven Type C polygons when separate and when enfolded. The Type C triangles embody the superstring structural parameter 168 and the dimension 248 of E<sub>8</sub>, the rank-8, exceptional Lie group describing the symmetry of the forces of one of the five types of superstrings. The two Type C squares embody the superstring structural parameter 336. The Type C pentagon embodies both the number 137 determining the fine-structure constant and the number of bones in the adult human skeleton. The two Type C hexagons embody the dimension 496 of  $E_{8} \times E_{8}$ . A single Type C octagon embodies the number 336. The two Type C decagons embody the superstring structural parameter 840. The Type C dodecagon embodies the number 336. The (7+7) Type C polygons separated by the root edge have 496 corners of triangles. The superstring structural parameter 1680 is the number of hexagonal yods inside the seven separate Type C polygons. The Godnames ADONAI, YAHWEH, ELOHIM & ELOHIM SABAOTH prescribe the inner Tree of Life when its polygons are Type C. Representing by a Tree of Life each of the five revolutions made by each of the 10 whorls of the UPA/subquark superstring, the triangles making up the first (6+6) Type C polygons enfolded in 50 Trees have 16800 corners that correspond to the 16800 turns in the 10 helical whorls. The inner form of a single Tree of Life embodies the number 1680 as the number of corners & sides of triangles outside the root edge that are not shared with its outer form and which are not pure corners of polygons.

	SEPHIRAH	GODNAME	ARCHANGEL	ORDER OF ANGELS	MUNDANE CHAKRA
1	Kether (Crown) 620	EHYEH (I am) 21	Metatron (Angel of the Presence) 314	Chaioth ha Qadesh (Holy Living Creatures) 833	Rashith ha Gilgalim First Swirlings. (Primum Mobile) 636
2	Chokmah (Wisdom) 73	YAHWEH, YAH (The Lord) 26, 15	Raziel (Herald of the Deity) 248	Auphanim (Wheels) 187	Masloth (The Sphere of the Zodiac) 140
3	Binah (Understanding) 67	ELOHIM (God in multiplicity) 50	Tzaphkiel (Contemplation of God) 311	Aralim (Thrones) 282	Shabathai Rest. (Saturn) 317
	Daath (Knowledge) 474				
4	Chesed (Mercy) 72	EL (God) 31	Tzadkiel (Benevolence of God) 62	Chasmalim (Shining Ones) 428	Tzadekh Righteousness. (Jupiter) 194
5	Geburah (Severity) 216	ELOHA (The Almighty) 36	Samael (Severity of God) 131	Seraphim (Fiery Serpents) 630	Madim Vehement Strength. (Mars) 95
6	Tiphareth (Beauty) 1081	YAHWEH ELOHIM (God the Creator) 76	Michael (Like unto God) 101	Malachim (Kings) 140	Shemesh The Solar Light. (Sun) 640
7	Netzach (Victory) 148	YAHWEH SABAOTH (Lord of Hosts) 129	Haniel (Grace of God) 97	Tarshishim or Elohim 1260	Nogah Glittering Splendour. (Venus) 64
8	Hod (Glory) 15	ELOHIM SABAOTH (God of Hosts) 153	Raphael (Divine Physician) 311	Beni Elohim (Sons of God) 112	Kokab The Stellar Light. (Mercury) 48
9	Yesod (Foundation) 80	SHADDAI EL CHAI (Almighty Living God) 49, 363	Gabriel (Strong Man of God) 246	Cherubim (The Strong) 272	Levanah The Lunar Flame. (Moon) 87
10	Malkuth (Kingdom) 496	ADONAI MELEKH (The Lord and King) 65, 155	Sandalphon (Manifest Messiah) 280	Ashim (Souls of Fire) 351	Cholem Yesodoth The Breaker of the Foundations. The Elements. (Earth) 168

## Table 1. Gematria number values of the ten Sephiroth in the four Worlds.

(All numbers in this table that the article refers to are written in **boldface**).

The Sephiroth exist in the four Worlds of Atziluth, Beriah, Yetzirah and Assiyah. Corresponding to them are the Godnames, Archangels, Order of Angels and Mundane Chakras (their physical manifestation, traditionally symbolised by celestial bodies). This table gives their number values obtained by the ancient practice of gematria, wherein a number is assigned to each letter of the alphabet, thereby giving to a word a number value that is the sum of the numbers of its letters.

