Table 1. Table of gematria number values of the ten Sephiroth.

	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**	YAHVEH, 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**	YAHVEH ELOHIM (God the Creator) **76**	Michael (Like unto God) **101**	Malachim (Kings) **140**	Shemesh The Solar Light. (Sun) **640**
7	Netzach (Victory) **148**	YAHVEH 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 Yesodeth The Breaker of the Foundations. The Elements. (Earth) **168**

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). 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 a number value to a word that is the sum of the numbers associated with its letters.

All numbers from this table appearing in the text are written in **boldface**.

Mathematical meanings of the Names of God (Part 2)

$$\frac{\sum_{n=1}^{50} (n + ½)}{50}$$

i.e., **26** is the average of the first **50** odd half-integers after ½.

The identity:

$$\mathbf{26}\times 100 = \sum_{n=1}^{50} (2n + 1)$$

has a simple interpretation vis-à-vis CTOL, for Chokmah of the nth tree is the (2n+1)th SL on the Pillar of Mercy, Chokmah of the **50**th tree being the **101**st SL (notice that **101** is not only the **50**th odd integer after 1 but also the **26**th prime number. It is the number value of *Michael*, Archangel of Tiphareth). This means that the sum of the number of SLs on the Pillar of Mercy of **50** successive sections of the **50**-tree is the sum of the number weights **26** assigned to all the SLs on the Pillar of Mercy *below* Chokmah of the **50**th tree.

The Pythagoreans represented square numbers like 51^2 by square arrays of dots, the odd integers composing a square number being the numbers of dots in successive gnomons, or right angles sandwiched within each other. These odd integers are also the number of SLs on the Pillar of Mercy up to the Chokmah of successive trees. In other words, gnomons measure the heights of successive trees!

Using the identities

$$\mathbf{26}\times\mathbf{50} = 1^5 + 2^5 + 3^5 + 4^5$$

and

$$\mathbf{50} = \begin{array}{c} 4^2 \\ 3^2\ \ 3^2 \\ 2^2\ \ 2^2\ \ 2^2 \\ 1^2\ \ 1^2\ \ 1^2\ \ 1^2 \end{array}$$

26 has the representation

$$\mathbf{26} = \frac{\begin{array}{c} 1^4 \\ 2^4\ \ 2^4 \\ 3^4\ \ 3^4\ \ 3^4 \\ 4^4\ \ 4^4\ \ 4^4\ \ 4^4 \end{array}}{\begin{array}{c} 4^2 \\ 3^2\ \ 3^2 \\ 2^2\ \ 2^2\ \ 2^2 \\ 1^2\ \ 1^2\ \ 1^2\ \ 1^2 \end{array}}$$

in terms of the Pythagorean set of integers 1, 2, 3 & 4. Such symmetry of representation illustrates the intrinsic beauty of archetypal Godnames like YAHWEH, which expresses in the Judaic-Christian religions the creative nature of God.

Another representation of 2600 relating **26** to these integers is

$$2600 = \begin{array}{cccc} 2^2 & 4^2 & 6^2 & 8^2 \\ 24^2 & & & 10^2 \\ 22^2 & & & 12^2 \\ 20^2 & 18^2 & 16^2 & 14^2 \end{array} \qquad (24 = 1\times 2\times 3\times 4)$$

Therefore,

$$\mathbf{26} = \frac{2^2 + 4^2 + 6^2 + \ldots + 24^2}{1^3 + 2^3 + 3^3 + 4^3}$$

$$= \frac{\begin{array}{cccc} 2^2 & 4^2 & 6^2 & 8^2 \\ 24^2 & & & 10^2 \\ 22^2 & & & 12^2 \\ 20^2 & 18^2 & 16^2 & 14^2 \end{array}}{\begin{array}{ccccccc} 4 & & 4 & & 4 & & 4 \\ & 4 & & 4 & & 4 & \\ 4 & & 4 & & 4 & & 4 \\ & 4 & & 4 & & 4 & \\ 4 & & 4 & & 4 & & 4 \\ & 4 & & 4 & & 4 & \\ 4 & & 4 & & 4 & & 4 \end{array}}$$

A square divided into tetractyses represents the identity

$$\mathbf{26} = \frac{\sum_{n=1}^{25} 2n}{25}$$

as

$$\mathbf{26} = \frac{\begin{array}{ccccccc} 2 & & 4 & & 6 & & 8 \\ & \mathbf{26} & & 28 & & 30 & \\ 24 & & 42 & & 44 & & 10 \\ & 40 & & \mathbf{50} & & 32 & \\ 22 & & \mathbf{48} & & 46 & & 12 \\ & 38 & & \mathbf{36} & & 34 & \\ 20 & & 18 & & 16 & & 14 \end{array}}{\begin{array}{ccccccc} 1 & & 1 & & 1 & & 1 \\ & 1 & & 1 & & 1 & \\ 1 & & 1 & & 1 & & 1 \\ & 1 & & 1 & & 1 & \\ 1 & & 1 & & 1 & & 1 \\ & 1 & & 1 & & 1 & \\ 1 & & 1 & & 1 & & 1 \end{array}}$$

illustrating once again the primary roles played by the Tetrad (symbolized by the square) and by the tetractys in defining Godname numbers.

The **26**th triangular number

$$\mathbf{351} = 1 + 2 + 3 + ... + \mathbf{26}$$

Is the number value of *Ashim*, the order of Angels assigned to Malkuth. It is the sum of the **15**th triangular number:

$$120 = 1 + 2 + 3 + ... + \mathbf{15}$$

and the **21**st triangular number:

$$231 = 1 + 2 + 3 + ... + \mathbf{21},$$

15 being the fifth triangular number and **21** being the sixth triangular number. This serves to illustrate that Godname numbers define numbers that are mathematically related in ways whose simplicity cannot be dismissed as coincidental.

We saw earlier how the Godname number of Kether defines the number of trees (91) in CTOL as the sum of **21** odd integers. The number of YAH defines this number through the tetractys, for a **15**-sided regular polygon divided into tetractyses contains 91 yods. The **15**th prime number is

$$47 = \mathbf{21} + \mathbf{26}.$$

This is the number of SLs in the 7-tree mapping the solar physical plane, which has **15** SLs on each side pillar. More generally, counting from Chokmah of the nth tree, Chokmah of the (n+7)th tree is the **15**th SL on the Pillar of Mercy. YAH prescribes one of the most important symmetries of CTOL because every seventh tree corresponds to the *same* Sephirah of Construction, just as every seventh SL does.

15 is also what mathematicians call the 'partition number' corresponding to the number 7, this being defined as the number of ways in which 7 can be written as the sum of smaller or equal integers:

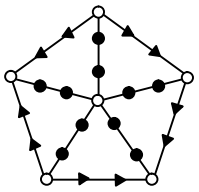
1.	7	9.	3 + 2 + 2
2.	6 + 1	10.	3 + 2 + 1 + 1
3.	5 + 2	11.	3 + 1 + 1 + 1 + 1
4.	5 + 1 + 1	12.	2 + 2 + 2 + 1
5.	4 + 3	13.	2 + 2 + 1 + 1 + 1
6.	4 + 2 + 1	14.	2 + 1 + 1 + 1 + 1 + 1
7.	4 + 1 + 1 + 1	15.	1 + 1 + 1 + 1 + 1 + 1 + 1

YAH therefore prescribes the *sevenfold* division of the planes of consciousness.

Just as the **15**th prime number defines the solar physical plane, so the **26**th prime number **101** defines the cosmic physical plane because it is the number of SLs on the central pillar of the **49**-tree mapping the **49** subplanes of the cosmic physical plane.

The Kethers of the nth and (n+13)th trees are separated by **26** SLs on the central Pillar of Equilibrium. The Lightning Flash descends in 52 vertical stages from the former to the latter. The SL on the central pillar next above Kether of the (n+13)th tree is two stages higher. Hence, another important symmetry of CTOL emerges, viz. **50** stages of descent of the Lightning Flash generate **26** SLs on the central pillar. Similarly, we find that **26** stages of descent of the Lightning Flash span **21** tree levels. These results illustrate how Godname numbers collude to define translational symmetries of CTOL.

The number of TETRAGRAMMATON is represented by the pentagon

26 =  = 10(●) + 5(▸) + 6(○) + 5(▸)
(YHVH = 10 + 5 + 6 + 5)

its letter values denoting the number of yods of each type shown. The fact that these yods lie on the boundaries of the five triangular sectors of the pentagon reflects the nature of YAHWEH, which expresses the 'range' of creation — the set of possibilities as opposed to actualities. We shall see later that completing each tetractys sector by adding a central yod generates the Godname number of Chesed, the Sephirah below Chokmah on the Pillar of Mercy, where these abstract potentials start to take shape.

HEBREW NAME: ChKMH.
MEANING: "Wisdom."
NUMBER: **73**.

Ch	K	M	H	
8	20	40	5	= **73**.

The **26**th SL on the central pillar of CTOL is the 74th SL, i.e., it emanates **73** SLs. Of these, 25 are on the central pillar and 24 are on each side pillar (making **48**). This differentiation is expressed by pairs of letter values:

73 = 8 + 20 + 40 + 5
48
25

The number of the Hebrew name of Chokmah is the number of SLs *emanating* from the **26**th SL on the central pillar of CTOL, where **26** is the Godname number of Chokmah.

Counting from the lowest SL on the Pillar of Mercy, the **73**rd SL in CTOL is Chokmah of the 12th tree. This is the **76**th SL from the bottom of CTOL. Up to this SL are **26** SLs on the central pillar and **50** SLs on the side pillars. The number of Chokmah thus specifies the section of CTOL whose structure reproduces the number value of YAHWEH ELOHIM, the Godname of Tiphareth:

76 = **26** + **50**.

73 is the **21**st prime number and the **36**th odd integer after 1. This illustrates once again the mathematical connection between the numbers of the names of the Sephiroth and their Godnames.

73 has the property that it is the arithmetic mean of the **97** numbers 25, **26**, 27... 121:

$$\mathbf{73} = \frac{25 + \mathbf{26} + 27 + \ldots + 121}{\mathbf{97}},$$

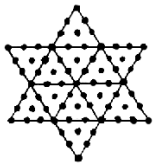
where **97** is the 25th prime number, the **49**th odd integer and the sum

$$\mathbf{97} = \mathbf{21} + \mathbf{26} + \mathbf{50}$$

of the Godname numbers of the Supernal Triad, as well as the number of *Haniel*, the Archangel of Netzach. Also:

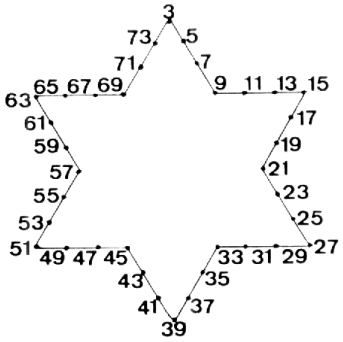
$$\mathbf{73} = \frac{1^5 + 2^5 + 3^5 + \ldots + 10^5}{1^3 + 2^3 + 3^3 + \ldots + 10^3},$$

showing how the number of Chokmah is defined by the Pythagorean Decad.



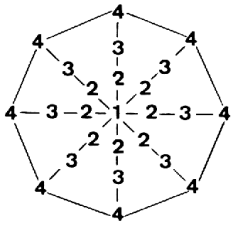
All integers can be represented as the sum of at most **73** *sixth* powers of integers (*The Penguin Dictionary of Curious and Interesting Numbers*, David Wells, Penguin Books, 1988, p. 130). This is also curious because **73** is the number of yods in a *six*-pointed Star of David converted into tetractyses. The Star of David defines the number value of the Hebrew name of the Demiurge, whose Godname, YAHWEH, is the creative power of God. In view of such a remarkable property, this ancient figure is an apt symbol for the Jewish religion, in which YAHWEH is particularly revered as a sacred name of God.

Being the **36**th odd integer after 1, **73** is the last of the odd integers that can be assigned to the **36** yods on the boundary of a Star of David when each of its sides is divided into four yods:



The number of Chokmah has an octagonal representation in terms of the integers 1, 2, 3 & 4:

73 =



Divided up into tetractyses, both a four-pointed star and a Maltese Cross (Fig. 9) are representations of the number of Chokmah. Its letter values denote the numbers of yods of four different types. The

73 =

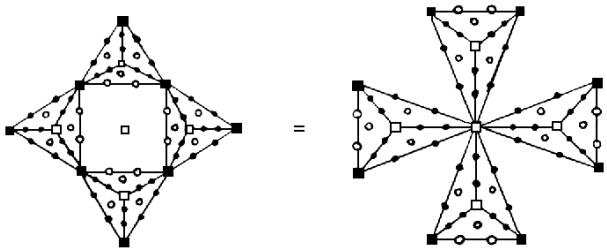


Figure 9

73 = Ch K M H = 8(■) + 20(○) + 40(●) + 5(□).
8 20 40 5

four-fold symmetry of these figures relates the Pythagorean Tetrad to the number value of Chokmah.

The Hebrew letters of EHYEH and YAHWEH each have eleven possible combinations that are of *four* types (Table 2). These generate a total of 24 (= 1×2×3×4) letters in each set of combinations.

Table 2

FORMULAE

1. Kether of nth tree is number S(n) = 6n + 5.
2. Kether of nth tree is tree level number D(n) = 3n + 4.
3. Kether of nth tree is (2n+3)th SL on central Pillar of Equilibrium.
4. nth SL on central pillar is number C(n) = 3n - 4 (n1, C(1) = 1).
5. Number of stages of descent of Lightning Flash in n-tree is N(n) = 4n + 3.

STRUCTURAL SYMMETRIES OF CTOL

(a) S(n+**21**) - S(n) = 126 = 16+42+47+**21**, i.e., every **21** trees have 126 SLs.

(b) D(n+**21**) - D(n) = 63 = 16+47 = 42+**21**, i.e., every **21** trees span 63 tree levels;

(c) N(n+**21**) - N(n) = 84 = 16+47+**21**, i.e., 84 stages of descent of Lightning Flash generate **21** trees;.

(d) C(n+**21**) - C(n) = 63 = 16+47 = 42+**21**, i.e., 63 SLs separate every **21** SLs on central pillar;

(e) **21** trees span 42 SLs on central pillar;

(f) C(**21**) - C(1) = 58 = 16+42, i.e., 58 SLs separate 1st and **21**st SLs on central pillar.

(a) S(n+**26**) - S(n) = 156 = **21**+52+57+**26**, i.e., every **26** trees span 156 SLs;

(b) D(n+**26**) - D(n) = 78 = **21**+57=52+**26**, i.e., every **26** trees span 78 tree levels;

(c) N(n+**26**) - N(n) = 104 = **21**+57+**26**, i.e., 104 stages of descent of Lightning Flash generate **26** trees;

(d) C(n+**26**) - C(n) = 78 = **21**+57 = 52+**26**, i.e., 78 SLs separate every **26** SLs on central pillar;

(e) **26** trees span 52 SLs on central pillar;

(f) C(**26**) - C(1) = **73** = **21**+52, i.e., **73** SLs separate 1st and **26**th SLs on central pillar.

Godname of Kether: AHIH = **21**
A = 1, H = 5, I = 10

1. A + H + I	=	16
2. AH + HI + AI + HH	=	42
3. AHI + HIH + AHH	=	47
4. AHIH	=	**21**
	TOTAL =	126

Godname of Chokmah: YHVH = **26**
Y = 10, H = 5, V = 6

1. Y + H + V	=	**21**.
2. YH + HV + YV + HH	=	52.
3. YHV + HVH + HYH	=	57.
4. YHVH	=	**26**.
	TOTAL =	156

The sum of these letter values is, respectively, 126 and 156. Our discussion of Kether pointed out that 126 is the number of SLs spanning every **21** trees of CTOL, where **21** is the number of EHYEH. Correspondingly, 156 is the number of SLs spanning every **26** trees, where **26** is the number of YAHWEH. Table 2 indicates how this and various other symmetries of CTOL can be expressed *always* in terms of the number values (or combinations thereof) of the four types of combinations of the letters of the Godnames of Kether and Chokmah. Their combinatorial properties are remarkable. Even if coincidence were plausible for one Godname, it is not credible for *both* Godnames, especially in view of the fact that similar types of symmetries are expressed by sums of corresponding types of combinations, e.g. in (c) both the numbers 84 and 104 are the sums of combinations (1), (3) and (4). These correlations show that SLs, tree levels and stages of descent of the Lightning Flash are genuine aspects of overlapping Trees of Life quantified by the potent mathematical archetypes embodied in Godnames.

The number 126 has the remarkable property that it is the arithmetic mean of the first **26** triangular numbers:

$$126 = \frac{\sum_{n=1}^{26} T_n,}{26}$$

where T_n (= ½n(n+1), the sum of the first n integers) is the nth triangular number. 126 is also the number of SLs on the two side pillars of the **31**-tree, the highest Kether of which is the **65**th SL on the central

pillar, where **31** is the number value of EL, Godname of Chesed and **65** is the number value of ADONAI, the Godname of Malkuth. In other words, if the number of TETRAGRAMMATON is assigned to each SL on the side pillars of the section of CTOL defined by the Godname number of Chesed (the Sephirah below Chokmah on the Pillar of Mercy of the Tree of Life), then the sum of these 126 numbers is equal to the sum of the first **26** triangular numbers. This demonstrates how the Godname numbers of Chokmah and Chesed are connected through CTOL.

The number 156 has the representation:

$$156 = \begin{matrix} 2 & 4 & 6 & 8 \\ 24 & & & 10 \\ 22 & & & 12 \\ 20 & 18 & 16 & 14 \end{matrix}$$

This should be compared with

$$2600 = \begin{matrix} 2^2 & 4^2 & 6^2 & 8^2 \\ 24^2 & & & 10^2 \\ 22^2 & & & 12^2 \\ 20^2 & 18^2 & 16^2 & 14^2 \end{matrix},$$

which was shown earlier to be the sum of the first **50** odd integers after 1, where **50** is the number value of ELOHIM. Such similarity is not accidental but evidence of the remarkable link between Godname numbers.

4. Binah

GODNAME: ALHIM
ENGLISH VERSION: ELOHIM
MEANING: lit. "Many Gods" or "Gods and Goddesses." In Kabbalistic terms: "I will be manifested in many."
NUMBER: **50**.

A L H I M
1 30 5 10 40→4 = **50**.

(Value of letter M is contracted).

Godnames have no single, specific interpretation because each is an abstract formula that prescribes that aspect of Adam Kadmon (Heavenly Man) corresponding to the Sephirah whose essence the Godname encapsulates. This is particularly obvious in the case of Chokmah and Binah that, as members of the Supernal Triad, embody powerful archetypes of great generality. The word 'ELOHIM' first occurs in the Old Testament in chapter 1 of *Genesis*, where it has been mistranslated as the catchall word 'God' by scholars oblivious of the subtle differentiations in the various Godnames mentioned in this Kabbalistic account of Creation. However, the ELOHIM referred to in *Genesis* denotes not the Godname of Binah but the Order of Angels corresponding to the Sephirah Netzach (see Table 1 at the beginning of Part 1 of this article). The longstanding Christian myth, born of mistranslation, that the Creator of the universe made the first male and female members of the human species should have been discredited long ago. In Binah, we encounter for the first time (albeit still at a very abstract level) the idea of pattern or design — the beginnings of relationship between the One and the Many. The amorphous, latent potentiality of Chokmah crystallizes into the archetype of Divine Form, prescribed by the Godname ELOHIM, which imposes general limits on the creative potential of YAHWEH. This imposition of restriction, initiated in Binah, developed in Geburah and finally formulated in Hod as concepts and laws of the Divine Mind, selects a unique universe out of all imaginable ones, viz. that which conforms to the nature of God so that all living things may evolve in order to realise their own divine nature and thus enable God to know Himself through His objective Creation. Each Godname serves as a mathematical prescription for the impregnation of the cosmic blueprint that is embodied in the Tree of Life and other sacred geometries. The arithmetic connections between their number values, which our analysis has begun to reveal, are of course not coincidental but, instead, originate in the very Tree of Life itself, whose design is prescribed by the Godnames in a way that is progressively more specific and concrete, the lower the position of a Sephirah in the Tree. Nor is it coincidental that symmetries of CTOL can be expressed concurrently by several Godname numbers. An example given earlier is that **50** stages of descent of the Lightning Flash generate **26** SLs on the central pillar of CTOL and **76** SLs in total, **50** of them being on the side pillars of CTOL. This reflects the composite nature of the Godname of Tiphareth: YAHWEH ELOHIM, whose number is **26** + **50** = **76**. An example of the power of ELOHIM to prescribe CTOL is the following: CTOL has 550 SLs, which number is the sum of **50** squares of the integers 1, 2, 3, 4 & 5:

$$550 = 10\times55 = 10(1^2 + 2^2 + 3^2 + 4^2 + 5^2).$$

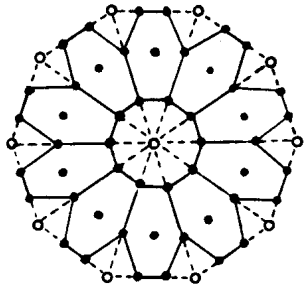
It does not matter that these square numbers are repeated ten times. What is essential is that holistic systems are defined by numbers whose representations are patterns of numbers quantified by Godname numbers. As another example, we saw earlier that YAHWEH defines the cosmic physical plane because the number of SLs on the central pillar of the **49**-tree is the **26**th prime number. This section of CTOL is also defined by ELOHIM because the **49**-tree has **50** Upper and Lower Faces.

In terms of the integers 1, 2, 3 & 4, the number of ELOHIM has the representations

$$\mathbf{50} = \begin{matrix} & & 4^2 & & \\ & 3^2 & & 3^2 & \\ 2^2 & & 2^2 & & 2^2 \\ 1^2 & & 1^2 & & 1^2 \quad 1^2 \end{matrix} = \begin{matrix} & & 4^1 & & \\ & 3^2 & & 3^2 & \\ 2^3 & & 2^3 & & 2^3 \\ 1^4 & & 1^4 & & 1^4 \quad 1^4. \end{matrix}$$

(Notice in the latter case that the powers increase monotonically in the opposite sense to the integers themselves).

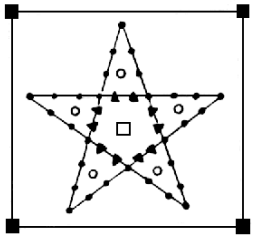
50 is the number of hexagonal yods in a decagon divided into tetractyses:

50 = 

(● = hexagonal yod)

We encountered this figure in the discussion of Kether. It explains why the number value of the Godname embodying archetypes of *form* is **50**. The decagon symbolizes the ten-fold nature of God and its division into ten tetractyses representing the ten Sephiroth generates **50** hexagonal yods that correspond to Sephiroth of Construction, that is to say, **50** bits of information are needed to delineate (or **50** degrees of freedom are needed to express objectively) whatever the mind of God conceives.

The pentagram defines the number of ELOHIM:

50 = 

ALHIM = 1 + 30 + 5 + 10 + 4 = 1(□) + 30(●) + 5(○) + 10(▲) + 4(■)

The value of each letter denotes the number of each type of yod.