# 1. Properties of the seven separate Type C polygons

A polygon is Type C when its sectors are Type B triangles with seven corners & **15** sides of nine triangles, i.e., **31** geometrical elements, where **15** is the number value of YAH, the Godname of Chokmah, and **31** is the number value of EL, the Godname of Chesed (Fig. 1). This means that each sector contributes 28



Figure 1. Type C polygon

geometrical elements (5 corners, 14 sides & 9 triangles). The numbers of geometrical elements in a Type C n-gon (note that it need not be regular) are:

Number of corners  $\equiv C = 5n + 1$ Number of sides  $\equiv S = 14n$ Number of triangles  $\equiv T = 9n$ Total = 28n + 1

("+1" denotes the centre of the polygon). The number of hexagonal yods  $\equiv$  H = 2S + T = 37n. The number of corners of the 9n tetractyses = C = 5n + 1. The number of yods  $\equiv$  Y = C + H = 42n + 1. The number of yods on sides of tetractyses  $\equiv$  B = C + 2S = 33n + 1. Table 2 and Table 3 below tabulate the geometrical and yod compositions of the seven separate Type C polygons that make up the inner form of the Tree of Life ("+7" refers to their seven centres):

Table 2. Number of geometrical elements in the 7	separate Type C polygons.
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	Triangle (n=3)	Square (n=4)	Pentagon (n=5)	Hexagon (n=6)	Octagon (n=8)	Decagon (n=10)	Dodecagon (n=12)	Total
Corners	16= <b>15</b> +1	<b>21</b> =20+1	<b>26</b> =25+1	<b>31=</b> 30+1	41=40+1	51= <b>50</b> +1	61=60+1	247=240+7
Sides	42	56	70	84	112	140	168	672
Triangles	27	36	45	54	72	90	108	432
Total	85=84+1	113= <b>112</b> +1	141= <b>140</b> +1	169= <b>168</b> +1	225=224+1	281= <b>280</b> +1	337=336+1	1351 = 1344+7

Table 3. Number of ye	ods in the 7	separate	Type C polyge	ons.
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	Triangle (n=3)	Square (n=4)	Pentagon (n=5)	Hexagon (n=6)	Octagon (n=8)	Decagon (n=10)	Dodecagon (n=12)	Total
С	16= <b>15</b> +1	<b>21</b> =20+1	<b>26</b> =25+1	<b>31</b> =30+1	41=40+1	51= <b>50</b> +1	61=60+1	247=240+7
Н	111	148	185	222	296	370	444	1776
В	100=99+1	133=132+1	166=165+1	199=198+1	265=264+1	331=330+1	397=396+1	1591=1584+7
Υ	127=126+1	169= <b>168</b> +1	211=210+1	253=252+1	337=336+1	421=420+1	505=504+1	2023=2016+7

#### Comments

**Triangle** 

The Type C triangle has 85 geometrical elements (84 surrounding its centre), where

$$85 = 4^0 + 4^1 + 4^2 + 4^3$$

and

$$84 = 1^2 + 3^2 + 5^2 + 7^2.$$

It has **15** corners and 69 sides & triangles surrounding its centre (Fig. 2). Compare this with the 2nd-order tetractys (Fig. 3). It has 85 yods consisting of **15** corners and 69 hexagonal yods that surround its centre:



Figure 2. The equivalence of the Type C triangle & 2nd-order tetractys

Figure 3. The Type C triangle contains 127 yods.

As the first stage in the sequence of development of the seven regular polygons making up the inner Tree of Life, the triangle embodies the pattern of this Pythagorean representation of holistic systems. The two separate Type C triangles have **168** geometrical elements surrounding their centres (Fig. 4). They embody the number value **168** of *Cholem Yesodoth*, the Mundane Chakra of Malkuth. This is a structural parameter of the subquark superstring, being the number of turns of each half-revolution of a whorl of the



Figure 4. The **168** geometrical elements (84 sides & 84 corners & triangles) surrounding the centres of two separate Type C triangles correspond to the **168** turns in a half-revolution of a whorl of the UPA/subquark superstring.