50 is interesting as a number because it is the smallest integer that is the sum of two squares in two different ways (see p. 125 of *The Penguin Dictionary of Curious and Interesting Numbers*):

$$\mathbf{50} = 5^2 + 5^2 = 7^2 + 1^2.$$

Note in this context that the next smallest integer with this property is **65**, the Godname number of Malkuth:

$$\mathbf{65} = 8^2 + 1^2 = 7^2 + 4^2.$$

The 10 Sephiroth of the Tree of Life *drawn in 3-dimensional space* are the corners of 16 triangles with 22 edges (Paths), of which 12 are the edges of two tetrahedra. The number of geometrical elements assembled in the Tree is

$$10 + 16 + 22 + 2 = \mathbf{50}.$$

These elements: point, line, triangle and solid tetrahedron are what mathematicians call the first four 'simplexes.' The Godname number of Binah specifies the skeletal, 3-dimensional form of the Tree of Life by quantifying how many simplexes it contains. In this way, the archetype of form embodied in ELOHIM manifests geometrically in the outer form of the Tree of Life.

It was pointed out in the previous section that the archetypal number of YAHWEH has been discovered recently in theoretical particle physics. During the early 1970s, scientists found that so-called 'dual string models' of elementary particles make sense physically and satisfy the principles of quantum mechanics only if they allow space-time to have **26** dimensions. Likewise, the number of ELOHIM has been known to nuclear physicists as a 'magic number,' as we will now explain. A considerable body of experimental evidence strongly suggests that atomic nuclei possess a shell structure analogous to the way electrons in atoms are known to fill sets of orbitals forming a discrete series of shells. Certain nuclear properties show periodic variations with the atomic number Z (number of protons) and neutron number N (number of neutrons) of the atomic nucleus. These properties indicate that the numbers 2, 8, 20, **50**, 82 and 126 have special significance in nuclear structure. An atomic nucleus for which either Z or N is equal to one of these numbers is said to be a "magic-numbered nucleus." Magic numbers always denote atomic nuclei that are especially stable because their shells are completely filled with either protons or neutrons, a property which makes it difficult for them to acquire or lose these particles compared with nuclei whose shells are only partly filled. This means that magic-numbered elements have relatively large numbers of isotopes. For example, tin (Z = **50**) has *ten* stable isotopes — more than any other element. **50** is the *fourth* magic number and, counting from 4 (Tetrad), **50** is the (1×2×3×4 = 24)th even integer. These facts are remarkable because of the significance the Pythagoreans attributed to the Decad as the perfect number and to the Tetrad, believing that natural phenomena were divided into four classes.

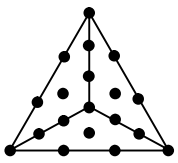
The formative archetype of Binah determines the mathematics of superstring theory. One of the ways it does this is shown by the remarkable fact that Binah of the **50**th tree in CTOL is the **248**th SL from its apex. Because of its fundamental significance, this remarkable property of CTOL is worth repeating explicitly: the dimension **248** of the exceptional group E_8 characterizing the original, unbroken symmetry of superstring interactions is the number of SLs from the top of CTOL down to *Binah of the very tree specified by the Godname number of Binah*. This SL is the **101**st SL on the left-hand Pillar of Judgement, and **101** is the **26**th prime number (also the number of *Michael*, Archangel of Tiphareth). This is one of the ways in which YAHWEH defines the superstring number **248**. These amazing features of CTOL will be discussed later in more detail.

HEBREW NAME: BINH.
MEANING: "Understanding."
NUMBER: **67**

B	I	N	H	
2	10	50	5	= **67**.

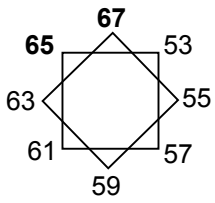
In our discussion of Chokmah, we found that Chokmah of the 12th tree is the **76**th SL. Binah of this tree is the 75th SL, or the **67**th SL, counting from Binah of the lowest tree of CTOL. It emanates **26** SLs on the central pillar. The first 12 trees have **50** SLs on the side pillars. The number of Binah specifies relative to the lowest Binah the position of the highest Binah of the section of CTOL with **50** SLs on its side pillars and **26** SLs on the central pillar below this SL. The numbers of Binah and Chokmah are thus related, referring to the *twelfth* tree. The significance of the 12th tree is that its Malkuth is the **65**th SL from the bottom of CTOL, and **65** is the Godname number of Malkuth. When we discuss Malkuth, we will show how this number determines the ten dimensions of the space-time of superstrings. Here is an example of the interplay not only of Godname numbers (**26**, **50**, **76**) but also of the numbers of Sephirothic names. Other examples will be encountered later.

67 is the 19th prime number. The number of the Sephirah embodying the most general archetypes of the *form* of the Divine Image is therefore the last of the prime numbers that can be assigned to the 19 yods of the *simplest* regular polygon — the triangle:

19 = 

when it is divided into tetractyses. This is an example of the power of the tetractys to relate the properties of integers and the number values of the names of the Sephiroth. The Decad, the Pythagorean perfect number, defines 19 as the *tenth* odd integer.

The number **67** of the Sephirah embodying the archetype of Form defines the number of non-zero roots of the heterotic superstring group $E_8 \times E_8$ according to

480 = 

i.e., **67** is the largest of the eight consecutive odd integers that start with 53, the **26**th odd integer after 1. This is a way in which YAHWEH determines arithmetically the number 480 as an important group-theoretical parameter of one of the superstring theories.

The fourth subplane of the fourth cosmic plane is represented by the **67**th tree in CTOL, which is thus defined by the Pythagorean Tetrad. Its Binah is the 405th SL, which is the 146th SL from the top of CTOL, where 146 is the **73**rd even number. Hence, the number of Chokmah defines Binah of the tree specified by its number. The fourth subplane of the fourth solar plane corresponds to the 25th tree, the Binah of which is the **153**rd SL, where **153** is the number value of ELOHIM SABAOTH.

5. Daath

GODNAME: None, because Daath is not a Sephirah.
HEBREW NAME: DOTh.
MEANING: "Knowledge."
NUMBER: **474**.

D	O	Th
4	70	400 = **474**.

We found earlier that the explanation of the numbers of Chokmah and Binah involved the 12th tree, the Malkuth of which defines the Godname number of Malkuth. This tree is also relevant to the explanation of the number of Daath because Daath of the 12th tree is the **26**th SL on the central pillar of CTOL. This SL is number

$$74 = 4 + 70$$

(the sum of the values of the first two letters of Daath) and the 477th SL from the top of CTOL, i.e., the **474**th SL from Daath of its highest tree. The number of Daath is the number of SLs between the highest Daath and the **26**th SL on the central Pillar of Equilibrium. The lowest Daath of CTOL is the fourth SL on the central pillar, which is the value of the letter D of Daath. Daath of the **49**th tree is the 100th SL on the central pillar, the latter being 74 central SLs above Daath of the 12th tree. The value of the first two letters of Daath specifies the position of both the **26**th SL on the central pillar and, relative to this, the Daath of the **49**th tree. The significance of the latter is that, in the language of Kabbalah, Daath of the **49**th tree is the "Abyss" separating the *cosmic physical* plane from the cosmic *superphysical planes* represented by trees **50-**91.

The **474**th SL from the top of CTOL is Kether of the 12th tree and the 77th SL. It emanates **26** SLs on the central pillar and **50** SLs on the side pillars, where

$$\mathbf{26} + \mathbf{50} = \mathbf{76}$$

is the number of YAHWEH ELOHIM, the Godname of Tiphareth. This SL marks the middle of the Pillar of Equilibrium of the 25-tree, which we shall see later defines the complete Godname number of Malkuth. The number of SLs in CTOL is simply the sum

$$550 = \mathbf{474} + \mathbf{76}$$

of the number of Daath and the number of YAHWEH ELOHIM. Tiphareth is the centre of the Tree of Life in both a geometrical and a metaphysical sense. "Knowledge" of its Godname generates this parameter of CTOL, the domain of the celestial hierarchies of all religions.

Combining **474** with other Godname numbers yields other numbers of significance to CTOL. Some are directly relevant to the theory of superstrings. For example, the sum

$$\mathbf{474} + \mathbf{21} = 495$$

of the number of Daath and the number of EHYEH defines the 495th SL from the top of CTOL. As Daath

of the ninth tree, it emanates 55 SLs, where

$$55 = \begin{array}{c} 1 \\ 2\ \ 3 \\ 4\ \ 5\ \ 6 \\ 7\ \ 8\ \ 9\ \ 10 \end{array}$$

is the tenth triangular number. The significance of this for superstring theory is that the first of these SLs, the **496**th, is the first Sephirah of Construction of the ninth tree and so marks the *beginning* of the section of CTOL which can be said to correspond to Malkuth, viz. to the first of the nine form-generating, spatial dimensions of superstring space-time, the counterpart of these nine trees. This, indeed, is the reason why the number of Malkuth is **496**, as we shall explain further, when we discuss its Godname. The connection between this feature of CTOL and the discovery in 1984 that **496** spin-1 particles mediate superstring forces will be analysed fully in the discussion of Malkuth later in this chapter.

Another significant combination is the sum:

$$\mathbf{474} + \mathbf{65} = 539$$

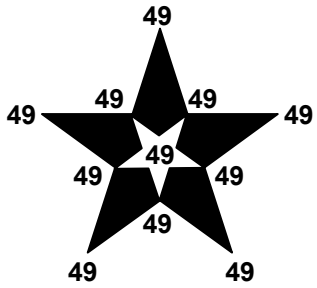
of the numbers of Daath and ADONAI, the partial Godname of Malkuth. 539 is the number of SLs between the highest and lowest Daath of CTOL. It is also the number of SLs above the lowest tree. This tree is the most 'Malkuth' level of CTOL, corresponding in Theosophical terms to the seventh subplane of the solar physical plane, which is the seventh subplane of the cosmic physical plane, which is in turn the seventh of the cosmic planes. Combining the name of Daath (Knowledge) with the Godname of Malkuth thus generates a number providing knowledge of the most 'physical' level of Creation, just as combining it with the Godname of Tiphareth generates a number expressing knowledge of Creation, viz. the number of SLs in CTOL.

The number 539 is the sum

$$539 = \mathbf{31} + \mathbf{36} + \mathbf{76} + \mathbf{129} + \mathbf{153} + \mathbf{49} + \mathbf{65}$$

of the Godname numbers of the seven Sephiroth of Construction, from which the astute reader will deduce that the number of Daath is the sum of the Godname numbers of the first six Sephiroth of Construction — a result which will receive comment shortly. 539 has the pentagram representation:

539 =



where

$$\mathbf{49} = \begin{array}{c} 2^0 \\ 2^1\ \ 2^1 \\ 2^2\ \ 2^2\ \ 2^2 \\ 2^3\ \ 2^3\ \ 2^3\ \ 2^3 \end{array}$$

is the Godname number of Yesod. Remarkably, 539 is the sum of the **26** combinations of integers in the four rows of the tetractys

$$\begin{array}{c} 1 \\ 2\ \ 3 \\ 4\ \ 5\ \ 6 \\ 7\ \ 8\ \ 9\ \ 10 \end{array}$$

(sum of combinations = $343 = 7^3 = 7\times\mathbf{49}$)

and the **26** combinations of integers in the four rows of its inverse

$$\begin{array}{c} 10 \\ 8\ \ 9 \\ 5\ \ 6\ \ 7 \\ 1\ \ 2\ \ 3\ \ 4 \end{array}$$

(sum of combinations = $196 = 4\times\mathbf{49}$)

because $343 + 196 = 11\times\mathbf{49} = 7\times77 = 539$.

The number of Daath can be expresses in terms of pentagram arrays of the integers 1, 2, 3 & 4 with these integers as their powers (Fig. 10).

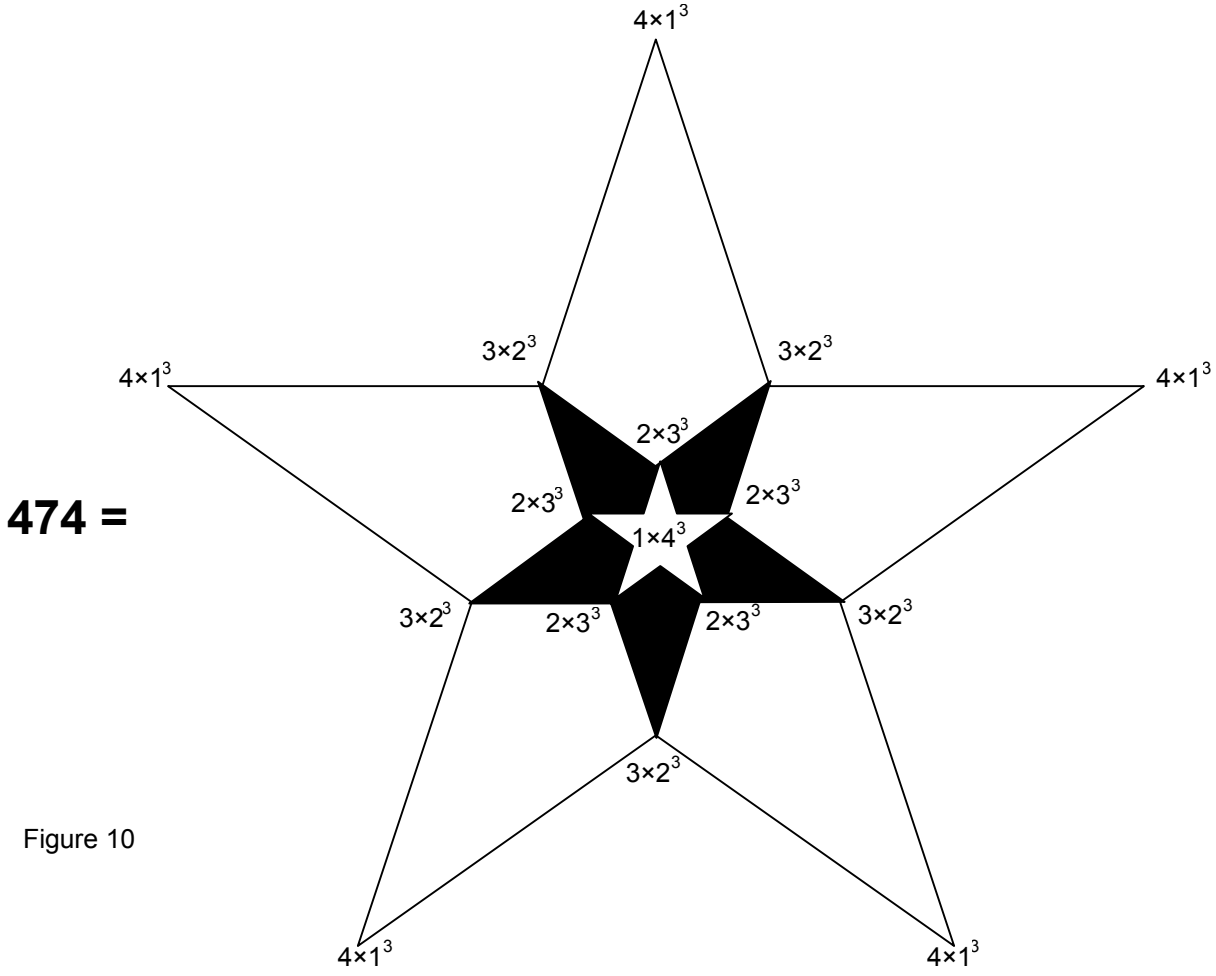
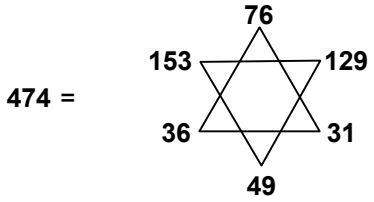


Figure 10

As mentioned earlier, the number of Daath is the sum



of the Godname numbers of the first six Sephiroth of Construction, the two interlaced triangles in the Star of David denoting the two triads of Sephiroth of Construction, viz. Chesed (**31**)–Geburah (**36**)–Tiphareth (**76**) and Netzach (**129**)–Hod (**153**)–Yesod (**49**). This identity may be interpreted as signifying that the six Sephiroth of Construction above Malkuth (the Sephirah whose Godname number is absent from the sum) determine the mathematics ("knowledge") of the Malkuth level of CTOL, i.e., the physics of the space-time continuum.

The sum of the Godname numbers of the ten Sephiroth is

21 + **26** + **50** + **31** + **36** + **76** + **129** + **153** + **49** + **65** = **636**,

which is the number of *Rashith ha Gilgalim* ("First Swirlings"), the Mundane Chakra of Kether (see Table 1). This number has a pentagram representation (Fig. 11) in terms of **36** binomial coefficients $\binom{7}{r}$ (r = 0, 1, 2... 7). Its remarkable feature is that the sum of the seven binomial coefficients, respectively, at the centre of the pentagram, between its centre and the tips of the star and at its five tips.

The sum of the number of Daath and **636** is

474 + **636** = 1110 = 111
111 111
111 111 111
111 111 111 111,

636 =

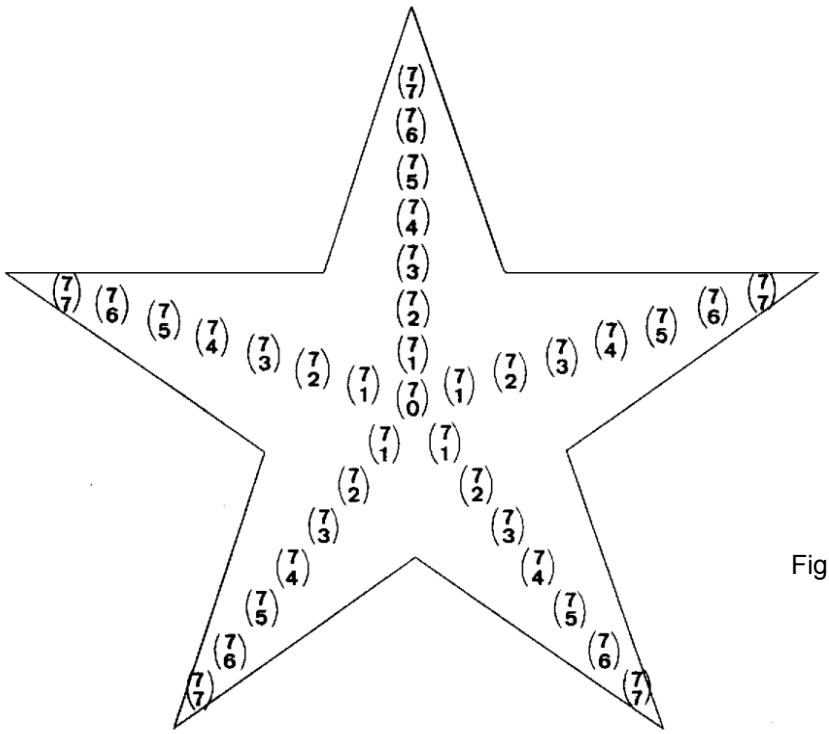


Figure 11

where 111 is the 55th odd integer after 1 and

1
2 3
55 = 4 5 6
7 8 9 10

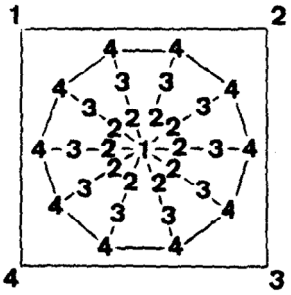
is the tenth triangular number. Remarkably, 111 is the sum of the **26** combinations of numbers in the four rows of the tetractys formed from the integers 1, 2, 3 & 4:

	COMBINATIONS	**SUM OF COMBINATIONS**
1	1	1
1 2	1 +2 + (1+2)	6
1 2 3	1 + 2 + 3 + (1+2) + (1+3) + (2+3) + (1+2+3)	24
1 2 3 4	1 + 2 + 3 + 4 + (1+2) + (1+3) + (1+4) + (2+3) + (2+4) + (3+4) + (1+2+3) + (1+2+4), + (1+3+4) + (2+3+4) + (1+2+3+4)	**80**
		TOTAL = 111

1110 can be written

1110 = 1^3 2^3
101
101 101
101 101 101
101 101 101 101
4^3 3^3

where

101 = 

is the **26**th prime number and the number of *Michael*, the Archangel of Tiphareth.

The sum of the numbers of the *complete* Godnames of the ten Sephiroth is

543 + **26** + **50** + **31** + **36** + **76** + **129** + **153** + **363** + **155** = 1562,

which has the 2nd-order tetractys representation shown in Figure 12, being the sum of the integers at

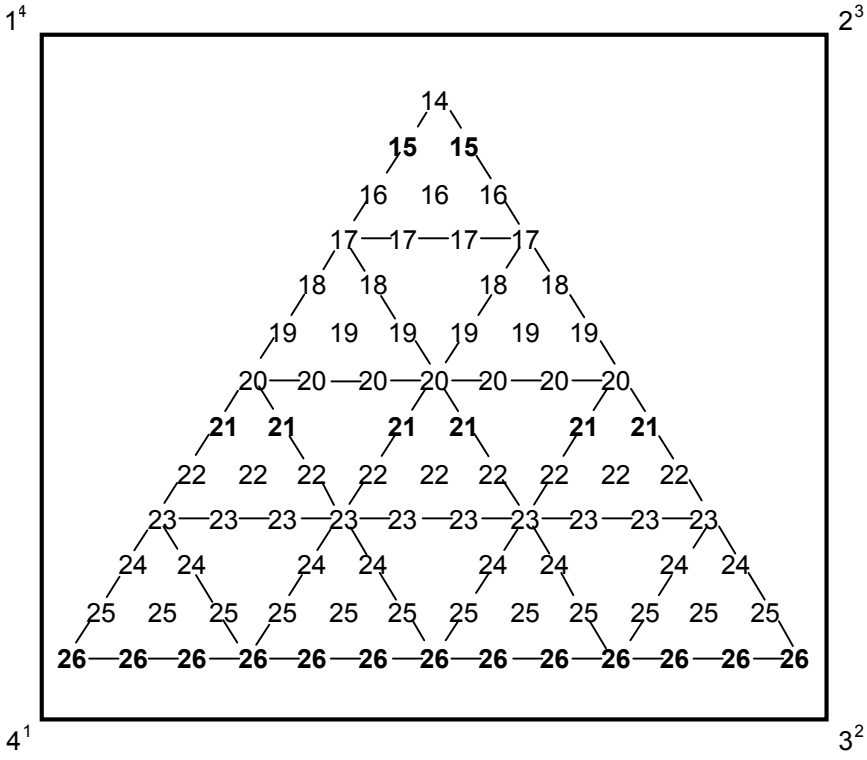
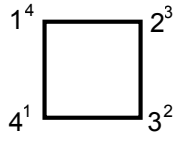
1562 = 

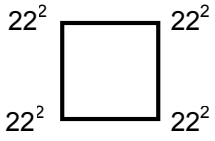
Figure 12

corners and centres of hexagons. Note that the number of YAHWEH forms the base of the tetractys and that its central integer:

22 = 

is the number of Paths in the Tree of Life, as well as the sum of the powers of 1, 2, 3 &4 at the corners of the square enclosing the tetractys.

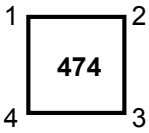
The sum of the number of Daath and 1562 is

474 + 1562 = 1936 = 

$$= 4\times\begin{pmatrix} 1^2 + 2^2 + 3^2 + 4^2 \\ 1^3 + 2^3 + 3^3 + 4^3 \\ 1^4 + 2^4 + 3^4 + 4^4 \end{pmatrix},$$

where

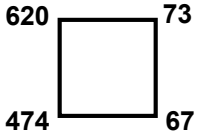
22^2 =



The beautiful four-fold symmetry of these representations illustrate the fundamental connection between sums of Godname numbers, the tetractys, the Pythagorean integers 1, 2, 3 & 4 and the number of Daath. They serve as examples of a fundamental 'Tetrad Principle,' which is formulated in Article 1.