UPA. The Type C triangle has 127 yods, where 127 is the **31**st prime number and **31** is the number of EL, the Godname of Chesed. The two joined Type C triangles have **246** yods outside their shared side, where **246** is the number value of *Gabriel*, the Archangel of Yesod. **248** yods surround their centres, where **248** is both the number value of *Raziel*, the Archangel of Chokmah, and the dimension of  $E_8$ , the rank-8 exceptional Lie group. Alternatively, they have **248** yods that are intrinsic to them in the sense that they are unshared with the outer Tree of Life, their left-hand and right-hand corners coinciding with, respectively Geburah and Chesed (Fig. 5). Embodied in the Type C triangle are both the structural and



Figure 5. The **248** yods surrounding the centres of the two joined Type C triangles symbolize the **248** roots of  $E_8$ , the rank-8 exceptional Lie group describing the symmetry of  $E_8 \times E_8$  heterotic superstring forces.

the dynamical parameters of a superstring!

## Square

The two joined Type C squares have 221 geometrical elements surrounding their centres. This is the

Circles are yods behind other yods



Figure 6. The 1-tree contains the same number of hexagonal yods as are in the 7 enfolded Type A polygons outside their shared root edge.



221 hexagonal yods

number of hexagonal yods in the 1-tree and in the seven *enfolded* Type A polygons outside their shared root edge (Fig. 6).

Surrounding the centre of each separate Type C square are **168** yods (Fig. 7). Whereas both triangles are



Figure 7. 168 yods surround the centre of the Type C square.

needed to embody this superstring structural parameter, the square on its own achieves this.

## Pentagon

A Type A pentagon has **31** yods (Fig. 8). It is a representation of EL ("God"), the Godname of Chesed with number value **31**. The yod at its centre A denotes the letter aleph  $\aleph$  (E) with gematria value 1 and the 30



yods surrounding it express the value 30 of the letter lamed  $\stackrel{>}{>}$  (L). The Type B pentagon has **76** yods (Fig. 9). This is the number value of YAHWEH ELOHIM, the Godname of Tiphareth. The number **26** of YAHWEH is the number of red yods lining the sides of the five basic sectors of the Type C pentagon. The number **50** of ELOHIM is the number of black yods. These embodiments of two well-known Godnames are described here to set the stage for the later discussion of how the pentagon embodies the number of bones in the adult human skeleton and the number 137 that determines the fine-structure constant at the heart of quantum electrodynamics, the highly successful theory of electromagnetic interactions.

The Type C pentagon (Fig. 10) has **26** corners & 70 sides of 45 triangles, i.e., 141 geometrical elements. Two separate Type C pentagons have **282** geometrical elements, of which **50** are corners surrounding



The 70 yods of the Tree of Life

The 70 sides of the 45 triangles in the Type C pentagon



their centres. **282** is the number value of *Aralim*, the Order of Angels assigned to Binah, whose Godname ELOHIM has the number value **50**. The number 70 is a parameter of holistic systems, being the number of yods in the Tree of Life when its 16 triangles are tetractyses. The five black sides of the pentagon and the five black sides of its sectors correspond to the (5+5) Sephirothic corners of these triangles. The 60 remaining red sides of the 45 triangles correspond to the 60 hexagonal yods in the Tree of Life constructed from tetractyses. This 10:60 pattern expresses the difference between Malkuth and the six higher Sephiroth of Construction in the outer Tree of Life. Its counterpart in its inner form is the dodecagon and the six regular polygons that precede it.

140 geometrical elements in the Type C pentagon surround its centre, where 140 is the number of *Masloth*, the Mundane Chakra of Chokmah, whose Godname YAHWEH has the number 26. 137



 $\begin{array}{ccc} 24 \text{ corners} & 24 \text{ corners} \\ 69 \text{ sides} & 69 \text{ sides} \\ \underline{45} \text{ triangles} & \underline{45} \text{ triangles} \\ Total = 138 & Total = 138 \end{array}$ 

Figure 11. (137+137) geometrical elements outside the root edge surround the centres of two joined Type C pentagons.

geometrical elements outside the root edge surround its centre (Fig. 11). We see that the geometrical composition of the Type C pentagon embodies the number 137 determining the finestructure constant  $\alpha = e^2/\hbar c \approx 1/137$ well-known to physicists, whilst the number of bones in the adult human skeleton is embodied in its yods other than its corners (see here).

ELOHIM, the Godname of Binah, prescribes the pair of joined Type C pentagons because its number value **50** is the number of corners of their 90 triangles, whilst YAHWEH, the Godname of Chokmah with number value **26**, prescribes the **26** corners of the 45

triangles in each pentagon. The two joined Type C pentagons have 229 lines & triangles, where 229 is the **50**th prime number. ELOHIM prescribes both the number of corners of the triangles in the two pentagons and the number of their sides & triangles!

The pair of joined Type C pentagons has 189 corners & sides, i.e., **187** corners & sides surround their two centres. **187** is the number of *Auphanim*, the Order of Angels assigned to Chokmah. **95** corners & sides in a Type C pentagon surround its centre, where **95** is the number value of *Madim*, the Mundane Chakra of Geburah. A corner of each pentagon coincides with the centre of the decagon when it is part of the inner Tree of Life. This means that surrounding the centre of each pentagon are 136 geometrical elements outside the shared root edge that are intrinsic to this polygon in the sense that they are not part of any other polygon in the inner Tree of Life. The pair of pentagons has **272** such geometrical elements, where **272** is the number value of *Cherubim*, the Order of Angels assigned to Yesod.

The Type C pentagon has 211 yods, that is, 210 (=21×10) yods surround its centre. 21 is the number



The 16th-century philosopher Heinrich Agrippa drew a man over a pentagram inside a circle, implying a relationship to the Golden Ratio  $\Phi$ . (From Heinrich Cornelius Agrippa's *Libri tres de occulta philosophia*).



Figure 12. The 206 yods in the Type C pentagon other than its corners symbolize the 206 bones in the human skeleton.

value of EHYEH, the Godname of Kether. It contains 206 yods other than its five defining corners (Fig. 12). In other words, given a pentagon, 206 more yods in 45 tetractyses (comprising **21** corners and 185 hexagonal yods) are needed to transform it into a Type C pentagon. This is how the pentagon, whose diagonal width a and side b are in the proportion of the Golden Ratio:  $a/b = \Phi = (1+\sqrt{5})/2 = 1.618...$ , embodies the number of bones in the adult human skeleton. Many artists through the centuries have believed that this famous ratio determines the relative proportions of parts of the ideal human body. Whatever the truth of this controversial claim, here is an indisputable, exact mathematical connection between its bone composition and the Golden Proportion  $\Phi$ . Article 32 & Article 33 explain how the outer & inner Trees of Life embody the human axial and appendicular skeletons (see also Human skeleton). Article 36 shows how the disdyakis triacontahedron — the polyhedral form of the inner Tree of Life — embodies 206 yods symbolizing the 206 bones (see also here).

#### Hexagon

**168** geometrical elements surround the centre of the Type C hexagon. They comprise 84 corners & triangles and 84 sides. Its geometrical composition displays the 84:84 division of this number that is characteristic of holistic systems. The Type C hexagon contains 222 hexagonal yods. This is the number



Figure 13. Surrounding the centres of the two joined Type C hexagons are **496** yods outside their shared side. They denote the **496** roots of  $E_8 \times E_8'$ , one of the two types of superstring symmetry groups that are free of quantum anomalies.

of hexagonal yods associated with each set of seven enfolded Type A polygons. **248** yods outside the shared root edge surround the centre of each hexagon (Fig. 13). This is the dimension of  $E_8$ , the rank-8, exceptional Lie group. The two joined Type C hexagons embody the dimension **496** of  $E_8 \times E_8'$ . This is highly significant in view of the Tetrad Principle formulated in Article 1, for the Type C hexagon is the fourth in the series of this polygon, which is the fourth type of regular polygon:

Triangle  $\rightarrow$  square  $\rightarrow$  pentagon  $\rightarrow$  hexagon  $\rightarrow$  heptagon  $\rightarrow$ ... Hexagon  $\rightarrow$  Type A hexagon  $\rightarrow$  Type B hexagon  $\rightarrow$  Type C hexagon  $\rightarrow$  Type D hexagon  $\rightarrow$ ....

## Octagon

The octagon has 225 geometrical elements, so that the two joined octagons have 444 geometrical elements outside their shared side, 222 in each polygon. This is the number of hexagonal yods in the inner Tree of Life, 222 hexagonal yods being associated with each set of seven enfolded polygons (Fig.