The sum of the numbers of Daath and the Hebrew names of the Sephiroth belonging to the Supernal Triad is

1234 =



This is truly remarkable, for what other number could better express the relevance of the integers 1, 2, 3 & 4 to the Tree of Life? These Hebrew words are equivalent to numbers whose sum provides the information that 1, 2, 3 & 4 express the mathematics of the Tree of Life blueprint for the physical and superphysical levels of reality. This is powerful evidence of a mathematical Intelligence inherent in the Hebrew names of the Sephiroth. Notice that

$$1234 = \begin{matrix} 1000 \\ 100\ 100 \\ 10\ 10\ 10 \\ 1\ \ 1\ \ 1\ \ 1 \end{matrix} = \begin{matrix} 10^3 \\ 10^2\ \ 10^2 \\ 10^1\ \ 10^1\ \ 10^1 \\ 10^0\ \ 10^0\ \ 10^0\ \ 10^0 \end{matrix}$$

It is amusing to observe that if these powers of 10 are regarded as binary numbers, so that $1000 \equiv 2^3$, $100 \equiv 2^2$, $10 \equiv 2^1$ and $1 \equiv 2^0$, then the tetractys representation of 1234 expresses the number:

$$\begin{matrix} 2^3 \\ 2^2\ \ 2^2 \\ 2^1\ \ 2^1\ \ 2^1 \\ 2^0\ \ 2^0\ \ 2^0\ \ 2^0 \end{matrix} = \mathbf{26},$$

i.e., the number of YAHWEH! The number 1234 expresses in its binary form the very creative essence of God.

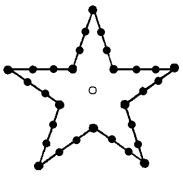
6. Chesed

GODNAME: EL
ENGLISH VERSION: None.
MEANING: "God."
NUMBER: **31**.

E L
1 30 = **31**.

Male names like Michael, Samuel and Raphael have etymological roots in this ancient name for God. EL expresses the creative energy of Chokmah as it starts to take shape in broad plans. The dynamic potency of Chokmah is restrained by the formative archetypes of Binah to give birth in Chesed to a vision of the possibilities of Creation. The Godname EL of the first Sephirah of Construction is represented by the ancient occult symbol of the pentagram, or five-pointed star. The disciples of Pythagoras wore the pentagram on their clothes as an emblem to aid mutual recognition in public. They called it "Health" and "Marriage," the latter because the number 5 is the sum of the first even (female) number, 2, and the first odd (male) number, 3 (remember that, for the Pythagoreans the first odd integer (1) was not a number but the source of all numbers). This figure has traditionally symbolized the five limbs of man and the five Elements: Earth, Water, Fire, Air and Aether. Its *mathematical* meaning, however, is that it is the geometrical representation of the Hebrew Divine Name, EL ("God"):

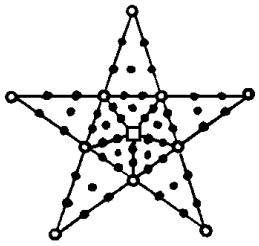
31 =



EL = 1 + 30 = 1(○) + 30(●)

Each of the ten sides of the star is divided in the proportion of the tetractys, the yod at its centre denoting the value 1 of the letter E and the 30 yods on its boundary denoting the value 30 of the letter L. Mathematical archetypes embodied by the Godname of Chesed are expressed through this powerful figure, generating many of the mathematical properties of The Tree of Life as pentagram arrays of numbers, as we have already begun to demonstrate.

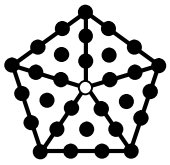
Divided into tetractyses, the pentagram represents the number of AIN, the Absolute:

61 = 

AIN = 1 + 10 + **50** = 1(□) + 10(○) + **50**(●).

It is thus equivalent to the decagon. Remarkably, **31** is the arithmetic mean of the first 61 integers that can be assigned to the yods of the pentagram.

A pentagon divided into tetractyses also contains **31** yods:

EL = 1 + 30 = 1(○) + 30(●) = **31** = 

The value 1 of the E corresponds to the centre of the pentagon and the number 30 of the letter L denotes the 30 yods surrounding its centre. An n-sided regular polygon divided into tetractyses is a representation of CTOL up to Chesed of the nth tree. Chesed of the fifth tree is the **31**st SL. This section of CTOL is found to encode the dimension **248** of the superstring gauge symmetry group E_8 because there are **248** yods up this SL when the triangles in overlapping trees are turned into tetractyses.

Every **31**st SL in CTOL is the *same* Sephirah separated by five trees. The significance of this symmetry defined by the Godname number of Chesed is that Chesed of any tree in CTOL is the fifth SL, counting from Kether of that tree.

Another connection between the number 5 and the number of EL is the fact that **31** is the fifth, so-called "Mersenne number." This type of number is any integer of the form $2^n - 1$ ($n \geq 1$). Mersenne numbers are named after Father Marin Mersenne, who was a philosopher, theologian and mathematician, a friend of Descartes, Fermat and other 17th century mathematicians. The first four Mersenne numbers:

$2^1 - 1 = 1,$
$2^2 - 1 = 3,$
$2^3 - 1 = 7,$
$2^4 - 1 = \mathbf{15},$

were encountered in the discussion of the numbers of YAH (**15** is the *fourth* Mersenne number) and YAHWEH (**26** is the sum of the first four Mersenne numbers), for they are the numbers of combinations of the yods in the four rows of the tetractys, as well as being the numbers of geometrical elements in the point, line, triangle and tetrahedron constituting the trunk of the Tree of Life. So-called “perfect numbers” are numbers that are the sum of their factors. Mersenne numbers that are also prime numbers are important to mathematicians because the Swiss mathematician Léonard Euler proved that all even perfect numbers are of the form $2^{n-1}M_n$, where $M_n = 2^n - 1$ is the nth Mersenne prime number. The fifth Mersenne number M_5 = **31** is the third Mersenne prime and defines the third perfect number 2^4M_5 = **496**. This is both the number of Malkuth and the crucial dimension of the gauge symmetry group $E_8 \times E_8$ found by physicists Michael Green and Gary Schwarz in 1984 to be free of quantum anomalies. **496** is also the **31**st triangular number:

496 = 1 + 2 + 3 + 4 +... + **31**.

The number of EL thus determines the group mathematics of superstring theory in two arithmetic ways:

1. **31** ⟶ 3rd Mersenne prime ⟶ 3rd perfect number = **496**;
2. **31** ⟶ **31**st triangular number = **496**.

The section about Malkuth discusses this property in more detail. The Godname number of Chesed is the total number of combinations of five objects:

$$\mathbf{31} = 2^5 - 1 = \begin{pmatrix} 5 \\ 5 \end{pmatrix} + \begin{pmatrix} 5 \\ 4 \end{pmatrix} + \begin{pmatrix} 5 \\ 3 \end{pmatrix} + \begin{pmatrix} 5 \\ 2 \end{pmatrix} + \begin{pmatrix} 5 \\ 1 \end{pmatrix}$$

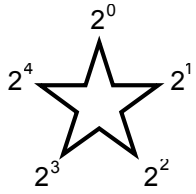
$$= 1 + (5 + 10 + 10 + 5) = 1 + 30,$$

which reproduces the letter values of EL. The value 30 of L (lamed) is the number of combinations of five objects taken 1, 2, 3 & 4 at a time, and the value 1 of E (aleph) is the number of combinations of 5 objects taken 5 at a time. The significance of this property vis-à-vis the Tree of Life is that the five SLs from Kether to Chesed of any tree in CTOL form **31** different combinations. Suppose now we assign the integers 1, 2, 3, 4 & 5 to these SLs. The sum of the **31** combinations of these integers is 240, which our discussion of Kether revealed is the number of the "degrees of freedom" associated with each tree, as well as the sum of the Godname numbers of the first six Sephiroth. This number is the number of non-zero roots of the exceptional group E_8 used in superstring theory. The number of EL thus prescribes a parameter of this group in a third way.

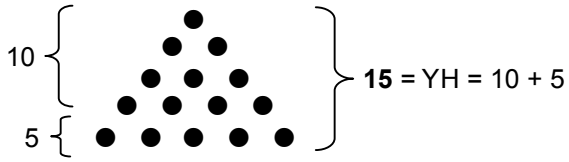
The pentagon portrays this property of the number **31** in a graphic manner. The sum of the **15** combinations of integers 1, 2, 3 & 4 is **80** (the number of Yesod). The 16 remaining combinations, each of which contains the number 5, sum to 160. Divided into tetractyses, a pentagon has **15** yods on its boundary and 16 internal yods. This means that all **15** combinations of 1, 2, 3 & 4 can be assigned to the boundary yods and all 16 combinations of 1, 2, 3, 4 & 5 containing the number 5 can be assigned to the internal yods. Not only do the five corners of the pentagon symbolize the first five integers but also its boundary and internal yods denote the **31** combinations of these integers. In fact, this division:

$$\mathbf{31} = \mathbf{15} + 16$$

is reflected in its pentagram representation as the sum

31 = 

of the first five powers of 2, the boundary having ($2^0 + 2^1 + 2^2 + 2^3 = \mathbf{15}$) yods and the interior of the pentagon having ($2^4 = 16$) yods. Notice that **31** is the 16th odd integer, i.e., the **15**th odd integer after 1. It is in this way that the number of YAH, a Godname of Chokmah, prescribes the number of EL, the Godname of the Sephirah below Chokmah on the Pillar of Mercy of the Tree of Life. Furthermore, the fifth triangular number **15** is depicted by a triangular array of **15** dots, the value 10 of the letter Y denoting the number of dots in the first four rows and the value 5 of the letter H denoting the number of dots in the fifth row. **15** is the number of combinations of the fourth row of dots, **26** is the sum of the number of combinations of dots in the first four rows and **31** is the number of combinations of the dots in the fifth row:



The perfect number **496** prescribed by YAH can be written:

$$\mathbf{496} = 16 \times \mathbf{31} = 1^3 + 3^3 + 5^3 + 7^3,$$

where

$$16 = 1 + 3 + 5 + 7,$$

so that

$$\mathbf{31} = \frac{1^3 + 3^3 + 5^3 + 7^3}{1 + 3 + 5 + 7}$$

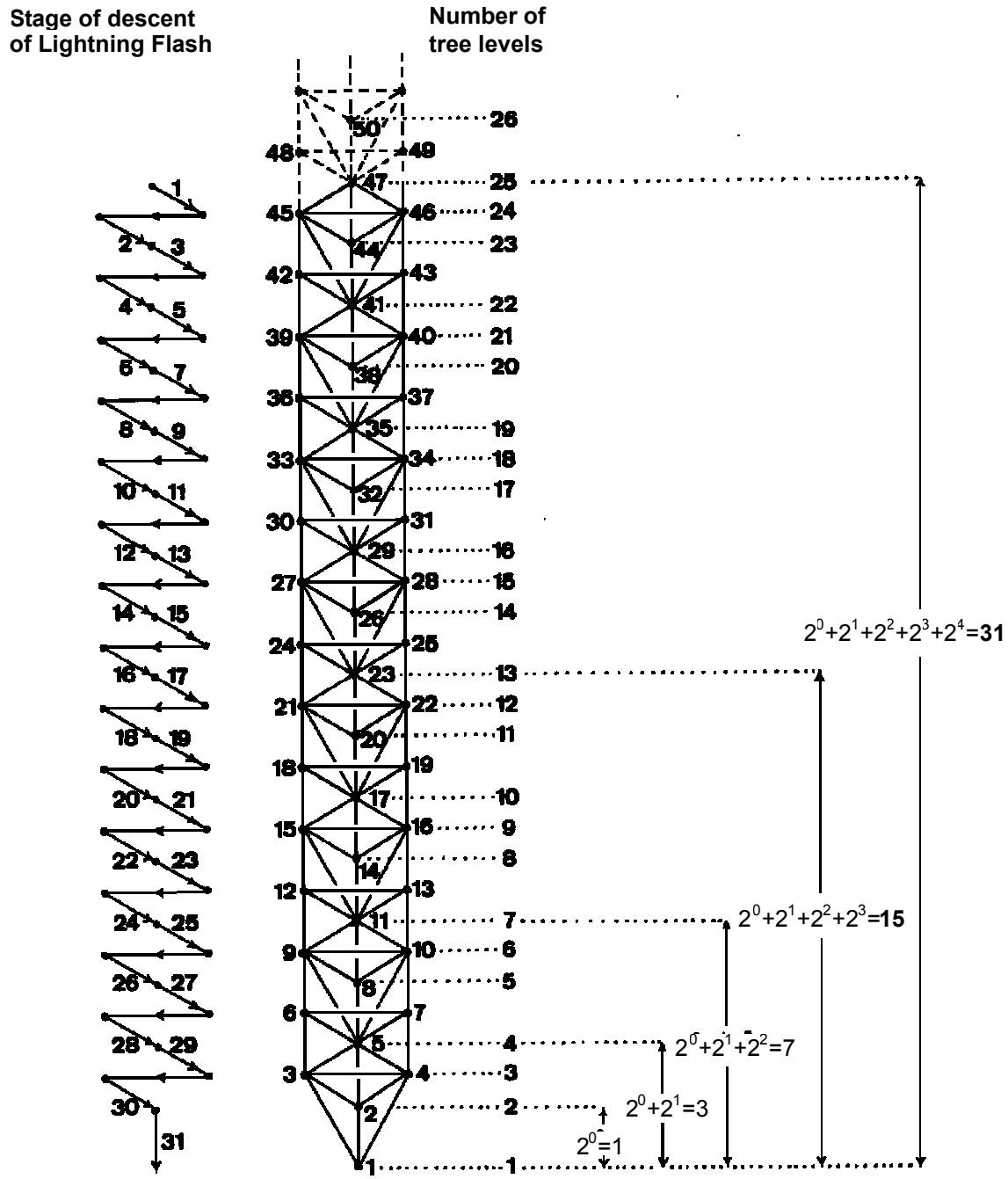


Figure 13

Number **21** of EHYEH is number of SLs on central pillar up to Kether of 9th tree whose Malkuth is top of 7-tree;

Number **15** of YAH is number of SLs on each side pillar of 7-tree (47 is **15**th prime number);

Number **26** of YAHWEH is number of tree levels up to Daath of 8th tree from which 7-tree emanates;

Number **50** of ELOHIM is number of SLs up to Daath of 8th tree;

Number **31** of EL is number of stages of vertical descent of Lightning Flash in 7-tree;

Number **36** of ELOHA is number of SLs between Geburahs of 1st and 7th trees.

The Pythagorean Tetrad thus defines the number value of EL as an expression of the first four odd integers. **31** stages of descent of the Lightning Flash from Kether of the seventh tree to Malkuth of the first tree generate the 47 SLs of the 7-tree representing the physical solar plane (Fig. 13). Each of the seven trees corresponds to a Sephirah of Construction and thus the Godname number of the first of these determines how many stages the Lightning Flash has to descend for all seven Sephiroth of Construction to manifest as subplanes. (2^4 = 16) stages generate the uppermost three subplanes/trees and ($2^3 + 2^2 + 2^1 + 2^0$ = **15**) stages generate the lowest three subplanes/trees, which Theosophists have called the "dense physical," "liquid" and "gaseous" subplanes, although these terms are misleading, as was explained in Article 2.

Our discussion of Chokmah indicated that the number of YAH defines the **15** SLs in the 7-tree on either the Pillar of Mercy or the Pillar of Judgement. YAH also prescribes the number of SLs in the 7-tree because 47 is the **15**th prime number. The 7-tree emanates from Daath of the eighth tree, which is the **50**th SL and the **26**th tree level. Kether of the 7th tree is Malkuth of the ninth tree, the Kether of which is the **21**st SL on the central pillar, **21** being the Godname number of Kether. The number **26** of YAHWEH prescribes seven overlapping trees because the latter is made up of 260 (=10×**26**) geometrical elements. These properties serve to show how the Godnames of Kether, Chokmah, Binah and Chesed prescribe the 7-tree mapping the space-time continuum.

HEBREW NAME: ChSD.
MEANING: "Mercy."
NUMBER: **72**.

Ch	S	D	
8	60	4	= **72**.

The 12th tree was found previously to define the numbers of Chokmah, Binah and Daath. It also defines the number of Chesed because Chesed of the 12th tree is the **73**rd SL (the number of Chokmah above it on the Pillar of Mercy of the Tree of Life) and therefore it emanates **72** SLs. The value 4 of the letter D denotes Chesed as the fourth Sephirah from Kether and the sum (8+4=12) of the values of the letters D and Ch denote the 12th tree. Every (8+4=12) trees have (8+4+60=**72**) SLs, of which (8+4=12) SLs are Cheseds and of which 60 are Sephiroth other than Chesed. The letter values of Chesed express a symmetry of CTOL.

The pentagon, which we saw earlier represents the Godname of Chesed, has an interior angle of 72°, which is the number of Chesed! **72** is the arithmetic mean of the Pythagorean integers raised to their own powers:

$$\mathbf{72} = \tfrac{1}{4}(1^1 + 2^2 + 3^3 + 4^4).$$

It is also the **36**th even integer, where **36** is the Godname number of Geburah opposite Chesed on the Pillar of Judgement.

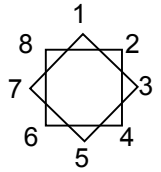
7. Geburah

GODNAME: ELH.
ENGLISH VERSION: ELOHA.
MEANING: "The Almighty."
NUMBER: **36**.

E	L	H	
1	30	5	= **36**.

Geburah is the sixth Sephirah from Malkuth. Geburah of the sixth tree is number **36**, i.e., the Godname number of the sixth Sephirah locates the sixth Sephirah of the tree corresponding to this Sephirah! Also, every six trees span **36** SLs. The *lowest* subplane of the sixth solar plane formally corresponding to Geburah is the **36**th subplane, counting from the *lowest* subplane of the physical plane. It is mapped by the **36**th tree in CTOL. The sixth subplane of the sixth solar plane, *both* of which correspond formally to Geburah, is the **36**th subplane, counting from the sixth subplane of the physical plane. It is evidence that the correlation between the seven Sephiroth of Construction and the seven subplanes/planes is correct.

The Pythagoreans called the number **36** the "World" because it is the sum

36 = 

550 =

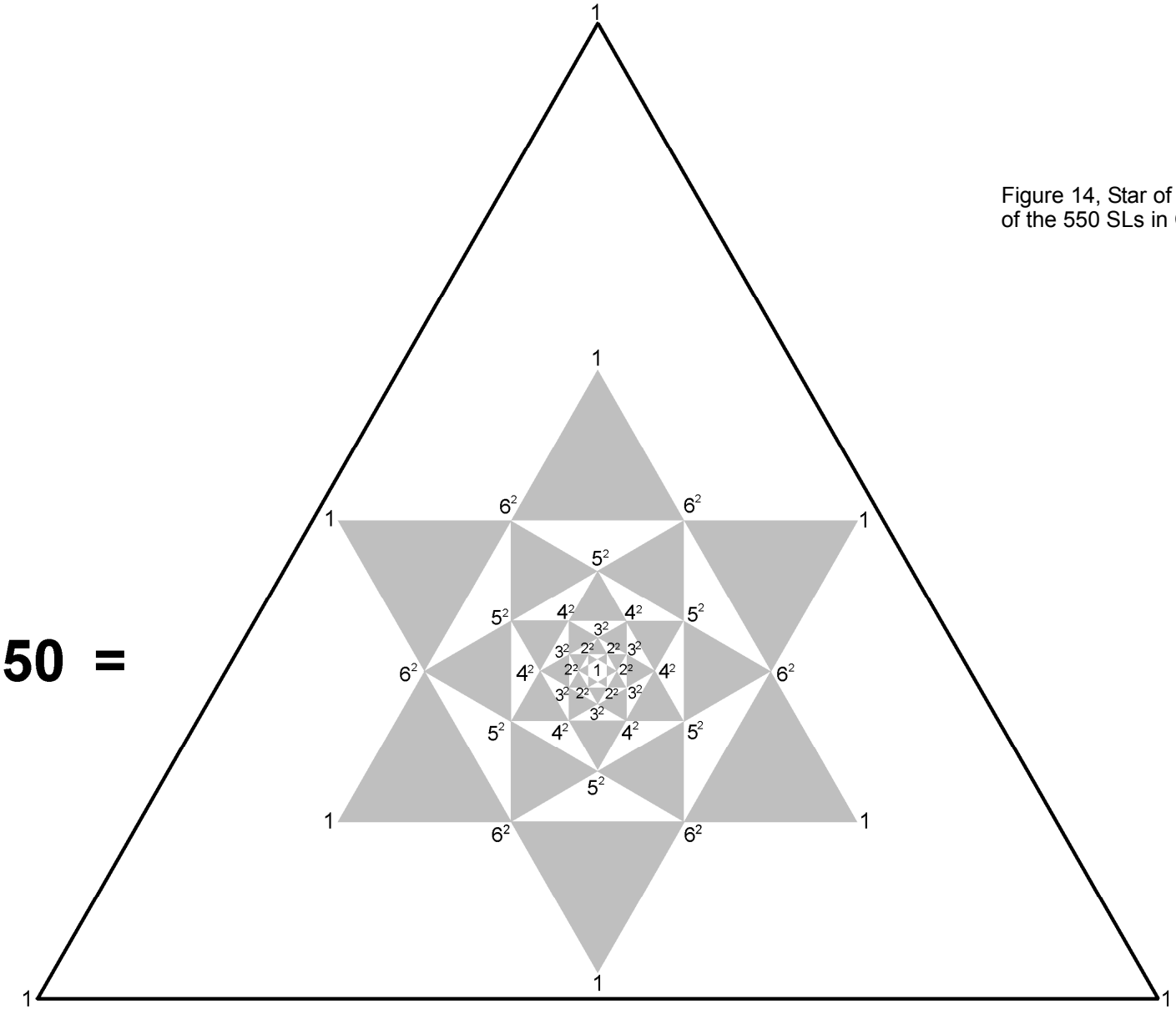


Figure 14, Star of David representation of the 550 SLs in CTOL.