Figure 14. The (7+7) enfolded Type A polygons have 444 hexagonal yods.

14). 336 yods surround the centre of the octagon (Fig. 15). This is the number of turns in one revolution of



Figure 15. 336 yods (**168** yods & their diametric opposites) surround the centre of the Type C octagon.

each whorl of the UPA. The octagon embodies this major structural parameter of the subquark superstring. Surrounding its centre are 264 yods lining the sides of its **72** tetractyses. This is the yod



Figure 16. The 47 tetractyses making up the seven enfolded polygons of the inner Tree of Life have 264 yods.

population of the seven enfolded Type A polygons (Fig. 16).

## <u>Decagon</u>

**280** geometrical elements comprising **50** corners, **140** sides and 90 triangles surround the centre of the decagon. 840 *yods* surround the centres of two separate decagons. This is the number of turns in an outer or inner half of a whorl of the UPA.

#### <u>Dodecagon</u>

336 geometrical elements (**168** corners & triangles, **168** sides) surround the centre of a dodecagon. This is the number of yods other than corners in two joined Type B dodecagons (Fig. 17). The number **168** factorises in the geometrical case as 12×14 — exactly as it does for the yods in each Type B dodecagon,



Figure 17. Two joined Type B dodecagons have 336 yods other than their corners.

each sector contributing 14 yods other than corners. The holistic division 336 = 168 + 168 arises because the number of corners & triangles in any Type C polygon is equal to the number of sides (as is the case for Type A & Type B polygons). The dodecagon has 444 hexagonal yods — exactly the same as for the



inner Tree of Life. 504 yods surround its centre (Fig. 18). They comprise **168** black yods (the number of yods in a Type B dodecagon other than the corners of its sectors) and (2×168=336) red yods. The superstring/UPA significance of this is discussed here under the heading "TYPE C DODECAGON", here and here. The way in which the heptagon and outer Tree of Life embody the number 504 is discussed here. The fact that the dodecagon is the first single polygon to embody superstring structural parameters in terms of both its geometrical and yod compositions (the hexagon does the same but only as two separate polygons) confirms its unique status as the polygonal version of the outer Tree of Life. 500 (=**50**×10) yods outside the root edge surround its centre. This is how ELOHIM, the Godname of Binah



with number **50**, prescribes the yods that construct the dodecagon. Surrounding the centres of the two joined dodecagons (the tenth regular polygon) are  $(1000=10^3)$  yods outside the root edge. This illustrates the power of the Decad.

## Properties of the seven separate polygons

240 corners of 432 triangles with 672 sides surround the centres of the seven polygons. The number 240 is a parameter of holistic systems (Fig. 19). For example, when the 19 triangles in the 1-tree are Type A, it contains 240 yods other than their 11 corners, whilst the seven separate Type A triangles contain 240 hexagonal yods. There are (240+240=480) corners of 864 triangles surrounding the 14 centres of the (7+7) Type C polygons, i.e., 494 corners in total. If we imagine the two sets of seven

polygons separated by a straight line representing the root edge, whose endpoints count as corners, there are **496** corners present. Associated with each set are **248** corners (240 corners of triangles, 7 centres & one endpoint). This **248:248** pattern represents the (**248+248=496**) roots of  $E_8 \times E_8'$ , one of the two symmetry groups of heterotic superstrings.

- The seven separate polygons have 672 sides and 672 corners & triangles surround their centres. This number was encountered in the discussion here of the first four Platonic solids when their faces and interiors are constructed from tetractyses. It was found that they contain 672 yods, making an average of **168** yods per Platonic solid.
- 1344 geometrical elements surround the centres of the seven polygons. This number is embodied in the (7+7) enfolded Type B polygons in the following way: when the outer and inner Trees of Life are superposed, the two side pillars lie in the plane of the polygons, coinciding with the vertical axes of the two hexagons. Each axis contains seven yods shared with a hexagon. One of these is its centre, leaving six other centres. Each set of seven enfolded polygons contain (7+6=13) yods that are either shared yods or centres. Both sets of enfolded polygons have 1370 yods, of which 26 are such yods, leaving 1344 yods intrinsic to the polygons that surround their centres.
- A Type C n-gon contains 37n hexagonal yods. 2n hexagonal yods line its n sides, inside which are 35n hexagonal yods. The number of hexagonal yods inside the seven separate, Type C polygons = ∑35n = 35∑n = 35×48 = 1680. This is the number of turns in each helical whorl of the UPA. Embodied, therefore, inside the seven separate polygons is this major structural parameter of the subquark superstring. 840 hexagonal yods are inside the dodecagon and the first three polygons (triangles, square & pentagon) and 840 hexagonal yods are inside the next three polygons (hexagon, octagon & decagon). The characteristic 24:24 division of the holistic parameter 48 manifests in the inner Tree of Life as the 840 hexagonal yods inside each of these sets of polygons with 24 corners. This manifests in the subquark superstring as the 840 turns in the 2½ revolutions of the outer half of each whorl and the 840 turns in the 2½ revolutions of its inner half.

# 2. Properties of the seven enfolded polygons

When the seven regular polygons of the inner Tree of Life are enfolded in one another, a corner of the triangle coincides with the centre of the hexagon and a corner of the pentagon coincides with the centre

	Triangle (n=3)	Square (n=4)	Pentagon (n=5)	Hexagon (n=6)	Octagon (n=8)	Decagon (n=10)	Dodecagon (n=12)	Total
Corners	14	19	24	24	39	48	59	227
Sides	41	55	69	69	111	139	167	651
Triangles	27	36	45	45	72	90	108	423
Total	82	110	138	138	222	277	334	1301

Table 4. Number of geometrical elements outside the root edge in the 7 enfolded Type C polygons.

Table 5. Number of yods outside the root edge in the 7 enfolded Type C polygons

	Triangle (n=3)	Square (n=4)	Pentagon (n=5)	Hexagon (n=6)	Octagon (n=8)	Decagon (n=10)	Dodecagon (n=12)	Total
С	14	19	24	24	39	48	59	227
Н	109	146	183	183	294	368	442	1725
В	96	129	162	162	261	326	393	1529
Υ	123	165	207	207	333	416	501	1952

of the decagon. All the **31** geometrical elements in the sector of the hexagon replaced by the triangle disappear, so that, instead of 169 geometrical elements (see table above). the hexagon is now left with five sectors containing (169–**31**=138) elements. 46 yods also disappear from this sector because it is a Type A triangle with 46 yods, so that, instead of 253 yods, the hexagon is left with (252–46=207) yods.

Tabulated above in Tables 4 & 5 are the geometrical and yod compositions of the seven enfolded Type C polygons outside their shared root edge.

#### Comments

- The seven enfolded polygons have 423 triangles with 227 corners outside the root edge. 227 is the 49th prime number, showing how EL ChAI, the Godname of Yesod with number value 49, prescribes the skeletal shape of the seven enfolded Type C polygons. Including the two endpoints of the shared root edge, there are 229 corners. The Godname ELOHIM with number value 50 prescribes the number of corners because 229 is the 50th prime number. This is a spectacular illustration of the power of Godnames at work in mathematically determining the geometry of the inner Tree of Life.
- The seven enfolded polygons have 650 (=65×10) corners & triangles and 651 sides outside the root edge. This shows how ADONAI, the Godname of Malkuth with number value 65, prescribes the seven enfolded polygons. As the topmost corner of the hexagon coincides with the lowest corner of the hexagon belonging to the seven polygons enfolded in the next higher, overlapping Tree of Life, 1300 geometrical elements are intrinsic to the set of seven polygons enfolded in adjacent Trees of Life, where

$$1^{4}$$

$$2^{4} 2^{4}$$

$$1300 = 1^{5} + 2^{5} + 3^{5} + 4^{5} = 3^{4} 3^{4} 3^{4}$$

$$4^{4} 4^{4} 4^{4} 4^{4}$$

This means that 2600 geometrical elements are intrinsic to both sets of seven enfolded polygons, where

is the sum of the first **50** odd integers after 1. This shows how both ELOHIM and YAHWEH with number value **26** prescribes how many intrinsic geometrical elements are needed to construct the (7+7) enfolded polygons, starting with the root edge. Such beautiful harmony between number and geometry is powerful evidence of the archetypal status of this sacred geometry.