2650 =

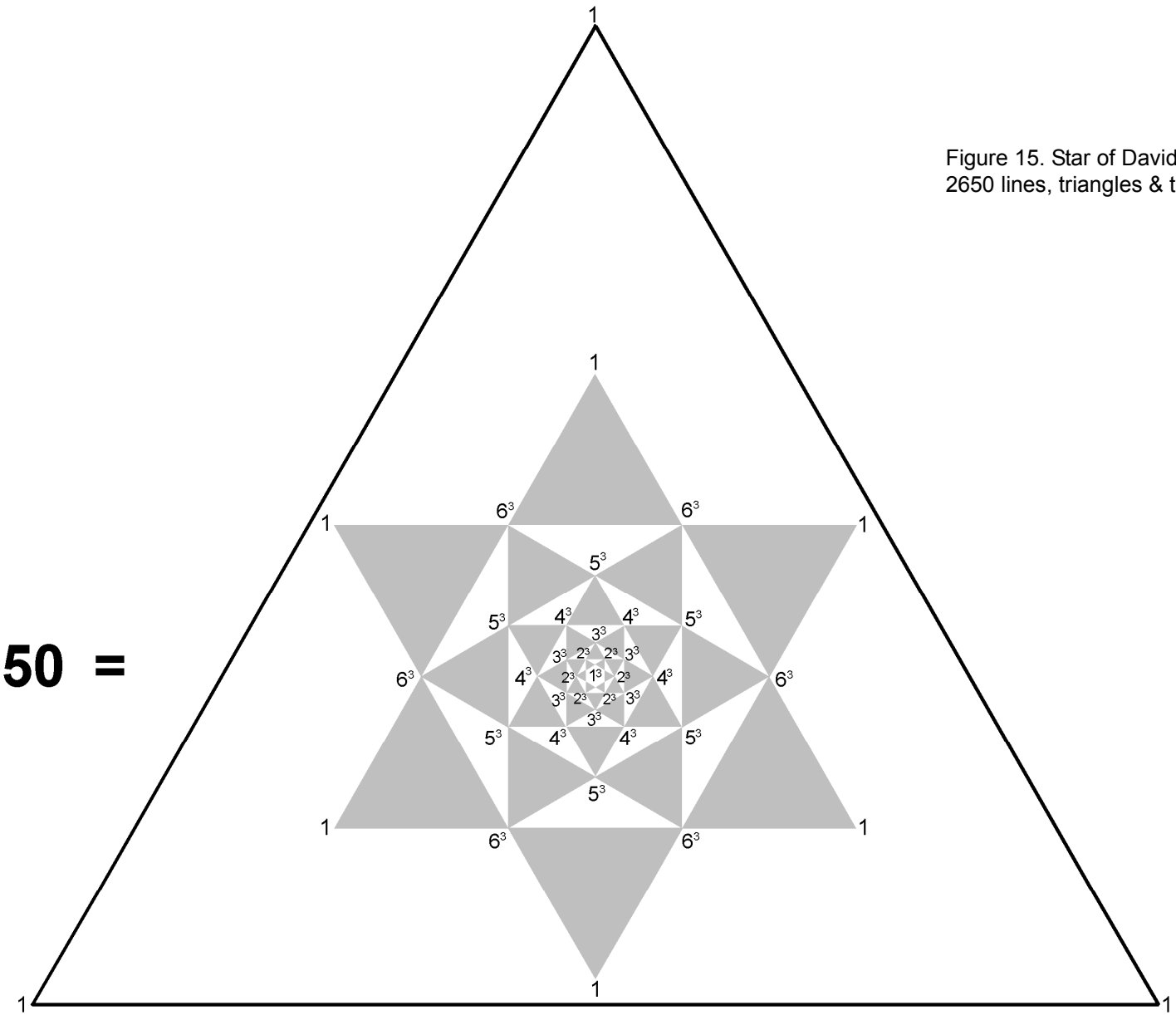


Figure 15. Star of David representation of the 2650 lines, triangles & tetrahedra in CTOL.

1738 =

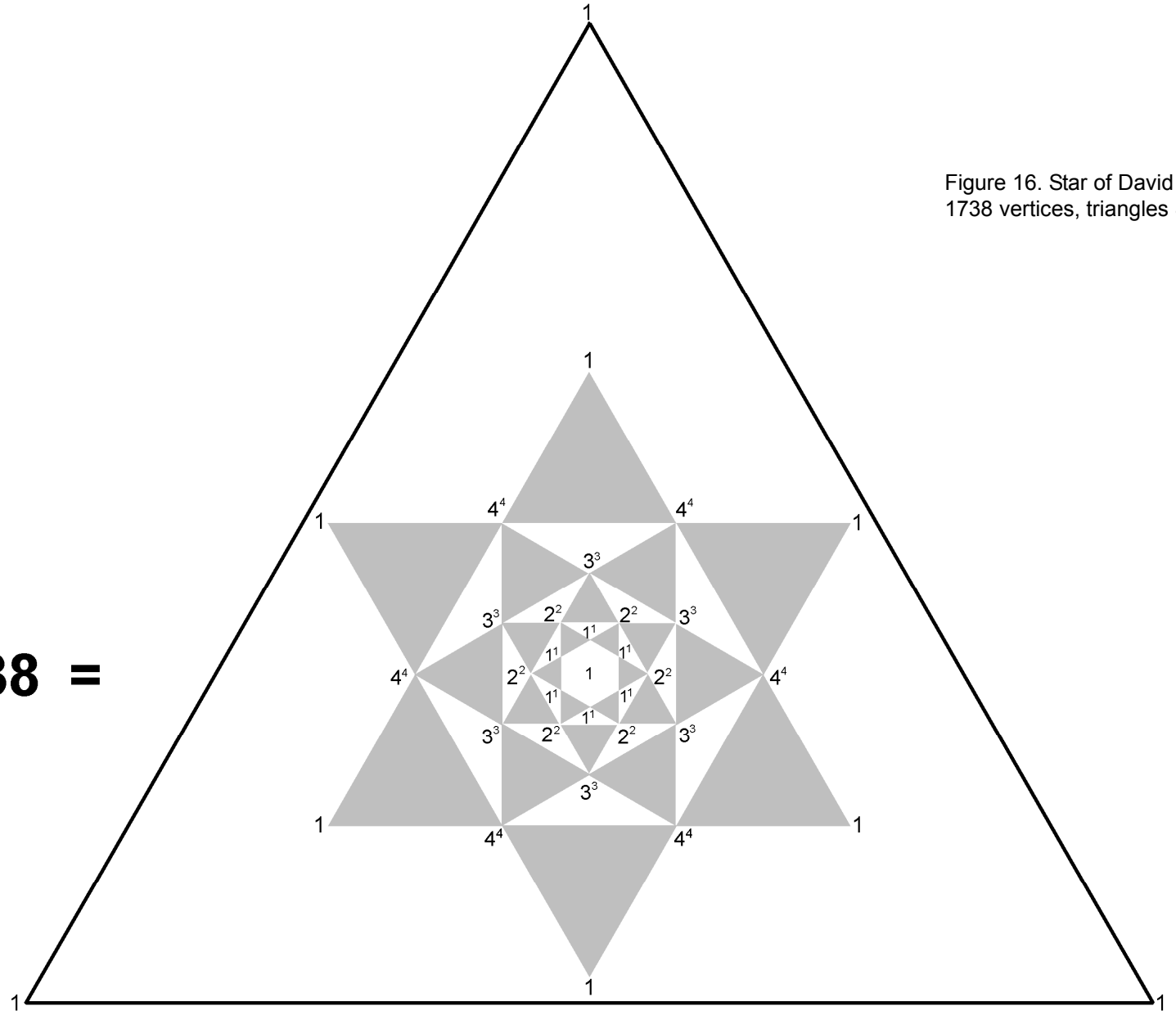


Figure 16. Star of David representation of the 1738 vertices, triangles & tetrahedra in CTOL.

of the first *four* odd integers and the first *four* even integers, which makes it the eighth triangular number. It is the first integer after 1 to be both square and triangular. As the square of 6, it is the sum of the first six odd integers. Because its square root is the third triangular number, it is also the sum of the first three cubes: **36** = $1^3 + 2^3 + 3^3$.

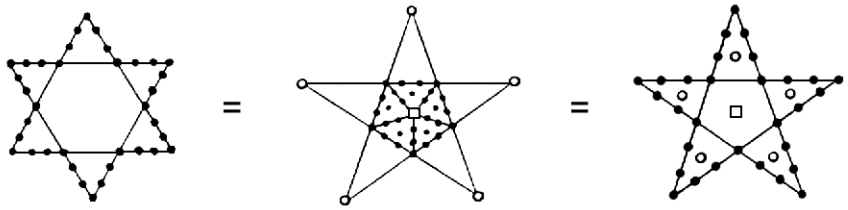
The **36**th prime number is 151, which is the number of tree levels in the **49**-tree representing the cosmic physical plane. This is how ELOHA prescribes the seven solar planes of consciousness. The **26**th prime number is **101**, which is the number of SLs on the central pillar of the **49**-tree. This is how YAHWEH prescribes the seven planes. It is a testament to the power of Godnames that numbers characterizing the structure of such an important section of CTOL as the **49**-tree should be prescribed mathematically by two successive Sephiroth. It is, of course, prescribed by all the Godnames.

36 can be represented in terms of the Pythagorean quartet of integers 1, 2, 3 & 4 as

$$\mathbf{36} = 1^4 + 2^2 + 3^3 + 4^1 = 1^3 + 2^4 + 3^1 + 4^2.$$

Both expressions are unchanged when the integers and their powers are interchanged. There are (with appropriate Pythagorean significance) *ten* ways of writing down sums of these integers raised to the same set of powers that have this property of invariance. Only two generate the *same* number, viz. **36**.

There are **36** yods on the boundary of a Star of David, each of whose sides is divided into four yods:

36 =  =

ALH= 1 + 30 + 5 = 1(□) + 30(•) + 5(○)

Like the pentagram, which defines the Godname of Chesed, the Star of David, which defines the Godname of Geburah, the next Sephirah after Chesed, is a powerful representation, generating parameters of CTOL, e.g., its 550 SLs (corners of triangles) in CTOL (Fig. 14), its 2650 lines, triangles & tetrahedra (Fig. 15) and its 1738 vertices, triangles & tetrahedra (Fig. 16), as well as numbers expressing the mathematical properties of the Tree of Life. The number **36** also has the alternative pentagram representations shown above, the values of the letters of ELOHA denoting the numbers of different types of yods.

HEBREW NAME: GBURH.
MEANING: "Severity."
NUMBER: **216**.

G	B	U	R	H	
3	2	6	200	5	= **216**.

Geburah of the **36**th tree is the **216**th SL, i.e., the number of Geburah locates Geburah of the tree defined by its Godname number! Also, every **36** trees span **216** SLs. **36** stages of descent of the Lightning Flash generate the lowest 55 SLs of CTOL. The significance of this is that the 550 SLs of CTOL are represented by a tetractys array of the number 55:

$$550 = \begin{matrix} & & & & 55 & & & & \\ & & & 55 & & 55 & & & \\ & & 55 & & 55 & & 55 & & \\ & 55 & & 55 & & 55 & & 55, & \end{matrix}$$

where

$$55 = \begin{matrix} & & & 1 & & & \\ & & 2 & & 3 & & \\ & 4 & & 5 & & 6 & \\ 7 & & 8 & & 9 & & 10 \end{matrix}$$

is the tenth triangular number. The 55th SL, Chesed of the 9th tree, is the **496**th SL from the top of CTOL and the first of the *last* set of 55 SLs. The number of the Godname embodying the formative archetype of its Sephirah Geburah defines therefore the **496**th SL. We shall explain later how this accounts for the number value of the Hebrew word Malkuth being **496** and why this number plays such a crucial role in

superstring physics.

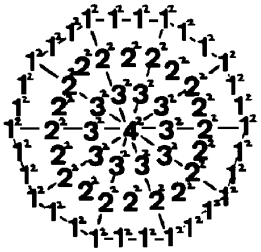
216 is the smallest cube that is also the sum of three cubes:

$$\mathbf{216} = 3^3 + 4^3 + 5^3.$$

Compare this with:

$$\mathbf{36} = 1^3 + 2^3 + 3^3.$$

216 is represented by the 61 squares of 1, 2, 3 & 4 in the decagon shown below. The sum of the 60

216 = 

squares surrounding the centre is 200, which is the value of the letter R in GBURH. The central square 4^2 = 16 is the sum of the values of its other letters.

According to Androcydes, the Pythagorean writer of the work *On Symbols*, Aristoxenus, Hippobotus and Neanthes, **216** was known in antiquity as the number of years which elapsed between successive incarnations of Pythagoras.

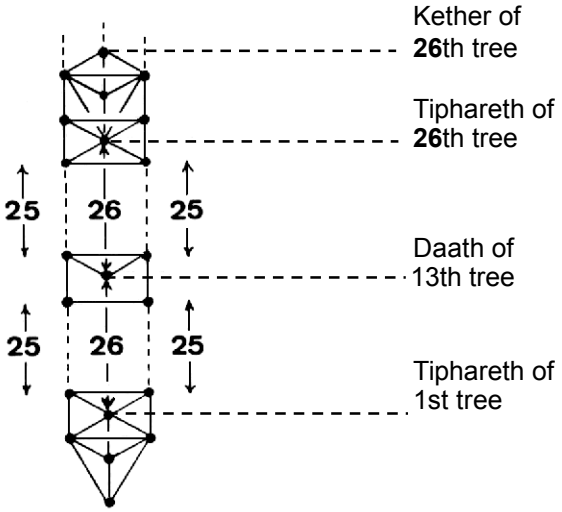
8. Tiphareth

GODNAME: YHVH ALHIM.
ENGLISH VERSION: YAHWEH ELOHIM.
MEANING: "The Holy One" (lit. "God-the-creator-to-become").
NUMBER: **76**.

YHVH	ALHIM	
26	**50**	= **76**.

Tiphareth is not only the spiritual centre of the Tree of Life — the meeting point of psyche, soul and Spirit — but also its geometrical centre of gravity. Its Godname expresses this latter aspect, as we will now demonstrate.

Kether of the **26**th tree is the 55th SL on the central pillar of CTOL, where 55 is the tenth triangular number. The middle of this vertical column of 55 SLs is the 28th SL, Daath of the 13th tree. It is the **80**th SL, where **80** is the number of Yesod, meaning "foundation." The centre of this pillar of SLs is indeed the fulcrum or foundation of the **26**-tree. Counting from Tiphareth of the first tree, it is the **26**th SL on the central pillar. Between this SL and the lowest Tiphareth of CTOL are **50** SLs on the side pillars, which means that Daath of the 13th tree is the **76**th SL, where **76** (=**26**+**50**) is the number of YAHWEH ELOHIM. Counting from this SL, Tiphareth of the **26**th tree is the **26**th SL on the central pillar. Between these SLs, there are **50** SLs on the side pillars. Hence, Tiphareth of the **26**th tree is the **76**th SL, counting from Daath of the 13th tree. We see that the Godname number of Tiphareth defines the *centre* or *fulcrum* of the vertical axis of the **26**-tree, which our discussion of Malkuth will reveal is the counterpart in higher realms of consciousness of the **26** dimensions of space-time predicted by the application of quantum mechanics to spinless strings.

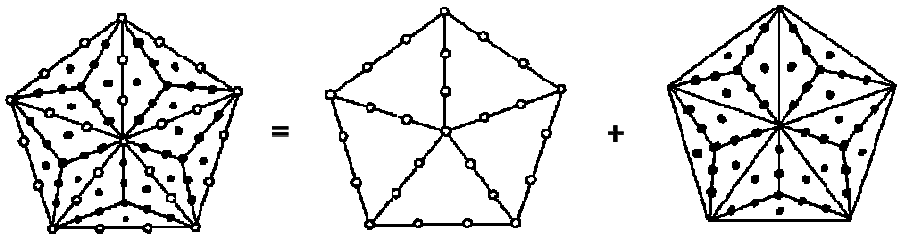


Tiphareth of the **26**th tree, which is Kether of the 25th tree (the **155**th SL specified by ADONAI MELEKH), is the 79th tree level. Counting from Tiphareth of the first tree, Tiphareth of the **26**th tree is the **76**th tree

level, i.e., the number of YAHWEH ELOHIM specifies the SL in CTOL that defines the complete Godname number of Malkuth (see discussion of ADONAI MELEKH in Section 12).

50 stages of descent of the Lightning Flash generate **76** SLs, of which **26** are on the central pillar and **50** are on the side pillars, irrespective of the starting point. The number of YAHWEH ELOHIM expresses a symmetry of CTOL.

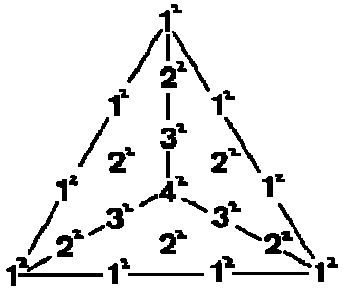
We saw earlier that a pentagon divided into tetractyses contains **31** yods, where **31** is the Godname number of Chesed. With its triangular sectors further divided into three tetractyses, a pentagon contains **76** yods, of which **26** form the boundaries of its five sectors and **50** are inside its sectors:

76 =  = +

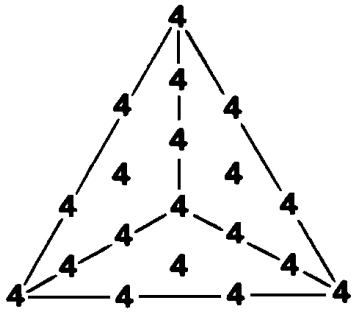
76 **26** **50**

The *five*-sided pentagon represents the number of the Godname of Tiphareth, the *fifth* Sephirah, counting from Malkuth.

Divided into tetractyses with the squares 1^2, 2^2, 3^2 and 4^2 assigned to its 19 yods:

76 = 

a triangle is a representation of **76**. Notice that, as **76** = 19×4, the Pythagorean Tetrad, 4, directly defines **76** through such a triangle:

76 = 

The number of YAHWEH ELOHIM is the arithmetic mean of the first 151 integers:

$$\mathbf{76} = \frac{1 + 2 + 3 + \ldots + 151}{151}$$

where 151 is the **36**th prime number. This is the arithmetic connection between the Godname numbers of the *consecutive* Sephiroth Geburah and Tiphareth.

HEBREW NAME: ThPARTh.
MEANING: "Beauty."
NUMBER: **1081**.

Th	P	A	R	Th	
400	**80**	1	200	400	= **1081**.

Tiphareth of the highest tree in CTOL, i.e., Kether of the 90th tree, is the 545th SL from the base of CTOL. Tiphareth of the lowest tree is number 5. Hence, 540 SLs separate the highest and lowest Tiphareths of CTOL. Counting from the former, the latter is the 541st SL. In the descent of the Divine Spirit into matter:

Kether of 91st tree ⟶ Malkuth of 1st tree

followed by its evolutionary ascent:

Malkuth of 1st tree ⟶ Kether of 91st tree,

the number of SLs traversed between the highest and lowest Tiphareths:

Tiphareth of 91st tree ⟶ Tiphareth of 1st tree ⟶ Tiphareth of 91st tree

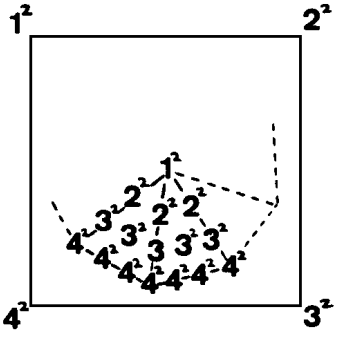
is 541 + 540 = **1081**; this is the number of Tiphareth. Counting from the highest Tiphareth, the (400+**80**+1=481)st SL is Kether of the 10th tree, the **65**th SL, which is prescribed by the Godname ADONAI of Malkuth. The 10-tree determines not only the dimensionality of the space-time of superstrings and the dimension **248** of the superstring group E_8 but also the *3-dimensional* form of the superstring constituents of quarks, as shown in the section *Superstrings as sacred geometry/Tree of Life* at this website. The sum of the values of the first two letters of Tiphareth is 480. This is the number of SLs above the 10th tree up to the highest Tiphareth. It is also the number of non-zero roots of the heterotic superstring symmetry group $E_8 \times E_8$. The **50**th SL from the bottom of CTOL is the **496**th from the highest Tiphareth. This means that the number of Malkuth is defined through the number of ELOHIM from the same point in CTOL as is the number of Tiphareth.

The number **1081** has the apt tetractys representation

1081 =
65
65 65
65 496 65
65 65 65 65.

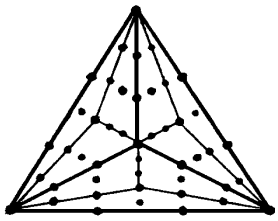
The central yod, which symbolizes Malkuth, has the number value of Malkuth, whose Godname number is **65**. This representation has a significance that is more than purely arithmetic. It can be said to express the idea that the material form (Malkuth) of the divine blueprint, realized at the centre of His Creation, is a perfect harmony or balance of form and function and this is the true meaning of "beauty," the translation of the Hebrew word 'Tiphareth.'

In terms of the integers 1, 2, 3 & 4, the number of Tiphareth has the representation:

1081 = 

15-sided polygon)

A triangle whose sectors are divided into three tetractyses has 46 yods:

46 = 

where 46 = **15** + **31**. The 46th triangular number is **1081**:

1081 = 1 + 2 + 3 +… + 46.

Divided into three tetractyses, a triangle has 19 yods. Since $19^2 = 361$,

$$3(19^2 - 1) + 1 = \mathbf{1081}.$$

$$19^2 = 1 + 3 + 5 + 7 + ... + 37.$$

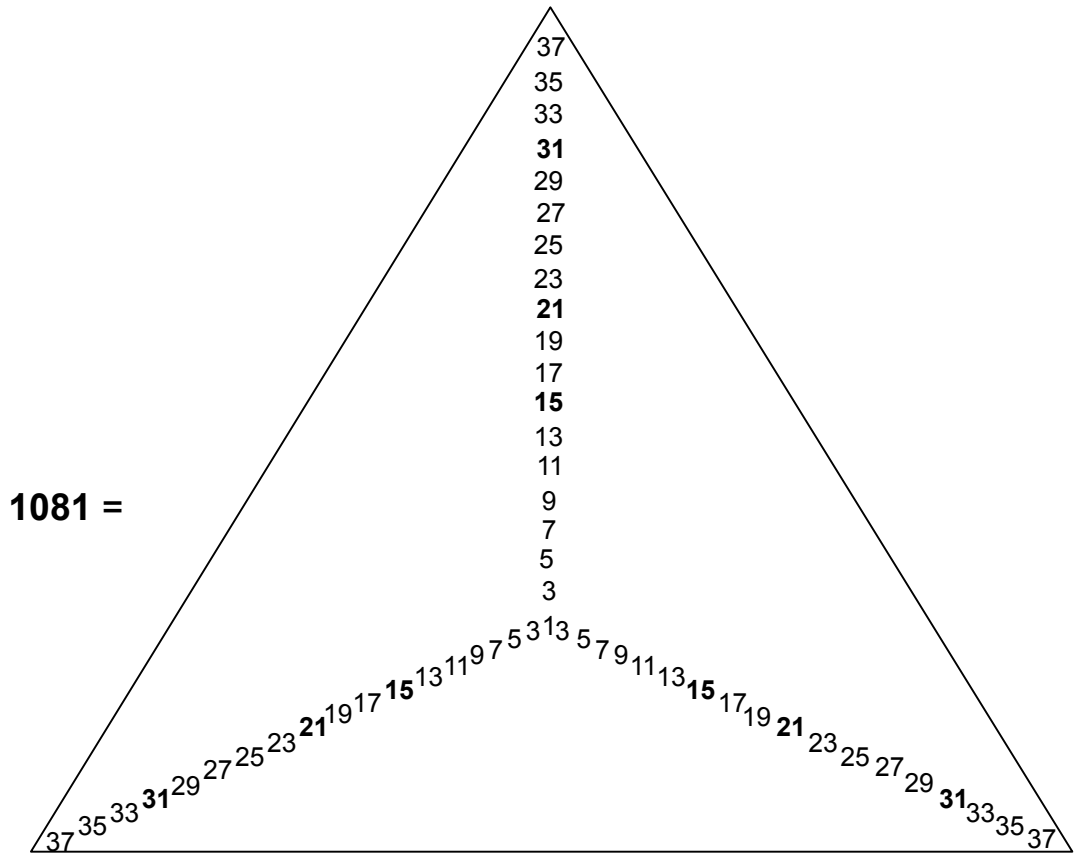
Therefore,

$$\mathbf{1081} = 1 + 3(3 + 5 + 7 + ... + 37),$$

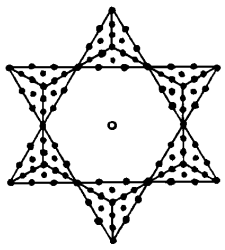
i.e., **1081** is the sum of 55 odd integers, where

$$55 = \begin{array}{c} 1 \\ 2\ \ 3 \\ 4\ \ 5\ \ 6 \\ 7\ \ 8\ \ 9\ \ 10 \end{array}$$

is the *tenth* triangular number. This is a remarkable property of the number of Tiphareth in view of the significance of the number 55 to the structure of CTOL. The mathematical significance of the 19 yods in a tetractys-divided triangle is that they define 19 odd integers 1, 3, 5... 37 summing to 19^2, a three-fold array of which sums to **1081**:



As the number of the sixth Sephirah from the top of the Tree of Life, **1081** finds its natural representation in the *six*-pointed Star of David (known in Hinduism as the "Sign of Vishnu"). This ancient religious symbol was shown earlier to generate the number value **73** of Chokmah when divided into tetractyses. When its triangular points alone are divided into tetractyses, it generates the number of Tiphareth in the following way:

1081 = 

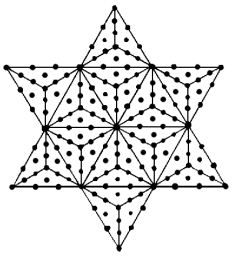
○ = 1

● = 1 + 2 + 3 + 4

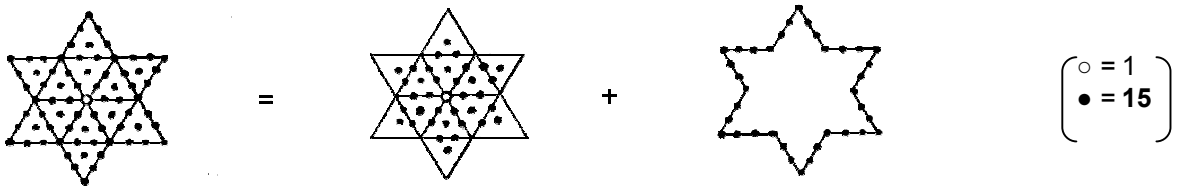
The central yod denotes the value 1 of the letter A in the Hebrew name ThPARTh, the sum of the **48** yods

on the boundary of the points of the Star of David is 480 — the sum of the values of the letters Th and P — and the sum of the 60 yods inside the star is 100, which is the sum of the values of the letters R and Th.