- There are 1529 yods outside the root edge lining the 423 tetractyses in the seven enfolded polygons. Hence (2×1529 + 4 = 3062) yods line the 846 tetractyses in the (7+7) enfolded polygons. The topmost corners of the two hexagons coincide with the lowest corners of the hexagons enfolded in the next higher Tree. This means that 3060 (=306×10) boundary yods are intrinsic to each set of 14 enfolded polygons. 1530 (=153×10) intrinsic, boundary yods are associated with each set. This shows how ELOHIM SABAOTH, the Godname of Hod with number value 153, prescribes the shape of the inner Tree of Life whose polygons are Type C.
- Outside the root edge are 227 corners of the seven enfolded polygons. The dodecagon has 59 such corners, so that the first six enfolded polygons have 168 such corners of 315 triangles. Both sets of the first six enfolded polygons, which have 50 corners, have (168+168=336) corners of 630 triangles outside the root edge, where 630 is the number value of *Seraphim*, the Order of Angels assigned to Geburah. ELOHIM, the Godname of Binah with number value 50, prescribes the superstring structural parameter 336, which is the number of turns in each of the 50 revolutions of the ten whorls of the UPA.



Figure 20. Inner Tree of Life representation with Type C polygons of the superstring structural parameters 840 & 1680.

Including the two endpoints of the root edge, the first (6+6) enfolded polygons have 338 corners. But the topmost corners of their two hexagons coincide with the lowest corners of the hexagons enfolded in the next higher Tree of Life. This means that 336 corners are intrinsic to each set of (6+6) enfolded polygons. The number of intrinsic corners of the first (6+6) polygons enfolded in n Trees of Life = 336n. The 120 such polygons enfolded in 10 overlapping Trees have 3360 intrinsic corners. This is the number of turns per revolution in all ten whorls of the UPA. Each revolution of a whorl can be represented by a Tree of Life, so that **50** overlapping Trees represent the **50** revolutions of the whorls of the UPA. The 600 polygons of the first six types enfolded in them have (336×**50**=16800) intrinsic corners. This is the number of turns in the ten whorls of the UPA. These Type C polygons provide a geometrical representation of the UPA/subquark superstring because the first six polygons constitute a holistic subset of the complete set of seven polygons, as has been illustrated many times elsewhere in this website. The fact that the first six polygons of the inner Tree of Life have **36** corners when separate and **26** corners when enfolded, both enfolded sets having **50** corners serves to illustrate how they are prescribed by the Godnames of the ten Sephiroth (see Article **8** for more details).

The 423 triangles in the seven enfolded polygons have 881 corners & sides. There are five corners & sides on the vertical axis of the hexagon that are shared with the outer Tree of Life as its Pillar of Mercy (they are coloured green in Figure 20). Similarly for the hexagon in the other set of polygons, five corners & sides coincide with the Pillar of Judgement. One of these corners is the centre of the hexagon, so that (881-5-6=870=87×10) intrinsic corners & sides surround the centres of the seven enfolded polygons. 87 is the number value of Levanah, the Mundane Chakra of Yesod. 878 corners & sides in each set of seven enfolded polygons are outside the root edge. Of these, five corners & sides are shared with the outer Tree, leaving 873 intrinsic corners & sides. Of these, five are centres of polygons that are not also corners and 28 corners are pure corners in the sense that none of them is also the centre of a polygon. Hence, the centres of each set of polygons are surrounded by (873-5-28=840) intrinsic corners & sides other than their corners. Outside the root edge of both sets of enfolded polygons are (840+840=1680) intrinsic corners & sides that are not pure corners of polygons. Alternatively, each set of seven enfolded polygons has (including the root edge) 881 corners & sides, of which 41 corners are corners of their 47 sectors, leaving 840 corners & sides, so that both separate sets have 1680 such corners & sides other than corners of sectors. Each set separately embodies the superstring structural parameter 840, whilst both sets of enfolded polygons embody the superstring structural parameter 1680. Ten overlapping Trees mapping the 10 whorls of the UPA have an inner form containing 16800 intrinsic corners & sides that are not pure corners of their (70+70) enfolded Type C polygons. This is the inner Tree of Life representation of the subguark state of the  $E_{\theta} \times E_{\theta}$ heterotic superstring.