Completely divided into tetractyses, the Star of David has 181 yods:

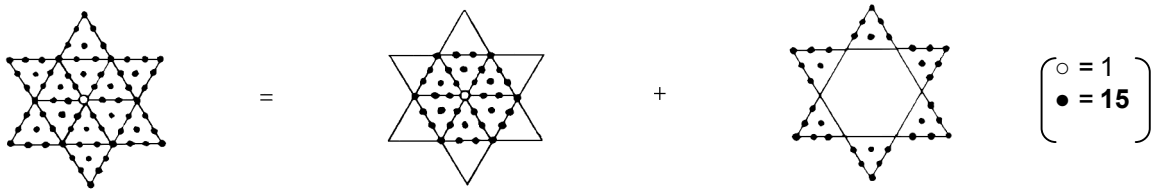
181 = 

This is the number of SLs on the central pillar of CTOL between the highest and lowest Tiphareths. 181 is the 91st odd integer, showing how the Star of David defines the number of trees in CTOL. It has **36** tetractyses. The number of ELOHA, the Godname of the *sixth* Sephirah Geburah, is not only the number of yods on the boundary of this *six*-pointed star but also the number of tetractyses into which it can be divided.



1081 **541** **540**

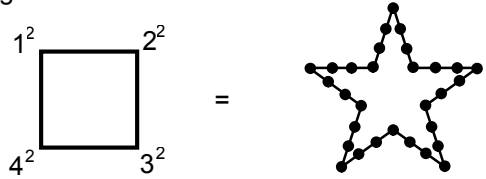
The Star of David was shown in Section 3 to generate the number **73** of Chokmah when divided into tetractyses. If the number **15** of YAH is assigned to the **72** yods surrounding its centre, with the latter assigned as before the number 1, the sum of the **73** yods is **1081**. Moreover, the number 541, which we described earlier as the number of SLs traversed in the descent from the highest Tiphareth to the lowest Tiphareth of CTOL, is the sum of the yods forming the hexagonal body of the star, whilst the number 540, which was described as the number of SLs traversed in the *ascent* from the lowest to the highest Tiphareth, is the sum of the yods forming the points of the star. Alternatively, 541 is the sum of the yods



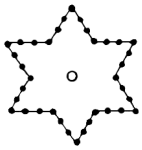
1081 **541** **540**

inside the boundary of the star and 540 is the sum of the yods on its boundary.

If, instead, a non-central yod is assigned the value

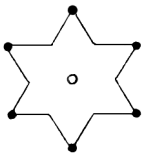
30 = 

namely, the number of yods on the *boundary* of a pentagram, then **1081** is the sum of the values of the yods on the boundary of the Star of David and at its centre:

1081 = 

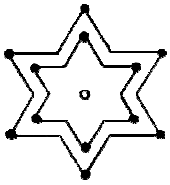
These two ancient religious symbols thus generate the number of Tiphareth, the centre of the Tree of Life. They create mathematical "beauty."

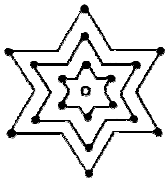
Returning to a Star of David with its yods weighted with the number of YAH, the sum of the central yod and the yods at the tips of the star points is

91 = 

○ = 1
● = **15**

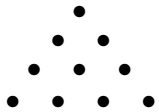
The number of trees in CTOL is thus encoded in this representation of the number of Tiphareth. Counting from the lowest Tiphareth, the highest Tiphareth of CTOL is the 181st SL on the central pillar. It is also the 271st tree level. These two numbers are generated, respectively, by the two Stars of David defined by the tips of the triangular star points and their centres and by the centres of the triangular sectors of the hexagonal body of the star:

181 = 

271 = 

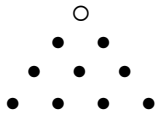
○ = 1
● = **15**

As Tiphareth of the **50**th tree, Kether of the **49**th tree (the highest point of the Tree of Life representation of the cosmic physical plane) is tree level number 151. It is 150 tree levels above the lowest point of CTOL. 150 is simply the sum of the 10 yods forming a point of the Star of David representation of **1081** described earlier:

150 = 

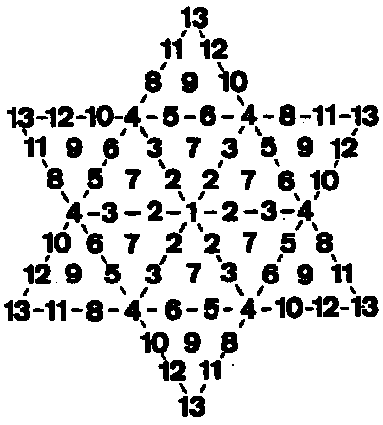
(● = **15**)

Tiphareth is the *fifth* Sephirah, counting from Malkuth. The highest point of the cosmic physical plane is the 136th tree level from Tiphareth of the *fifth* tree, i.e., the SL most representative of Tiphareth. 136 is the sum of the ten yods forming a sector of the hexagon in a Star of David:

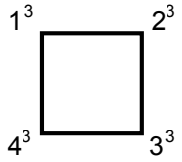
136 = 

○ = 1
● = **15**

The number 541 is the sum of the integers 1, 2, 3… 13 that can be assigned symmetrically to the **73** yods of the Star of David:

541 = 

It is the 100th prime number, where

100 = 

The number of trees in CTOL is the 13th triangular number:

$$91 = 1 + 2 + 3 + ... + 13.$$

This number is thus encoded in the representation above. It is interesting that Tiphareth of the 13th tree emanates **26** SLs on the central pillar and **50** SLs on the side pillars, a total of **76** SLs, which is the number of the Godname of Tiphareth: YAHWEH ELOHIM = **26** + **50**.

The number of Tiphareth has a Star of David representation defined by the number **26** of YAHWEH as well as by the number 1**5** of YAH (Fig. 17). Assigning the Monad, or 1, to its centre and consecutive even integers (starting with the Tetrad, 4) to the yods of the tetractyses making up the Star of David, the sum of

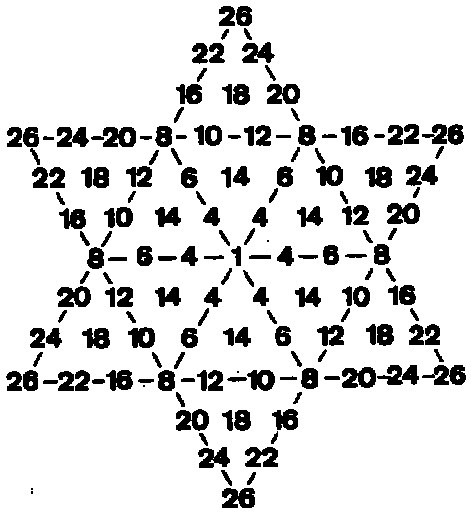
1081 = 

Figure 17

the **73** integers is **1081**. Notice that the sum of the integers **26** at the points of the star is 156, which is the sum of the values of all the combinations of letters in TETRAGRAMMATON.

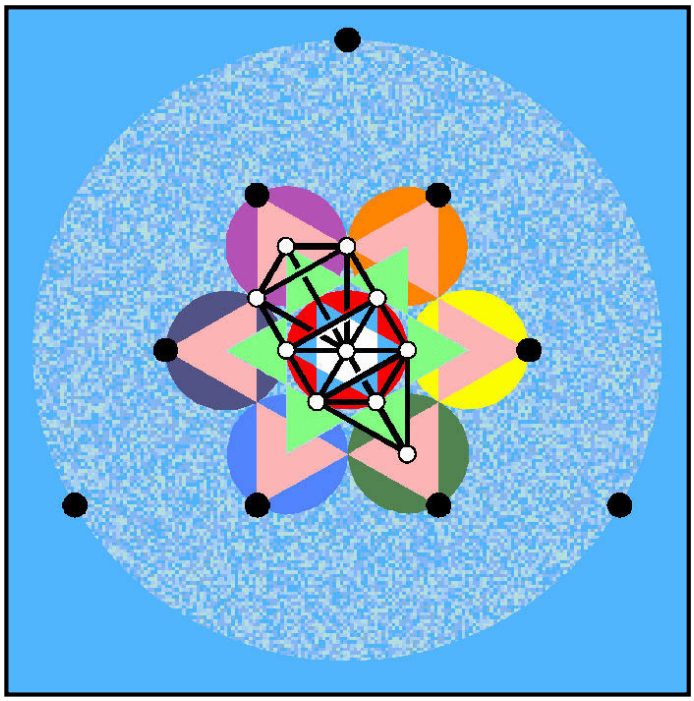


Figure 18

The Essenes called the Star of David the "Seal of Solomon." In Hinduism, it is the "Sign of Vishnu." The reason for this name is that Vishnu the Preserver is the Second Person of the Hindu Trinity, or Trimûrti, and thus corresponds to Kabbalah's Chokmah, whose number was shown earlier to be the number of yods generated in this figure when it is divided into tetractyses. Its shape generates the form of the Tree of Life (Fig. 18). The Pythagoreans regarded the Star of David as the symbol of Creation. Truly, it is a potent mathematical symbol, well deserving its universal, sacred reputation. It embodies both “wisdom” (**73**) and “beauty” (**1081**).

9. Netzach

GODNAME: YHVH TzBAUT
ENGLISH VERSION: YAHWEH SABAOTH.
MEANING: "Hosts of YAHWEH."
NUMBER: **129**.

YHVH	Tz	B	A	U	T	
26	90	2	1	6	400 → 4	= **26** + **103** = **129**.

(Value of letter T is contracted).

Counting from both the first and the last Sephirah of Construction, Netzach is the *fourth* such Sephirah. It corresponds to the fourth cosmic or solar ("Buddhic") plane and to the fourth subplane of any plane. The lowest subplane of the fourth solar plane is the 22nd plane, counting from the lowest subplane of the physical solar plane. Subplanes are represented by trees, and Netzach of the 22nd tree is the 130th SL. It emanates **129** SLs. It is the **26**th SL below Tiphareth of the **26**th tree, the **155**th SL, which is determined by ADONAI MELEKH, the complete Godname of Malkuth with number value **155**. The number of YAHWEH SABAOTH is therefore the number of SLs emanating from the lowest Netzach level of the *fourth* solar plane corresponding to Netzach. Notice that, as Netzach of Atziluth, the Godname YAHWEH SABAOTH is the 22nd SL from the bottom of the 4-tree representation of the four Kabbalistic Worlds.

129 is the **65**th odd integer, where **65** is the number of ADONAI, the partial Godname of Malkuth. Since the number of SLs on the Pillar of Mercy up to Netzach of the nth tree is (2n-1), the nth odd integer, Netzach of the **65**th tree is the **129**th SL on the right-hand pillar. In addition, Malkuth of the **65**th tree is the **129**th SL on the central pillar. The Godname number of Netzach thus defines the Malkuth of the tree specified by its Godname number. There are **129** SLs on the central pillar above Kether of the **26**th tree, which we shall point out later is the counterpart in the higher realms of consciousness in CTOL of the time dimension of the **26**-dimensional space-time predicted by the theory of bosonic strings. In this way, the number of YAHWEH SABAOTH prescribes the dimensionality of space-time.

Although not a prime number, **129** is the sum:

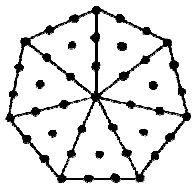
129 = 2 + 3 + 5 + 7 + 11 + 13 + 17 + 19 + 23 + 29

of the first *ten* prime numbers. The significance of this remarkable fact, discounting coincidence as implausible, is unknown.

Netzach is the seventh Sephirah from Kether. This gives significance to the fact that, if the *seven*-sided heptagon is divided into tetractyses, its 43 yods, weighted with the sum of the squares:

$$1^2 + 2^2 + 3^2 + 4^2 = 30,$$

generate the number:

1290 = **129** + **129** **129** + **129** **129** **129** + **129** **129** **129** **129** =  (● = $1^2 + 2^2 + 3^2 + 4^2$)

We shall see shortly that the number 7 is also significant for the number of Netzach.

HEBREW NAME: NTzCh.
MEANING: "Victory."

NUMBER: **148**.

N	Tz	Ch	
50	90	8	= **148**.

The 25th tree represents the *fourth* subplane of the *fourth* solar (Buddhic) plane. Each solar plane corresponds to a Sephirah of Construction, as does each subplane, and thus the 25th tree uniquely corresponds to Netzach, the fourth Sephirah. Netzach of the 25th tree is Chokmah of the 24th tree, which is the **148**th SL. The number of Netzach is thus a coordinate specifying the position in CTOL of the SL *most typifying this Sephirah*. As the **49**th SL on the right-hand pillar, Netzach of the 25th tree emanates **49** SLs on the left-hand pillar, i.e., there are 98 SLs on the side pillars up to this Netzach, as well as **50** SLs on the central pillar. These numbers are indicated in the values of the letters of Netzach:

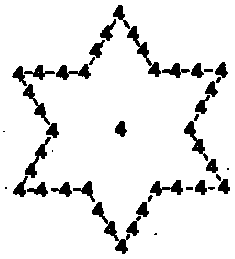
NTzCh = **50** + (90+8) = **50** + 98 = **148**.

Netzach of the 74th tree is Chokmah of the **73**rd tree, where **73** is the number of Chokmah. Below it are **148** SLs on the central Pillar of Equilibrium. The number of Netzach is therefore the number of SLs on the central pillar emanating from Chokmah of the tree specified by its number value. The fourth subplane of the fourth cosmic plane is represented by the **67**th tree, where **67** is the number of Binah. Netzach of the **67**th tree is the 400th SL in CTOL and the 133rd SL on the Pillar of Mercy. This means that the *fourth* SL of the tree representing the *fourth* subplane of the fourth cosmic plane defines the dimension 133 of the exceptional group E_7, the largest *exceptional* subgroup of the superstring group E_8. It is 84 SLs above the *fourth* SL of the tree representing the *fourth* subplane of the *fourth* solar plane, where

$$84 = \begin{array}{cc} 1^2 & 3^2 \\ 7^2 & 5^2 \end{array}$$

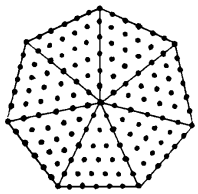
This serves as a remarkable illustration of the power of the Pythagorean Tetrad in determining CTOL-encoded numbers that characterize the mathematics of superstrings. One might ask what possible relevance Theosophical cosmic planes of consciousness could have for the smallest objects in the universe. But the question is misguided because it misses the point that is being demonstrated here. This is that the group mathematics of superstrings is part of the mathematics of the Tree of Life, God's blueprint for His Creation, and so its parameters must reappear in the Tree of Life description of any section of CTOL that is analogous to the 25-tree representing the counterpart in higher levels of CTOL of the 25 spatial dimensions of strings, viz. the fourth subplanes of the fourth cosmic and solar planes. As the Hermetic axiom declares: "As above, so below."

The Pythagorean Tetrad also provides a Star of David representation for the number **148** of Netzach:

148 = 

The number 4 at the centre symbolizes the fact that Netzach is the *fourth* Sephirah of Construction.

Finally, in view of the fact that Netzach is the seventh Sephirah to be emanated in the Tree of Life, it is remarkable that **148** is the number of yods in a heptagon whose sectors are triangular arrays of 28 yods with seven yods along each side:

148 = 

Furthermore, **148** is what mathematicians would call the seventh, heptagonal number after 1. Is this mere coincidence? Or is it not more likely that this is just another example of the powerful and beautiful mathematical coherence between the numbers of the Sephiroth and their Kabbalistic meaning, one that

reflects the fact that Kabbalah is the mathematically based, mystical revelation of Divine Intelligence?

10. Hod

GODNAME: ALHIM TzBAUT.
ENGLISH VERSION: ELOHIM SABAOTH.
MEANING: "Hosts of Elohim."
NUMBER: **153**.

ALHIM TzBAUT.
50 **103** = **153**.

Just as the **26**-tree is prescribed by the Godname number of Netzach because above it are **129** SLs on the central pillar of CTOL, so, too, it is defined by the Godname number of Hod because Hod of the **26**th tree is the **153**rd SL. As the 51st SL on the Pillar of Judgement, it emanates **50** SLs on the Pillar of Mercy and 52 SLs on the Pillar of Equilibrium, i.e.,

$$\mathbf{153} = \mathbf{50} + (52+51)$$

$$= \mathbf{50} + \mathbf{103},$$

which numbers are the values of ELOHIM and SABAOTH in the Godname of Hod. The number of SABAOTH is the number of SLs up to Hod of the **26**th tree on the Pillars of Judgement and Equilibrium. Since, for reasons which will be given shortly in the discussion of Malkuth, the **26**-tree represents the counterpart in higher levels of reality of the **26**-dimensional space-time predicted by quantum mechanics for bosonic strings„ we see that the Godname of Hod prescribes the dimensionality of space-time. In fact, the Godnames of *all* the Sephiroth determine the space-time section of CTOL in various ways.

The number of tree levels up to Kether of the **50**th tree is 154. Binah of the **50**th tree is therefore on the **153**rd tree level. It was pointed out in the discussion of Binah that this SL is the **248**th from the top of CTOL, thus demonstrating how the number of ELOHIM prescribes the dimension **248** of the superstring group E_8. The number of ELOHIM SABAOTH, which embodies archetypal ideas of the *form* of the Image of God, specifies the tree level containing the **248**th SL from the top of CTOL and thus defines the very number which, as the number of gauge bosons mediating superstring interactions, characterizes the physics of the microphysical world and so ultimately the structure of matter and the forms it takes in the large-scale world.

HEBREW NAME: HUD.
MEANING: "Glory."
NUMBER: **15**.

H U D
5 6 4 = **15**.

The third tree of CTOL corresponds to Hod, which is the third Sephirah, counting from Malkuth. Hod of the third tree is the **15**th SL. It is the fifth SL on the Pillar of Judgement and emanates six SLs on the Pillar of Equilibrium and four SLs on the Pillar of Mercy. These numbers are the values of the letters of Hod! The number of Hod and its letter values specify the position in CTOL of the SL *most typifying Hod*. Because of its simplicity, Hod is a convincing example of how the Sephirothic names and Godnames refer to CTOL through their gematria numbers.

We saw earlier that the Godname number of Chesed specifies Chesed of the fifth tree — the **31**st SL. Assigning the integer 1 to this SL, 2 to the next lower SL, 3 to the one after that, and so on, then the sum of the **31** integers assigned to the SLs from Chesed of the fifth tree down to the lowest point of CTOL is

$$1 + 2 + 3 + ... + \mathbf{31} = \mathbf{496},$$

which is the number of Malkuth. The sum of the integers extending down to Hod of the third tree, the 17th SL from Chesed of the fifth tree, is

$$1 + 2 + 3 + ... + 17 = \mathbf{153},$$

which is the number of ELOHIM SABAOTH. Since the number of Hod locates Hod of the third tree, it can be said to be related through the **31**st SL to its Godname number, which is the 17th triangular number. Far from being arbitrary, the number values of the names of the Sephiroth and their Godnames are related to one another through CTOL. They are also connected in arithmetic ways. For example,

$$\mathbf{153} = 1^3 + 3^3 + 5^3$$

and

$$\mathbf{496} = 1^3 + 3^3 + 5^3 + 7^3.$$

The number **153** has the property:

$$\mathbf{153} = 1! + 2! + 3! + 4! + 5!.$$

This has the following interpretation vis-à-vis the Tree of Life: counting from Chesed, the first Sephirah of Construction, Hod is the *fifth* such Sephirah. The five Sephiroth: Chesed, Geburah, Tiphareth, Netzach and Hod have $2^5 - 1 = \mathbf{31}$ different combinations and the five successive sets of emanations:

Chesed;
Chesed-Geburah;
Chesed-Geburah-Tiphareth;
Chesed-Geburah-Tiphareth-Netzach;
Chesed-Geburah-Tiphareth-Netzach-Hod;

possess

$$1! + 2! + 3! + 4! + 5! = \mathbf{153}$$

different permutations. We found in the discussion of Chesed that the sum of the **31** combinations of the five integers 1, 2, 3, 4 & 5 is 240. The discussion of Kether revealed that this number measures the intrinsic "degrees of freedom" associated with each tree in CTOL, being the sum of the number of all possible combinations of SLs emanated during the cycle of growth of each successive tree. The number 240 plays a central role in the manifestation of the Tree of Life in the microcosm, being the number of yods other than SLs in the 1-tree when its 19 triangles are Type A triangles. Because of its link to the first five integers, the Godname number of the formative Sephirah Hod, which embodies mathematical ideas governing the *form* of any realisation of the Tree of Life, prescribes the 240 non-zero roots of the superstring group E_8, whose corresponding gauge charges are spread along the ten whorls of the UPA (the basic unit of matter described by Annie Besant & C.W. Leadbeater), which can now be identified as the subquark state of the $E_8 \times E_8$ heterotic superstring.

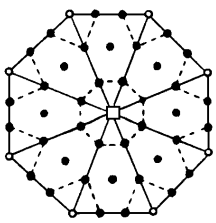
11. Yesod

GODNAME: AL ChI
ENGLISH VERSION: EL ChAI.
MEANING: "Living God."
NUMBER: **49**.

A	L	Ch	I	
1	30	8	10	= **49**.

The second cosmic or solar plane and the second lowest subplane of any plane formally correspond to Yesod, which is the second Sephirah of Construction above Malkuth. The ninth tree represents the second subplane of the second solar (astral) plane. Yesod of this tree is the **50**th SL (the **49**th SL, counting from Yesod of the first tree). The Godname number of Yesod therefore specifies the position, relative to the lowest Yesod of CTOL, of the SL *most typifying Yesod*, viz. the second SL of the tree representing the second subplane of the second solar plane. This SL is the **26**th tree level. The numbers of YAHWEH and EL ChAI define the Daath ("Abyss") between the physical universe (physical plane) mapped by the 7-tree and the 8th tree mapping the lowest astral subplane, from which the seven trees emanate as the Malkuth level of the cosmic physical plane. We shall see later that the **26**th tree level is where the dimension of time first appears in CTOL. The translation of EL ChAI as "living God" conveys the meaning of an aspect of God that exists, or lives, in time.

Every **49**th SL is the corresponding Sephirah of every eighth tree. The number of EL ChAI defines a translational symmetry of CTOL. **49** is the number of yods in an octagon divided into tetractyses:

49 = 

AL ChI = 1 + 30 + 8 + 10 = 1 + 8 + 40 = 1(□) + 8(○) + 40(●)

The value 1 of the letter A denotes the centre of the octagon, the value 8 of the letter Ch denotes its eight corners and the sum of the values of the letters L and I denotes the 40 hexagonal yods. As will see in the discussion of Malkuth, the octagon is the geometrical representation of numbers defining the dynamical *basis* of the form that the 'Image of God' blueprint takes in matter, thus explaining why Yesod has the translation of "Foundation." In view of this, it is neither a coincidence nor a mystery why one of the titles given by the Pythagoreans to the number 8 was "seat" or "abode."

Counting from the lowest Yesod, the **49**th SL on the central pillar of CTOL is Yesod of the 25th tree, whose Kether will be shown later to define the number of the complete Godname of Malkuth, whilst the (8+10+1=19)th SL on the central pillar is Yesod of the 10th tree, whose Kether defines the number **65** of the partial Godname of Malkuth. This SL is the (1+30=**31**)st down the central pillar from Yesod of the 25th tree. The number **31** of EL defines therefore the highest Yesod of the first ten trees, which are the counterpart of the ten dimensions of superstring space-time.

If we count from the bottom of CTOL, the **49**th SL on the central pillar is Malkuth of the 25th tree and the 18th SL on the central pillar is Yesod of the ninth tree, i.e., the **50**th SL (**49**th from Yesod of the 1st tree). The number of ChAI therefore specifies Yesod of the ninth tree. The significance of this 9:25 division for string theory is that the number of EL ChAI prescribes the lowest 25 trees of CTOL, which are the higher counterpart of the 25 spatial dimensions of bosonic strings, whilst the number of ChAI prescribes the lowest nine trees denoting the nine spatial dimensions of superstrings. The number of EL prescribes the 16 trees above them corresponding to the 16 higher bosonic string dimensions whose compactification generates superstrings. The number of EL ChAI also prescribes the cosmic physical plane — the 'cosmic' level of Malkuth — represented by the lowest **49** trees of CTOL. This Godname prescribes *analogous* sections of CTOL because the 25-tree is the counterpart of the 25-dimensional space of bosonic strings, i.e., the Malkuth level of reality, whilst the cosmic physical plane corresponds formally to Malkuth, being the seventh of the cosmic planes.

49 is the sum of the **26** combinations of the four rows of unit integers in the tetractys below:

	COMBINATIONS	**SUM OF COMBINATIONS**
1	1	1
1 1	1, 1, (1+1)	4
1 1 1	1, 1, 1, (1+1), (1+1), (1+1), (1+1+1)	12
1 1 1 1	1, 1, 1, 1, (1+1), (1+1), (1+1), (1+1), (1+1), (1+1), (1+1+1), (1+1+1), (1+1+1), (1+1+1), (1+1+1+1)	32
		TOTAL = **49**

More generally, it is the number of objects present in the **26** combinations of ten objects arranged in the four rows of a tetractys. This connects YAHWEH and EL ChAI.

As the seventh square, **49** is the sum of the first seven odd integers, where 7 is the fourth odd integer, as well as the (1×2×3×4=24)th odd integer after 1. In terms of 1, 2, 3 & 4:

$$\mathbf{49} = \frac{1^2 + 2^2 + 3^2 + 4^2 + \ldots + (1\times2\times3\times4)^2}{1^3 + 2^3 + 3^3 + 4^3}$$

$$= \sum_{n=1}^{1\times2\times3\times4} (n/1+2+3+4)^2.$$

The **49**th triangular number is

$$1225 = 35^2 = \quad 1^3,\ 3^3,\ 5^3,\ 7^3,\ 9^3 \quad = \quad \mathbf{49} \times 1,\ 3,\ 5,\ 7,\ 9$$

Hence,

$$\mathbf{49} = \frac{1^3 + 3^3 + 5^3 + 7^3 + 9^3}{1 + 3 + 5 + 7 + 9}.$$

The **49**th odd integer is

$$\mathbf{97} = \mathbf{21} + \mathbf{26} + \mathbf{50},$$

i.e., it is the sum of the Godname numbers of the Supernal Triad. It is also the number of *Haniel*, the Archangel of Netzach.

49 has the tetractys representations:

$$\mathbf{49} = \begin{array}{c} 2^0 \\ 2^1\ 2^1 \\ 2^2\ 2^2\ 2^2 \\ 2^3\ 2^3\ 2^3\ 2^3 \end{array} = \begin{array}{c} 1 \\ 1\ 1 \\ 1\ 1\ 1 \\ 1\ 1\ 1\ 1 \end{array} + \begin{array}{c} 1^5 \\ 2^5\ 2^5 \\ 3^5\ 3^5\ 3^5 \\ 4^5\ 4^5\ 4^5\ 4^5 \end{array}$$

$$1^3 + 2^3 + 3^3 + 4^3$$

A curious property of the letter values of EL ChAI is that their product is

$$1\times30\times8\times10 = 2400 = \mathbf{49}^2 - 1 = 3 + 5 + 7 + 9 + \ldots + \mathbf{97}$$

$$= 2400 = \begin{array}{c} 240 \\ 240\ \ 240 \\ 240\ \ 240\ \ 240 \\ 240\ \ 240\ \ 240\ \ 240, \end{array}$$

where 240 is the number of non-zero roots of the superstring group E_8. Notice also that

$$(1+30)\times8\times10 = 2480 = \begin{array}{c} \mathbf{248} \\ \mathbf{248\ \ 248} \\ \mathbf{248\ \ 248\ \ 248} \\ \mathbf{248\ \ 248\ \ 248\ \ 248}, \end{array}$$

where **248** is the number of roots of E_8. The number 2400 is the sum of the **48** odd integers 3, 5, 7... **97** that can be assigned to the **48** yods surrounding the centre of an octagon divided into tetractyses (Fig. 19). **48** is the number of *Kokab*, the Mundane Chakra of Hod. The 240 gauge fields of E_8 associated with the gauge charges corresponding to its non-zero roots have 2400 space-time components because each field extends in all 10 dimensions and has 10 components. This shows how the number of EL ChAI prescribes this important number of superstring physics. As 2400 = **48**×**50**, this number is also the sum of the number of ELOHIM assigned to each of the **48** yods.

2400 =

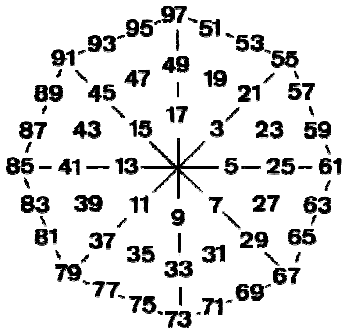


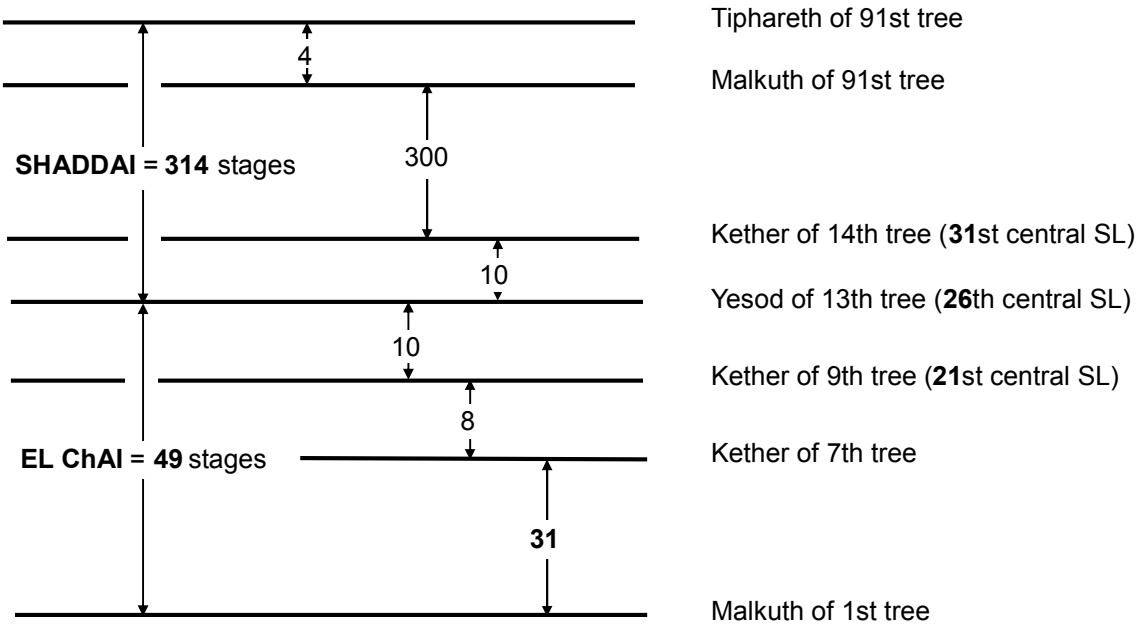
Figure 19

COMPLETE GODNAME: ShDI EL ChI.
ENGLISH VERSION: SHADDAI EL ChAI.
MEANING: "Almighty Living God."
NUMBER: **363**.

Sh	D	I	E	L	Ch	I	
300	4	10	1	30	8	10	= **314** + **49** = **363**.

The Lightning Flash descends in **363** stages from Kether of the 90th tree to the bottom of CTOL. This means also that there are **363** stages of descent of the Lightning Flash from the highest Sephiroth of Construction (Chesed of the 91st tree) to the lowest Yesod of CTOL. Kether of the 90th tree is Tiphareth of the 91st tree, which, being on the Pillar of Equilibrium, marks the very first stage of Creation where Force and Form achieve balance. The Lightning Flash descends from this starting point in four stages to the highest Malkuth of CTOL, then in 300 stages to Kether of the 14th tree, which is the highest point of the tree that represents the highest subplane of the second, solar (astral) plane corresponding to Yesod.

Then there are ten stages of descent to Yesod of the 13th tree, which is the **26**th SL on the central pillar. From here there are ten stages of descent to Kether of the ninth tree, which is the **21**st SL on the middle pillar and the highest point of the tree representing the second subplane of the second solar plane,



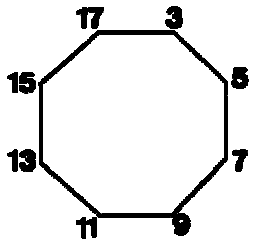
both of which correspond to Yesod. There are another eight stages of descent to Kether of the seventh tree (the highest point of the tree representing the highest subplane of the physical solar plane), the Lightning Flash finally descending in **31** stages to the bottom of CTOL. These numbers of stages are the numerical values of the letters of SHADDAI and ChAI and the number of EL. The number **314** of SHADDAI ("Almighty") is the number of stages of descent of the Lightning Flash from the first stage of creation on the Pillar of Equilibrium to the **26**th SL on this pillar. The number **49** of EL ChAI ("Living God") is the number of stages of descent from the **26**th SL to the highest point of the solar physical plane (10+8=18) and then to its lowest point (10+8+**31**=**49**), the bottom of CTOL. Does not coincidence seem an unlikely explanation for the fact that **314** stages of descent of the Lightning Flash from the highest Tiphareth of CTOL reach both the **26**th SL on the Pillar of Equilibrium and the **73**rd SL from the lowest Yesod of CTOL, where **73** is the number of Chokmah and **26** is the number of its Godname? Is it plausible that it is just chance that values of *three* of the seven letters of SHADDAI EL ChAI define SLs in CTOL specified by Godname numbers, viz. **31**, **26** and **21**?

HEBREW NAME: YSUD.
MEANING: "Foundation."
NUMBER: **80**.

Y	S	U	D	
10	60	6	4	= **80**.

The highest subplane of the second solar plane corresponding to Yesod is mapped by the 14th tree. Yesod of this tree is the **80**th SL. The number **80** of Yesod thus specifies the position of the *highest* Yesod of the Tree of Life representation of the second solar plane, which is the solar plane that corresponds to this Sephirah. Our discussion of Tiphareth pointed out that Daath of the 13th tree is the centre of the vertical column of SLs on the Pillar of Equilibrium of the **26**-tree. Moreover, this SL is **26** SLs above the lowest Yesod of CTOL — another example of the mathematical coherence between the numbers of Godnames and Sephirothic names. Yesod of the 14th tree is the fourth SL above Kether of the 12th tree, which is the **76**th SL (**26**th on the central pillar) from the lowest Yesod of CTOL. Kether of the 12th tree is six SLs above Kether of the 11th tree, which is 60 SLs above Kether of the first tree, which in turn is ten SLs above the lowest Yesod. These numbers are the letter values of Yesod! Such detailed correlation cannot be due to coincidence.

The number **80** is the sum of the first eight odd integers after 1:

80 = 

This shows once again the relevance of the octagon for Yesod.

The number of Yesod is the sum of the **15** combinations of the quartet of integers 1, 2, 3 & 4 that are symbolized by the four rows of the Pythagorean tetractys:

4

3
2 } 6
1

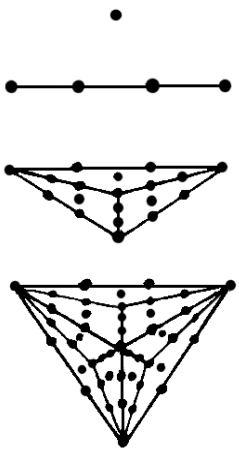
4 + 3
4 + 2
4 + 1
3 + 2
3 + 1
2 + 1 } 60
4 + 3 + 2
4 + 3 + 1
4 + 2 + 1
3 + 2 + 1

4 + 3 + 2 + 1 } 10

YSUD = 10 + 60 + 6 + 4 = **80**

That this could be the result of chance is rendered highly implausible by the fact that the numbers 4, 6, 60 and 10 are the values of, respectively, the letters D, U, S and Y of the name Yesod, which is written from right to left in Hebrew: DUSY.

In our discussion of Chokmah, it was found that the number of YAHWEH defines the number of corners, lines joining pairs of corners, triangles and tetrahedra that constitute the trunk of the Tree of Life. If all the lines are divided into four yods and all the triangular faces are divided into *three* tetractyses, the total number of yods thus generated is **80**. The number of Yesod, whose translation is "foundation," is the number of yods required to construct the trunk, or foundation, of the Tree of Life out of tetractyses. This number is also the number of yods needed to convert the triangles composing the 1-tree into tetractyses, illustrating the meaning of the word 'foundation' when applied to the *lowest* tree of CTOL. The trunk has **65** hexagonal yods, showing how ADONAI, the Godname of Malkuth with number value **65** prescribes the skeletal, (that is, *Malkuth-like)* frame or section of the Tree of Life.



Number of yods
1
4
19
56
80

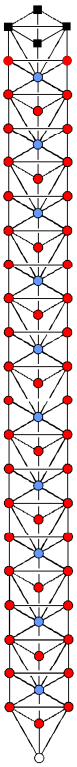
The **80**th tree level is Daath of the **26**th tree. Therefore, the number of Yesod specifies the tree in CTOL that is the counterpart of the dimension of time, for this is the **26**th dimension of the **26**-d space-time of bosonic strings, as we shall discuss next.

12. Malkuth

GODNAME: ADNI.
ENGLISH VERSION: ADONAI.
MEANING: "MY Lord."
NUMBER: **65**.

A	D	N	I	
1	4	50	10	= **65**.

Through Malkuth, the tenth and last Sephirah, the superphysical levels of reality become rooted in physical matter. Of all the Sephiroth, we might therefore expect the Godname of Malkuth to express some scientifically meaningful, characteristic of the objective world. This expectation is confirmed in many spectacular ways, the first of which will now be revealed. Kether of the 10th tree is the **65**th SL. The number of ADONAI specifies the *highest* point of the lowest ten trees of CTOL. The 10-tree has **21** SLs on each side pillar and so is prescribed by the number of EHYEH as well. ADONAI is represented by a decagon enclosed in a square and divided into tetractyses (Fig. 20). The value 1 of the letter A denotes the Malkuth of the first tree, the value 4 of the letter D denotes Kether, Chokmah, Binah and Daath of the 10th tree, the value 50 of the letter N denotes the ten Yesods and 20 SLs on each side pillar below the highest Chokmah and Binah and the value 10 of the letter I denotes the ten Tiphareth SLs in the 10-tree.

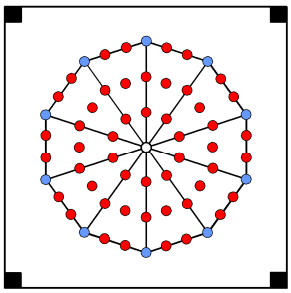


Equivalence of the 10-tree prescribed by

ADONAI and its representation by a decagon

אדני

= 65 =



A D N I

65 = 1 4 50 10

= 1(○) + 4(■) + 50(●) + 10(●)

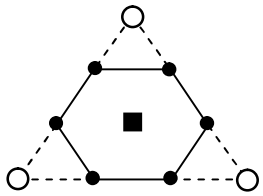
Figure 20

According to superstring theory, space-time has ten dimensions. The lowest ten trees of CTOL are the counterparts of these dimensions, which are actually denoted by the lowest ten tree levels of CTOL, as we shall show later. This means that the *Godname of Malkuth prescribes the dimensionality of the space-time of superstrings*. This conclusion will prove to be of crucial importance both to the demonstration of the encoding in ten trees of the root composition of SO(32) and $E_8 \times E_8$ — the two symmetry groups at the heart of superstring theory and to the micro-psi description of the subquark superstring, the 1680 turns of whose whorls will be shown to be determined by the number value of ADONAI, as well as by all the other Godnames.

It must be emphasized that the lowest ten trees (indeed, the lowest 25 trees of CTOL) are merely a higher counterpart or *analogy* to the ten (and 25) dimensions of space. They signify levels of consciousness corresponding to Theosophical subplanes as yet virtually unknown to science, although not to human culture, for some of these realities have been and continue to be explored (usually unintentionally) by people during near-death-experiences, trances and out-of-the-body-experiences.

Because superstring theory has given respectability to the notion of higher dimensions of space, some people today still repeat the naive errors of 19th century hyperspace philosophers like Charles Hinton and Claude Bragdon by identifying higher realities with human perception of higher dimensions of space-time, ignoring the fact that the latter are infinitesimal in size. However, the lowest ten trees representing levels of human (as well as non-human) consciousness do bear a *formal* correspondence to these dimensions because of the correspondence between the seven tree levels of the Tree of Life and the seven Sephiroth of Construction.

The tetractys was for the Pythagoreans the symbol of wholeness. The Decad was for them the most sacred number because it was the unity of the Monad made manifest. The ten yods of the tetractys symbolize the ten-fold nature of God expressed through the Sephiroth of the Tree of Life. This paradigm for natural phenomena has been discovered by physics in the form of superstring theory. Each of the ten dimensions of space-time is a degree of freedom that bears a formal correspondence to a Sephirah:



○ = dimension of large-scale space
● = dimension of compactified space
■ = time dimension

The three dimensions of ordinary space correspond formally to the Supernal Triad of Kether, Chokmah and Binah, which are symbolized by the corners of the tetractys, the six dimensions of compactified space correspond to the six Sephiroth of Construction above Malkuth, symbolized by the yods at the corners of the hexagon, and the dimension of time corresponds to Malkuth (the temporal world), which is symbolized by the yod at the centre of the tetractys. The Godname ADONAI expresses the wholeness of the realized form of the divine blueprint in matter by prescribing the ten dimensions of superstrings, each of which corresponds to one of the ten Sephiroth. SUPERSTRING THEORY (OR, RATHER, M-THEORY) IS THE MATHEMATICS OF THIS BLUEPRINT.

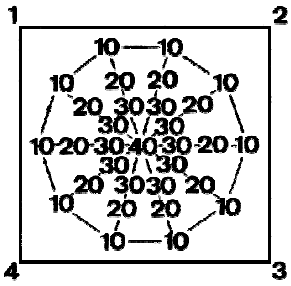
The number **65** is the sum:

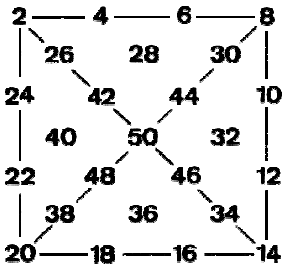
65 = $1^5 + 5^1 + 2^4 + 4^2 + 3^3$ = $1^4 + 2^3\ 2^3 + 3^2\ 3^2\ 3^2 + 4^1\ 4^1\ 4^1\ 4^1 + 5^0\ 5^0\ 5^0\ 5^0\ 5^0$

of the integers 1, 2, 3, 4 & 5 raised, respectively, to the powers 5, 4, 3, 2 & 1. It is therefore invariant with respect to interchange of corresponding powers and integers. It is also the sum of **15** powers of these integers, starting with the Tetrad as a power. This relates the number of ADONAI to the number of YAH, the fifth triangular number.

The sum of the complete Godname numbers of the first *four* Sephiroth is

650 = **543** **26** **31** **50** = **65** / **65 65** / **65 65 65** / **65 65 65 65**

= $1^2\ 2^2\ 3^2\ 4^2$ / $12^2\ 5^2$ / $11^2\ 6^2$ / $10^2\ 9^2\ 8^2\ 7^2$ = 

= 

This exhibits another remarkable connection between the number of ADONAI and the Tetrad, symbolized by the square. Notice that **50**, the number of ELOHIM, is the largest of the 25 even integers in the square that sum to 650.

65 can be expressed in terms of the Pythagorean integers 1, 2, 3 & 4 as:

$$\mathbf{65} = \frac{1^5\ \ 2^5\ 2^5\ \ 3^5\ 3^5\ 3^5\ \ 4^5\ 4^5\ 4^5\ 4^5 \;+\; 4^5\ \ 3^5\ 3^5\ \ 2^5\ 2^5\ 2^5\ \ 1^5\ 1^5\ 1^5\ 1^5}{1^3 + 2^3 + 3^3 + 4^3}$$

$$= \frac{1^2\ \ 2^2\ 2^2\ \ 3^2\ 3^2\ 3^2\ \ 4^2\ 4^2\ 4^2\ 4^2 \;+\; 1^3\ \ 2^3\ 2^3\ \ 3^3\ 3^3\ 3^3\ \ 4^3\ 4^3\ 4^3\ 4^3 \;+\; 4^2\ \ 3^2\ 3^2\ \ 2^2\ 2^2\ 2^2\ \ 1^2\ 1^2\ 1^2\ 1^2 \;+\; 4^3\ \ 3^3\ 3^3\ \ 2^3\ 2^3\ 2^3\ \ 1^3\ 1^3\ 1^3\ 1^3}{1 + 2 + 3 + 4}$$

65 is also the sum of the first *ten* integers after 1:

$$\begin{array}{c} \\ \\ \\ \mathbf{65} = \\ \\ \end{array} \begin{array}{c} 2 \\ 3 \quad 4 \\ 5 \quad 6 \quad 7 \\ 8 \quad 9 \quad 10 \quad 11. \end{array}$$

This shows how the Decad determines this number. **65** is the second number to be the sum of two squares in two ways:

$$\mathbf{65} = 8^2 + 1^2 = 7^2 + 4^2,$$

the first being the number **50** of ELOHIM (see Section 4). It is also the ratio:

$$\mathbf{65} = \frac{1^2 + 2^2 + 3^2 + \ldots + \mathbf{97}}{1 + 2 + 3 + \ldots + \mathbf{97}}$$

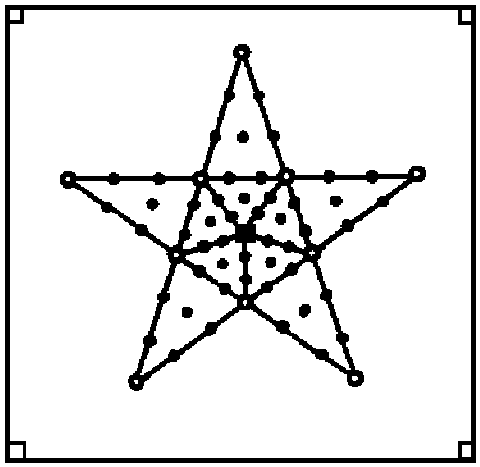
where

$$\mathbf{97} = \mathbf{21} + \mathbf{26} + \mathbf{50}$$

is the sum of the Godname numbers of the Supernal Triad, the **49**th odd integer and the number of *Haniel*, the Archangel assigned to Netzach. This is the arithmetic connection between the number of EL ChAI and the number of ADONAI.

We saw earlier that the pentagram defines the Godname number of Chesed. It is also part of the representation of the Godname number of Malkuth:

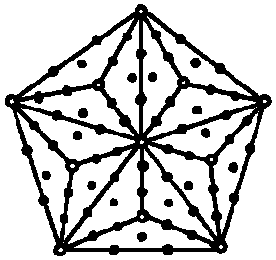
65 =



ADNI = 1 + 4 + 50 + 10 = 1(■) + 4(□) + 50(●) + 10(○)

The four yods at the corners of the square denote Kether, Chokmah, Binah and Daath of the 10th tree and the yod at the centre of the pentagram denotes Malkuth of the first tree. We also found that the Godname number of Chesed is the number of yods in a pentagon whose sectors are tetractyses. Similarly, the number of ADONAI is the number of hexagonal yods (●) in a pentagon whose sectors are converted into three tetractyses, i.e., a Type A pentagon:

65 (●) =



The total number of yods is **76**, the number of YAHWEH ELOHIM (see discussion of Tiphareth in Section 8).

COMPLETE GODNAME: ADNI MLK.
ENGLISH VERSION: ADONAI MALEKH.
MEANING: "The Lord and King."
NUMBER: **155**.

ADNI	M	L	K	
65	40	30	20	= **155**.

Kether of the 25th tree is the **155**th SL. This is also Tiphareth of the **26**th tree. As the centre of the Tree of Life, Tiphareth marks the meeting place of the Divine Spirit — eternal Cosmic Being — and evolving life-forms such as man. The boundary between Spirit and Matter is set by the Godname of Malkuth, the Sephirah denoting the outer, *physical* form of *Adam Kadmon*, Heavenly or Archetypal Man,* whether this be the organic body of a life-form or the physical cosmos itself. The number **155** of ADONAI MALEKH defines the boundary between the 25-tree, the higher counterpart of the lowest 25 tree levels signifying the 25 spatial dimensions of bosonic strings, and transpersonal regions of CTOL where consciousness has a unitive, mystical character that transcends subject/object duality. Space-time is the cosmic Malkuth

155 =

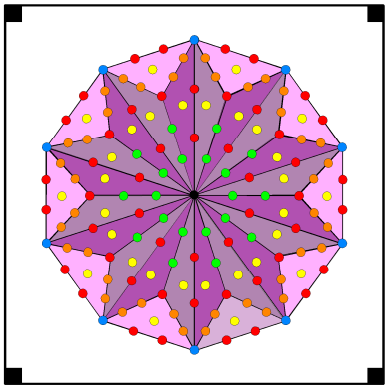


Figure 21

155 = A D N I M L K
1 4 50 10 40 30 20
= 65 + 90

65 = 1(●) + 4(■) + 50(●) + 10(●)

90 = 40(●) + 30(●) + 20(●)

of Adam Kadmon, the outer 'material' form of Heavenly Man. ADONAI MALEKH prescribes the 25-tree and thus the 25 spatial dimensions that express the outer form of the cosmic prototype in the microcosms, namely, the bosonic string. The **26**th tree represents the dimension of time, whilst the tenth tree maps the tenth spatial dimension required by M-theory.

The value:

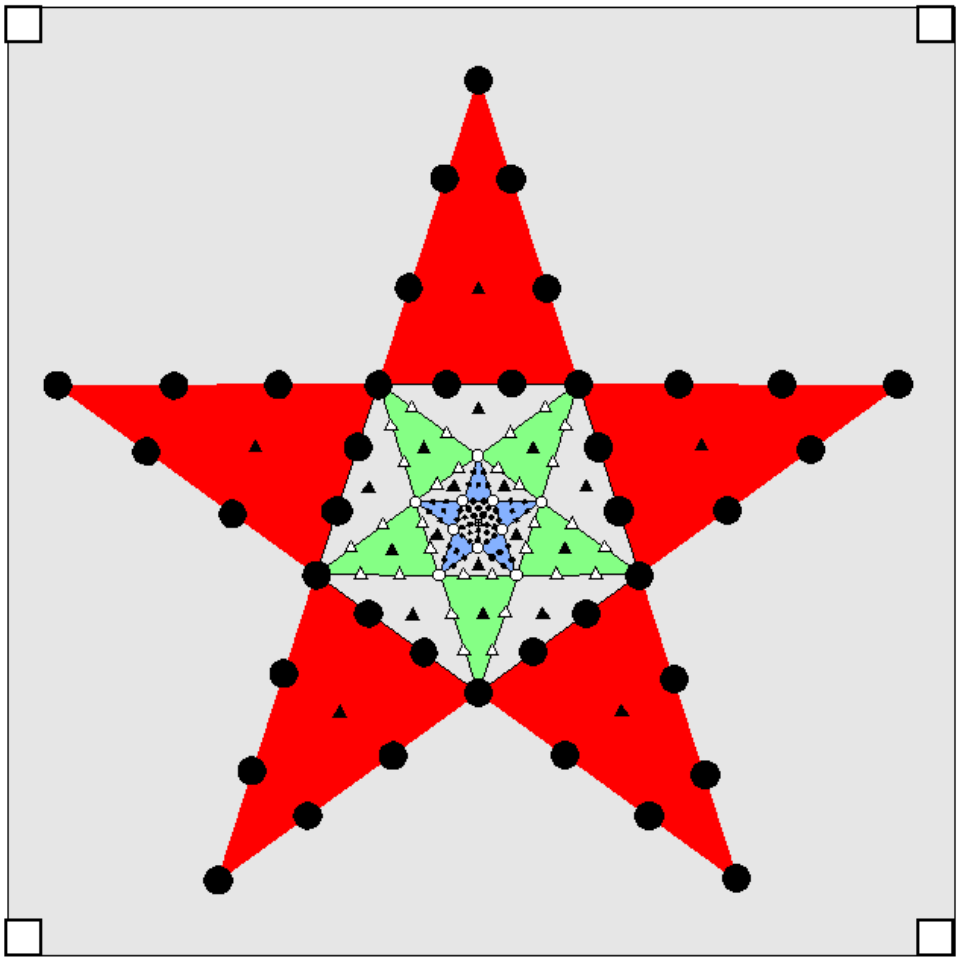
$$90 = 40 + 30 + 20$$

of the letters of MALEKH reflect the fact that the 25-tree has (40+20=60) more SLs on the side pillars and 30 more SLs on the central pillar than the 10-tree prescribed by ADONAI. The 16 highest trees spanned by these 90 SLs correspond to the 16 purely bosonic string dimensions that define a 16-dimensional torus around which the left-moving waves of the heterotic superstring wind anticlockwise.

We saw earlier that a decagon enclosed in a square and divided into tetractyses generates the number of ADONAI. When its triangular sectors are divided into three tetractyses, it represents the number of ADONAI MALEKH (Fig. 21). The number of MALEKH is expressed by the nine extra yods inside each sector of the decagon, its individual letter values denoting the numbers of different types of yods. Just as the number of ADONAI can be represented by a pentagram enclosed in a square, so the number of ADONAI MALEKH can be represented by three pentagrams enclosed within one another (Fig. 22). It is remarkable how the tetractys generates the number of the complete Godname of Malkuth from the

* The title "Heavenly or Archetypal Man" includes both terrestrial and possible extraterrestrial life-forms.

155 =



155 = A D N I M L K
1 4 50 10 40 30 20
= 65 + 90
65 = 1(⊞) + 4(□) + 50(●) + 10(○)
90 = 40(⬤) + 30(△) + 20(▲)

Figure 22

ancient symbol of the pentagram. In either of its representations there are

$$130 = \frac{1^5 + 2^5 + 3^5 + 4^5}{1 + 2 + 3 + 4}$$

hexagonal yods as well as **21** yods that are corners of ($1^2+2^2+3^2+4^2=30$) tetractyses. This demonstrates *par excellence* how the Divine Names, as mathematical archetypes, have a *geometrical* basis expressed through the tetractys.

Just as **65** is the sum of the first ten integers after 1, **155** is the sum of the first ten integers after 10:

11
12 13
155 = 14 **15** 16
17 18 19 20.

This illustrates in an arithmetic way the profound connection between the Hebrew Godnames and the

perfect Decad, symbolized by the tetractys. As

$$6201 = 1^2 + 2^2 + 3^2 + ... + \mathbf{26}^2,$$

then

$$6200 = 4\times1550 = \sum_{n=2}^{\mathbf{26}} n^2,$$

so that

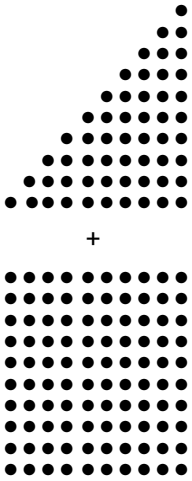
$$1550 = \begin{array}{c}\mathbf{155}\\ \mathbf{155}\ \ \mathbf{155}\\ \mathbf{155}\ \ \mathbf{155}\ \ \mathbf{155}\\ \mathbf{155}\ \ \mathbf{155}\ \ \mathbf{155}\ \ \mathbf{155}\end{array} = \sum_{n=2}^{\mathbf{26}} (n/2)^2 = 1^2 + (3/2)^2 + 2^2 + \ldots + 13^2$$

$$= \mathbf{50\times31}.$$

This identity connects the numbers of the Godnames of Chokmah, Binah, Chesed and Malkuth.

155 is also the sum of the *tenth* triangular number 55 and the *tenth* square number 100:

155 =



ADONAI MELEKH prescribes not only the 25 spatial dimensions of bosonic strings but also 4-dimensional, macroscopic space-time mapped by four overlapping trees because the latter consist of **155** vertices, lines, triangles & tetrahedra. This is another way the Godname of Malkuth points to the large-scale universe as the outer, physical (Malkuth) aspect of God. There is no contradiction between identifying the fourth tree as the dimension of time, whereas earlier we interpreted the **26**th or tenth trees as representing this dimension, because four overlapping trees is not part of CTOL but, instead, a separate, Tree of Life representation of 4-dimensional space-time, each tree mapping a dimension.

The 4-tree has 29 SLs. Remarkably, if the first 29 triangular numbers are assigned to these SLs, then **155** is their arithmetic mean:

$$\mathbf{155} = \frac{\sum_{n=1}^{29} T_n}{29}$$

A noteworthy property of CTOL is that Kether of the **65**th tree (the 395th SL) is **155** SLs below its top. This SL is the 133rd SL on the central Pillar of Equilibrium. It is one of the ways by which the numbers of ADONAI and ADONAI MELEKH define the dimension 133 of the exceptional group E_7, the largest exceptional subgroup of the superstring group E_8.

The converse of this property is that the **155**th SL from the bottom of CTOL is the Malkuth of the **65**th tree

from the top of CTOL. The number of trees in CTOL is the number of the combined Godname:

ADONAI TETRAGRAMMATON = **65** + **26** = 91.

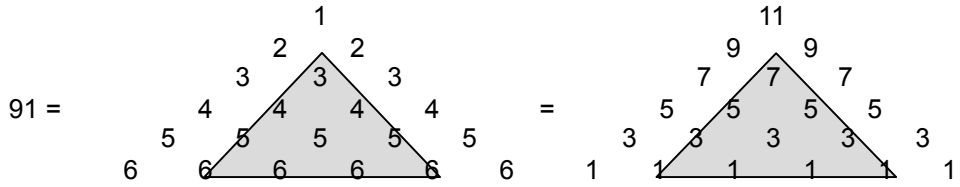
Because the Upper Face of the **26**th tree is the Lower Face of the **65**th tree from the top of CTOL, the number of ADONAI alone determines the **26**-tree and thus the dimensionality of space-time. In fact, this complementarity between the numbers of ADONAI and TETRAGRAMMATON exists in a purely arithmetic sense, as we now show. As

$$91 = 1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2$$

and

$$1^2 = 1$$
$$2^2 = 1 + 3$$
$$3^2 = 1 + 3 + 5$$
$$4^2 = 1 + 3 + 5 + 7$$
$$5^2 = 1 + 3 + 5 + 7 + 9$$
$$6^2 = 1 + 3 + 5 + 7 + 9 + 11,$$

the number 91 has the two representations:



= **26** + **65**.

The number of EHYEH is the number of integers in either array, the number of YAH is the number of integers forming the boundary of each array and in either case, their sum is **65**. The sum of the shaded, triangular array of six integers is **26**. We see that each representation of ADONAI TETRAGRAMMATON splits geometrically into the complementary pair of numbers **26** and **65**. The sum of the integers forming the interior triangle — the simplest *geometrical shape*— is the number of trees that in CTOL are the counterpart of **26**-dimensional space-time, the Malkuth level of CTOL where objective form is definable. 91 is the number value of ADONAI TETRAGRAMMATON.

HEBREW NAME: MLKUT.
MEANING: "Kingdom."
NUMBER: **496**.

M	L	K	U	T	
40	30	20	6	400	= **496**.

Malkuth, the Sephirah whose cosmic manifestation is the physical universe, or what physicists would call the "space-time continuum," presents us with one of the most astounding facts concerning the Tree of Life as the blueprint of Creation:

The gematria number value 496 of Malkuth is the dimension of the gauge symmetry group describing superstring forces free of quantum anomalies.

This proves beyond question that the ancient Jewish Kabbalah is *not* a theory invented by human beings but a body of esoteric knowledge about reality whose source transcends the intellect. For what brain could devise a scheme of Sephirothic names and Godnames in which the number **496** was linked to the most appropriate Sephirah — Malkuth — together with the number **65**, which turns out to be the number of SLs in *ten* overlapping Trees of Life, thus anticipating perhaps by thousands of years the major scientific discovery in 1984 that quantum theory requires the existence of **496** particles mediating the interactions between 10-dimensional superstrings? Whilst it is easy to work out that 10 overlapping trees have **65** SLs, this alone does not allow one to deduce that the number value of the name of the tenth Sephirah must be **496**. The sceptic, believing that science has banished all suggestions of the supernatural from religion, will find it easier to dismiss this amazing fact as yet another coincidence than to face an anomaly that he cannot explain. Self-consistency will then force him to use the same fatuous explanation to reject all other connections revealed in articles and material on this website between the Tree of Life or CTOL and numbers characterizing superstring and bosonic string theories. We believe that the accumulated weight of the evidence for these connections makes the possibility of such a vast

proliferation of coincidences so highly implausible to any reasonable person that it should not merit his serious consideration.

A sceptic who rejects a divine source for Kabbalistic doctrines might argue that the number **496** could have been attributed great significance by ancient mathematicians, such as the neo-Pythagorean Nichomachus of Alexandria (c. 100 C.E.), because it is the third perfect number. However, is it plausible that, for simply no other reason than this, the name of the tenth Sephirah was originally invented in order to have the value of this important number? We have already seen that the gematria numbers of the Sephiroth express their meanings, and Malkuth is no exception. The sceptic might suggest that some mathematical genius with mystical inclinations in ancient times discovered (let us not ask *how*!) the Tree of Life, developed it into what we have called "CTOL" and deduced by means of the latter that the name of the tenth Sephirah had to have the value of **496**. However, although the mystical significance attributed to the number 10 might explain why the number value of the partial Godname of Malkuth is **65**, knowledge of CTOL could not have enabled anyone to invent a complete Godname for it with a value of **155** that marks out the 25-tree, for no one could have known then that the number 25 denotes the number of spatial dimensions of space-time predicted by the theory of bosonic strings! The sceptic would again be forced into making the unconvincing assertion that this was merely yet another coincidence. The issue of the mundane or mystical origin of the names and Godnames of the Sephiroth is, however, beside the point. What is not readily explainable in rational terms is the fact that the scientifically significant number **496** is so intimately encoded in the properties of the Tree of Life itself, as demonstrated in many articles on this website, that the impartial reader will come to realize that the number of Malkuth cannot be

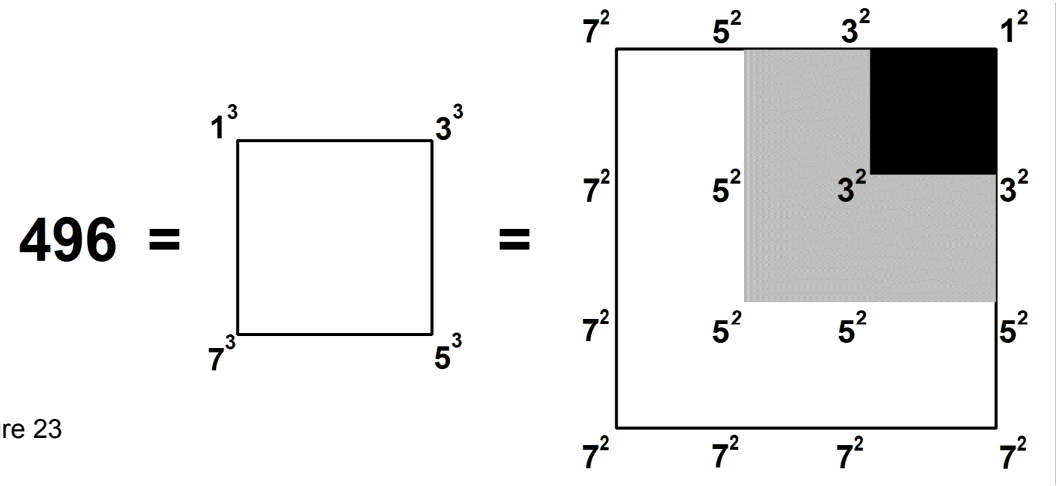


Figure 23

anything other than **496.** Whether the final form of the Tree of Life emerged during the Middle Ages or whether this glyph was only rediscovered then, having a far older, esoteric history, the obvious fact remains that no human intellect could have designed a geometrical object so as to have this feature incorporated in it because, if this had been the case, it would not simultaneously display its many other equally remarkable and *scientifically* significant properties discussed in these articles.

496 is the sum of the cubes of the first *four* odd integers:

$$\mathbf{496} = 1^3 + 3^3 + 5^3 + 7^3.$$

As

$$16 = 4^2 = 1 + 3 + 5 + 7$$

is the number of points in a 4×4 square array of points, the odd integers being the numbers of points in each successive gnomon), we see how the basic Pythagorean division of a line into four points determines the number **496** (Fig. 23). Notice that the sum of the squares of the integers inside the square is

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

that is, it is the sum of the *squares* of the first *four* odd integers. This prescription by the Pythagorean Tetrad (4) is highly significant, and the number 84 has been shown in many articles on this website to play a role in the 3-dimensional structure of the superstring constituents of matter. It is the number of yods in a 2nd-order tetractys that surround the central yod, which *most symbolizes* Malkuth. This makes it a structural parameter of the superstring, as will be explained later.

496 is the **31**st triangular number:

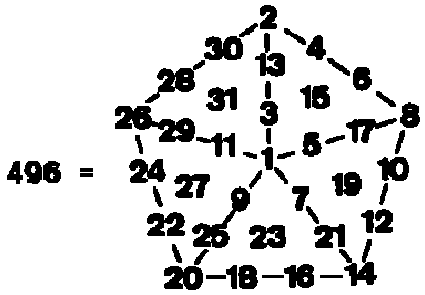
$$\mathbf{496} = 1 + 2 + 3 + \ldots + \mathbf{31},$$

so that

$$\mathbf{496} = (1^3 + 2^3 + 3^3 + \ldots + \mathbf{31}^3)^{1/2}.$$

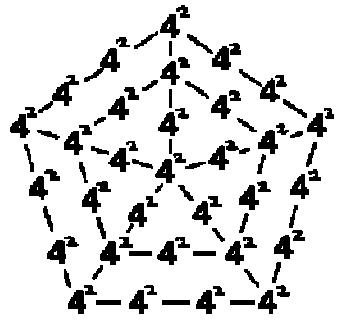
The number of Malkuth is thus defined by the Godname number **31** of Chesed, which is the third Mersenne prime number. The first **31** integers consist of **15** even integers, where **15** is the number of

496 =



YAH, a Godname of Chokmah, and 16 odd integers. The sum of the former is 240, which is the number of non-zero roots of the superstring group E_8 and which we showed in Section 2 to be both the sum of the first **21** binomial coefficients other than unity and the number of degrees of freedom associated with the emanation of each tree in CTOL. It was pointed out in the discussion of Chesed that a pentagon divided into tetractyses has **31** yods consisting of **15** yods on its boundary and 16 yods in its interior. Assigning the integers 1, 2, 3... **31** to these yods, with even integers on the boundary and odd numbers inside, the sum of the **31** integers forming yods of the pentagon is **496**, the sum of the 16 interior integers is $256 = 4^4$ and the sum of the **15** boundary integers is $240 = (1+2+3+4)1\times2\times3\times4$. The fact that 240 is the sum

496 =



= 240 + 240 + 16

of *even* integers forming the boundary of the pentagon and thus defining its *shape* is significant because this number, which measures the degrees of freedom encoded in the Tree of Life, dynamically determines in terms of the 240 E_8 gauge charges the *form* the Tree of Life manifests in the subatomic world as an $E_8\times E_8$ heterotic superstring.

As **496** = **31**×16, if the yods of the pentagon are, instead, assigned the number 16 ($= 4^2$), then its boundary yods sum to 240, as do the yods on the boundaries of the two interior pentagons, and the central yod has the value 16. In this way, the pentagon reproduces not only the number **496** of roots of the superstring gauge symmetry group $E_8\times E_8$' but also the 16 zero roots and the (240+240=480) non-zero roots. The inner pentagons formed by the **15** internal yods represent the 240 non-zero roots of E_8 (or E_8'), the boundary of the outer pentagon represents the 240 non-zero roots of E_8' (or E_8) and the central yod represents the 16 zero roots of $E_8\times E_8$'. Alternatively, if 16, the square of the Tetrad, is assigned to the central yod and the successive even integers 18, 20, 22... 46 are assigned to the **15** boundary yods of the pentagon, the sum of of the latter integers is 480, which is the number of non-zero roots of $E_8\times E_8$'. In

496 = 480 + 16 =

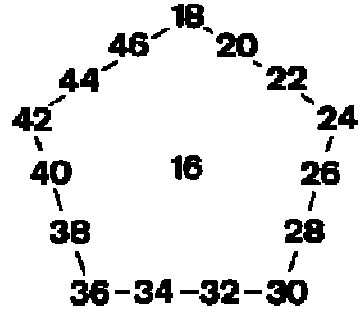
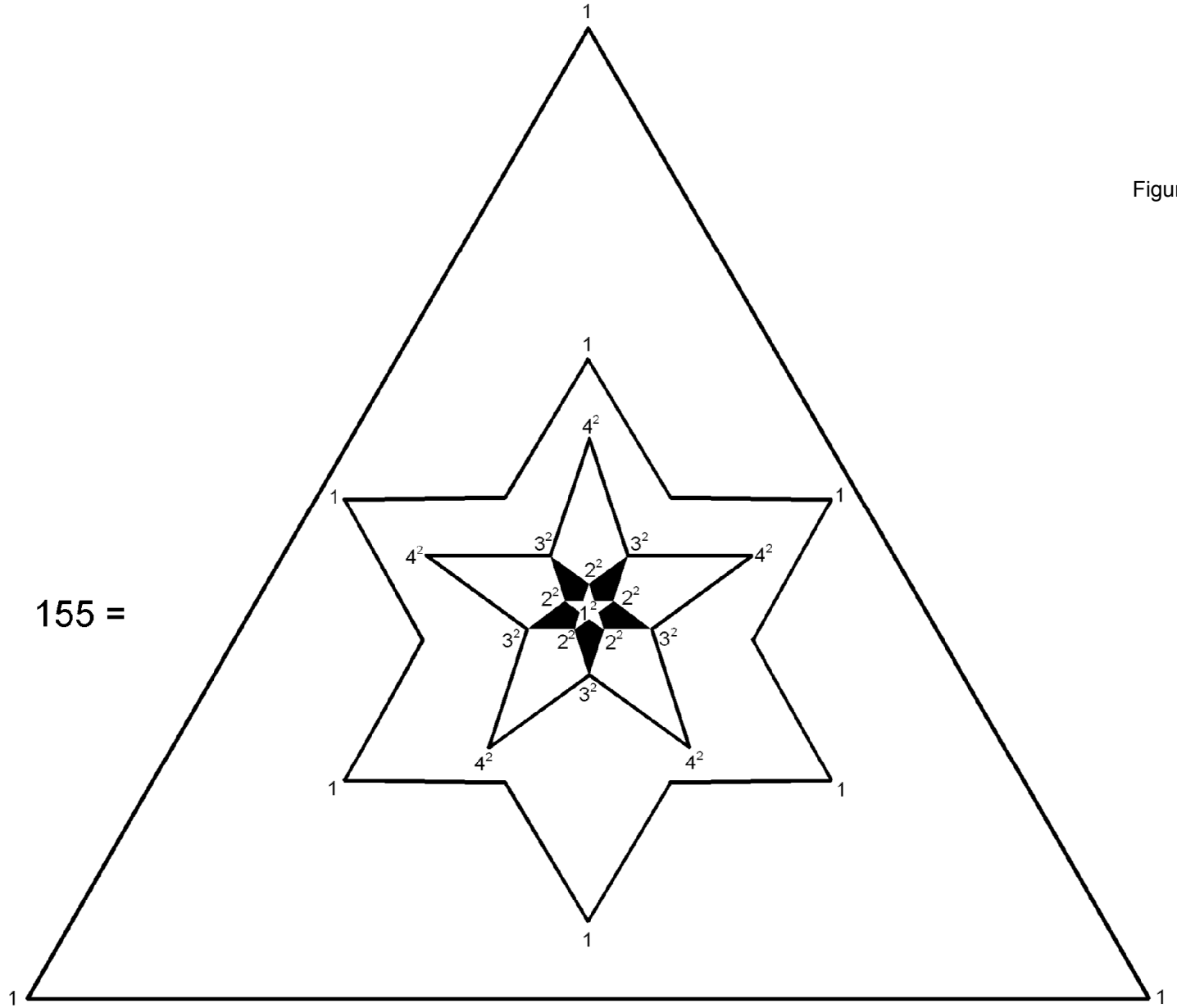


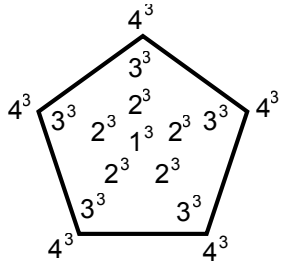
Figure 24



other words, the pentagon reproduces the root structure of $E_8 \times E_8'$ *arithmetically* through the Tetrad and the division of its sides into four points.

The number of Malkuth can also be represented by a pentagonal array of the cubes of the Pythagorean integers 1, 2, 3 & 4:

496 =



This illustrates as powerfully as any example given in this article the profound connection between the mathematics of superstrings and the Pythagorean Tetrad. It makes appropriate the title "holding the key of Nature" given by the Pythagoreans to the number 4.

Alternatively, **496** can be expressed as three nested, pentagram arrays of the cubes of 1, 2, 3 & 4 (Fig. 25). Notice that (4^2 = 16) cubes are present in this representation. We saw earlier (Fig. 24) that a similar

496 =

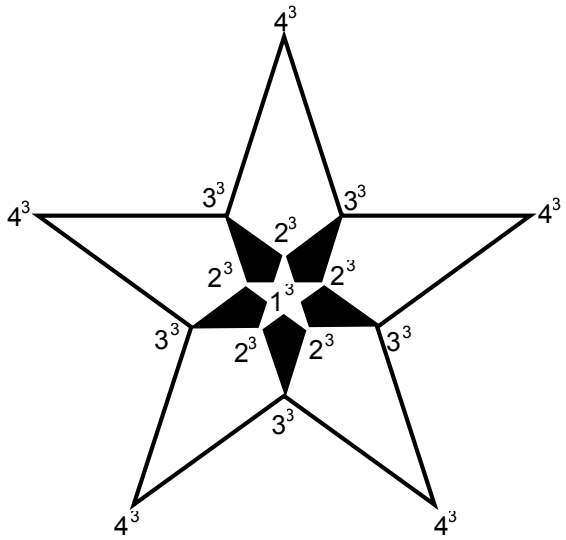


Figure 25

array of the squares of 1, 2, 3 & 4 enclosed by a Star of David inside a triangle represents the number of ADONAI MELEKH. The sum of the 10 numbers at the points of the two innermost pentagrams is **65**, the number of ADONAI, and the sum of the central number 1^2 and the 14 remaining numbers is **90**, the number of MELEKH. Notice that: 1. **155** is the sum of 25 numbers in this representation and the **155**th SL in CTOL is the top of the 25th tree, 2. **65** is the sum of ten numbers and that the **65**th SL is the top of the tenth tree, and 3. **90** is the sum of **15** numbers and this is the number of SLs in the **15** trees of the 25-tree above the 10-tree. The outer triangle symbolizes the Supernal Triad (the Trinity of some world religions) and the Star of David symbolizes the two triads of Sephiroth of Construction above Malkuth, the centre of the spiritual cosmos symbolized by the central number 1^2.

496 AS A PERFECT NUMBER

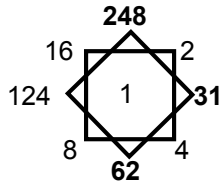
The ancient Greek mathematicians classified numbers not only as even or odd, prime or composite, but also as *excessive*, *defective* or *perfect*. In excessive (or superabundant) numbers the sum of the divisors is larger than the number. In defective (or deficient) numbers, the sum is smaller than the number. Perfect numbers are equal to the sum of their divisors. Book IX of Euclid's *Geometry* contains **36** propositions, the last of which asserts that, if $2^n - 1$ is prime, then $2^{n-1}(2^n - 1)$ is perfect. This means that all perfect numbers of this form are even. In a work published posthumously in 1849, the famous mathematician Leonard Euler proved the converse of this proposition that all even perfect numbers are of the form given by Euclid. It is still unknown whether any odd perfect numbers exist. The first twelve values of n for which it is known that $2^n - 1$ is prime are:

n = 2, 3, 5, 7, 13, 17, 19, **31**, 89, 107, 127.

The first seven perfect numbers are: 6, 28, **496**, 8128, 33550336, 8589869056 and 137438691328.

Because of their rapidly increasing size, only the first four perfect numbers were probably known to the Greeks. The fifth perfect number, 33550336, may have been known to Pythagoras' bibliographer, Iamblichus, though he does not give it. The neo-Pythagorean Nichomachus, who was more a mystic than a mathematician in the modern sense, is known to have spent a great deal of time hunting for the two perfect numbers **496** and 8128. He would have been overjoyed by the Pythagorean qualities he may have found in the former, some of which we have already mentioned. Being a perfect number, **496** is the sum of its divisors:

496 =



i.e., it has (4+4=8) divisors other than 1. Of all perfect numbers, **496** is *uniquely* connected with the Pythagorean Tetrad, 4, through its following remarkable property:

$$\mathbf{496}^4 = (1+2+4+8+16+\mathbf{31}+\mathbf{62}+124+\mathbf{248})^4 = 1\times2\times4\times8\times16\times\mathbf{31}\times\mathbf{62}\times124\times\mathbf{248}.$$

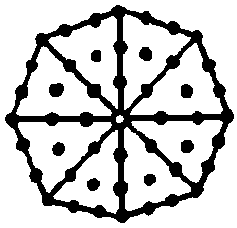
Also, because every even perfect number, except 6, is a partial sum of the series

$$1^3 + 5^3 + 7^3 + 9^3 + \ldots$$

496 is defined by the Tetrad because it is the sum of the first *four* terms in this series.

As **496** = 16×**31** and **31** (=1+2+4+8+16) is the sum of five numbers, **496** is the sum of 5×16= **80** numbers, where **80** is the number of Yesod. Since **496** = 16 + **48**×10, i.e.,

496 =



● = 1+2+3+4
○ = 4^2

we see that **496** is also the sum of **49** numbers, where **49** is the Godname number of Yesod. Notice that this representation, which we previously described as a representation of EL ChAI, reproduces the root structure of $E_8 \times E_8'$, the central yod denoting the number of its zero roots, the sum 240 of the boundary yods denoting the number of non-zero roots of E_8 and the sum 240 of the internal yods denoting the number of non-zero roots E_8' (or vice versa). This is one way whereby the Godname of Yesod prescribes the gauge symmetry group of superstrings. If the eight sectors of an octagon are 2nd-order tetractyses

496 =

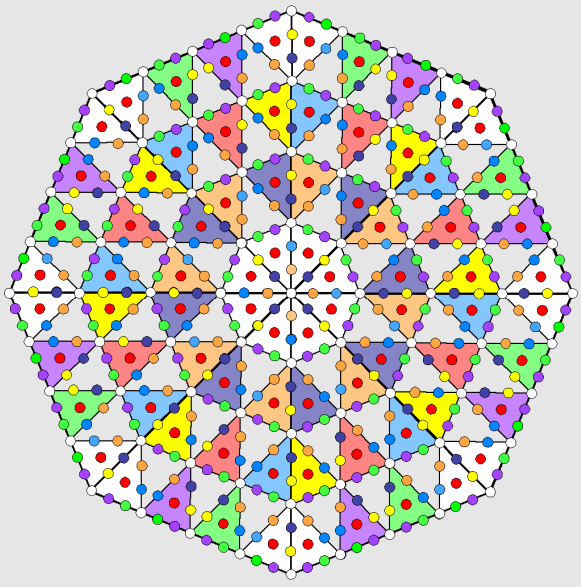
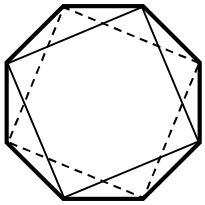


Figure 26

(Fig. 26), the number of yods surrounding the centre is 576 = 24^2 = $1^2\times2^2\times3^2\times4^2$, showing how the Pythagorean integers 1, 2, 3, 4 determine its yod population. Of the **72** yods per sector, 10 are corners of tetractyses symbolizing the Supernal Triad and **62** are hexagonal yods symbolizing Sephiroth of Construction, where **72** is the number of Chesed and **62** is the number of *Tzadkiel*, the Archangel of this Sephirah. The total number of hexagonal yods = 8×**62** = **496**. The octagon representing the Godname number of Yesod when its sectors are 1st-order tetractyses therefore generates the number **496** as the number of yods corresponding to Sephiroth of Construction in its 2nd-order tetractys sectors. This amazing property of the tetractys demonstrates how the number of EL ChAI prescribes the number **496** at the heart of superstring physics. Notice that the total number of corner yods is 8×10 = **80**, which is the number of Yesod. The number **496** is determined by the numbers of both Yesod and its Godname.

The number of hexagonal yods in a square divided into 2nd-order tetractyses is 4×**62** = **248**, which is the dimension of E_8. This illustrates once again the fundamental connection between the Tetrad (symbolized by the square) and superstring physics. One of the two gauge symmetry groups describing superstring forces in the heterotic string theory is $E_8\times E_8$, i.e., the so-called 'direct product' of two identical groups E_8. Geometrically, it arises because the octagon is two squares rotated through an angle of 45º:



The 24 (=1×2×3×4) white tetractyses in Figure 26 forming the corners of the sectors contain 136 hexagonal yods, where 136 is the (4^2=16)th triangular number:

$$136 = 1 + 2 + 3 + \ldots + 16.$$

This leaves

$$\textbf{496} - 136 = 360 = \begin{array}{c}\textbf{36}\\ \textbf{36 36}\\ \textbf{36 36 36}\\ \textbf{36 36 36 36}\end{array}$$

hexagonal yods in coloured tetractyses corresponding purely to Sephiroth of Construction. It shows how the mathematical archetype embodied in the Godname of the formative Sephirah Geburah further limits the population of yods. Of these, 44 yods per sector surround the centre of each sector — an appropriately Pythagorean number!

ROOT STRUCTURE OF $E_8\times E_8$

The **248** roots of the superstring group E_8 comprise 8 zero roots and 240 non-zero roots, the latter consisting of **112** of one kind and 128 of another kind, where **112** is the number of *Beni Elohim*, the Order of Angels of Hod. We shall now show that these numbers can be derived using the property of **496** as a perfect number. Writing **496** as the sum of its divisors:

$$\begin{aligned}\textbf{496} &= (1 + 2 + 4 + 8 + 16) + \textbf{31} + 124 + \textbf{248}\\ &= \textbf{31} + \textbf{31} + \textbf{62} + 124 + \textbf{248}.\\ &= \textbf{31}(1 + 1 + 2 + 4 + 8)\\ &= \textbf{31}\times16.\end{aligned}$$

Since **31**= $2^0 + (2^1 + 2^2 + 2^3 + 2^4) = 1 + 30$,

$$\textbf{496} = (1+30)16 = 16 + 480.$$

The powers-of-2 representation of the Godname EL of Chesed, which reproduces its letter values E = 1 and L = 30, differentiates between the 16 zero roots and the 480 non-zero roots of $E_8\times E_8$. Furthermore, because

$$480 = 16\times30 = 2^4(2^1 + 2^2 + 2^3 + 2^4)$$

then

$$240 = 480/2 = 2^3(2^1 + 2^2 + 2^3 + 2^4)$$

$= (2^4 + 2^5 + 2^6) + 2^7$

$=$ **112** $+ 128,$

which reproduces the numbers of the two types of non-zero roots of E_8.

Finally,

496 $= (1 + 2 + 4 + 8 + 16) +$ **31** $+$ **62** $+ 124 +$ **248**

$= ($**31** $+$ **31** $+$ **62** $+ 124) +$ **248**

$=$ **248** $+$ **248**,

where

248 $=$ **31** $+$ **31** $+$ **62** $+ 124$

$=$ **31**$(1 + 1 + 2 + 4) = 8\times$**31**

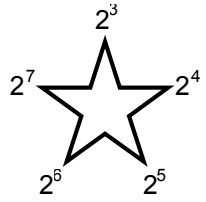
$= 2^3(2^0 + 2^1 + 2^2 + 2^3 + 2^4)$

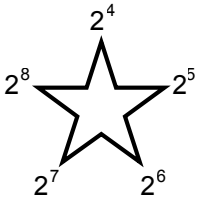
$= 2^3 + (2^4 + 2^5 + 2^6) + 2^7$

$= 8 +$ **112** $+ 128,$

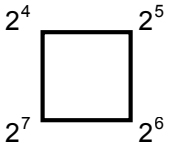
which reproduces the root structure of E_8.

The pentagram provides a powers-of-2 representation of the superstring numbers **248** and **496**:

248 = 

496 = 

Notice that

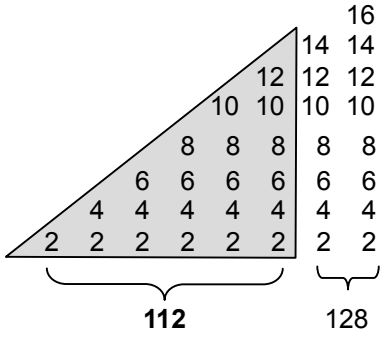
240 = 

i.e., 240 is the sum of four successive powers of 2, starting with the *fourth* power of 2. This illustrates the remarkable, generative power of the Pythagorean Tetrad to express defining parameters of the Tree of Life, such as the number 240. As pointed out before, the number 240 is the sum of the Godname numbers of the first six Sephiroth:

240 = **21** + **26** + **50** + **31** + **36** + **76**.

The sum of the first *four* numbers is 128 (= 2^7); the sum of the last two numbers is **112** (= $2^4 + 2^5 + 2^6$). It is remarkable that the first six Godnames not only possess numbers values whose sum is the number of non-zero roots of E_8 but also have *partial* sums differentiating between its two types of non-zero roots.

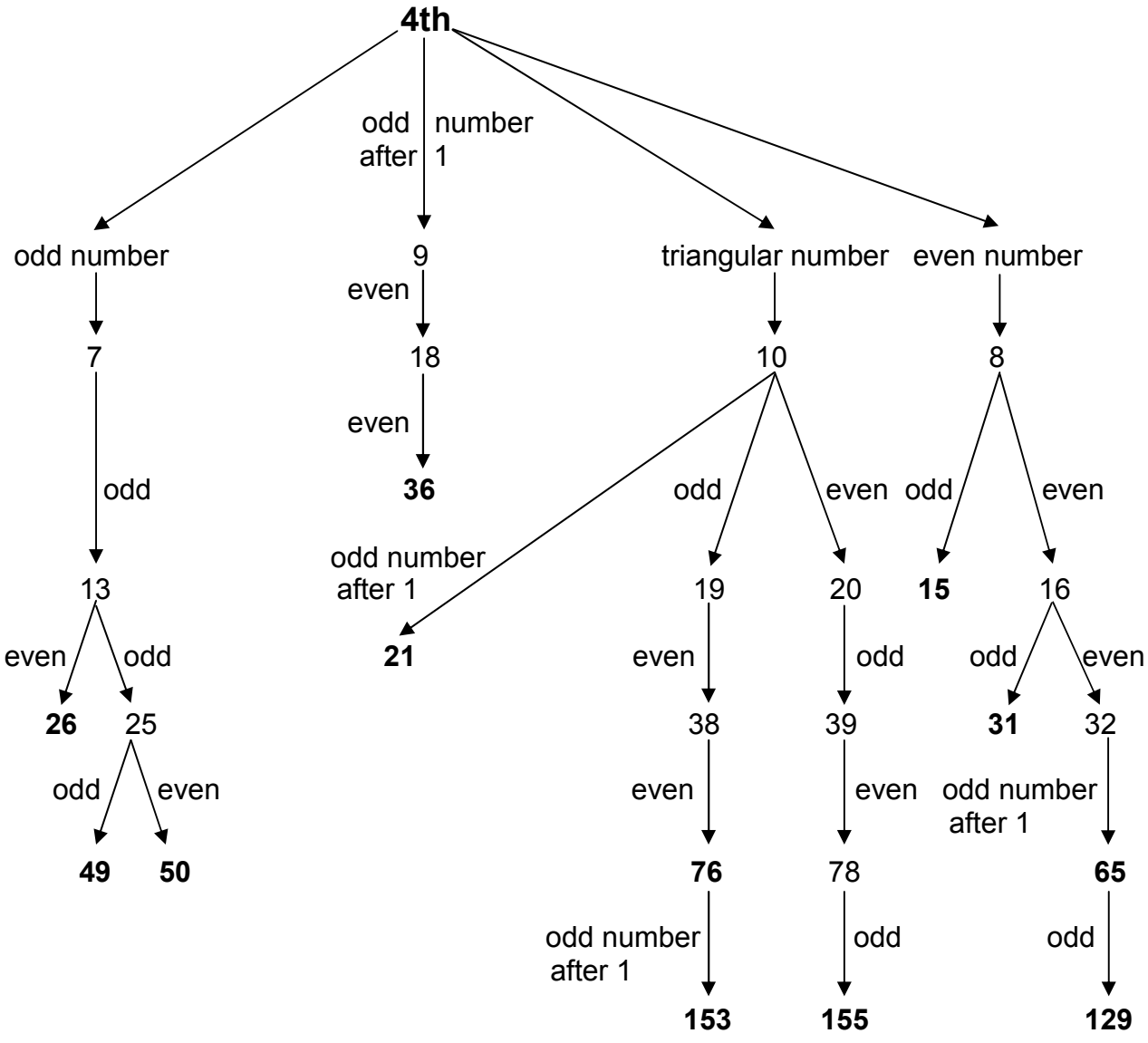
ELOHA prescribes the number 240 because **36** is the eighth triangular number and 240 is the sum of a triangular array of **36** even integers:

240 = 

EHYEH and YAH prescribe this number because **21** numbers summing to **140** (the number of *Masloth*, the Mundane Chakra of Chokmah) lie on the boundary of the triangular array and **15** integers lie inside it, adding to $100 = 1^3 + 2^3 + 3^3 + 4^3$. Starting with the lowest integer 2, the first **21** integers sum to **112** and the remaining **15** integers sum to 128, showing how EHYEH and YAH differentiate between the two types of non-zero roots of E_8.

Finally, Figure 27 depicts how the number 4 generates the Godname numbers arithmetically. It illustrates one of the profound properties of the Pythagorean Tetrad as the root source of these master numbers, which prescribe the spatial structure of superstrings and the group-theoretical symmetry of their unified interactions, as well as other examples of holistic systems that embody the mathematical archetypes encapsulated by the Divine Names.

HOW THE PYTHAGOREAN TETRAD DEFINES GODNAME NUMBERS



("Even" or "odd" denotes the type of arrowed number defined by the previous one in the sequence, e.g., 13 is the 7th odd number and 25 is the 13th odd number).

Figure 27