

THE SUPERSTRING AS MICROCOSM OF THE SPIRITUAL MACROCOSM

"As above, so below."

by

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ABSTRACT

Analysis by the author of the century-old description by Annie Besant and C.W. Leadbeater of the basic units of physical matter, which they magnified with the use of a yogic siddhi called 'anima,' has shown that these particles are not only the constituents of the up and down quarks in atomic nuclei but also superstrings. This paper proves *mathematically* that these particles are the microscopic manifestation of the Kabbalistic Tree of Life. Aspects of their geometrical configuration in 26-dimensional space-time, becoming superstrings as such only in ten of these dimensions, are shown to be encoded in both the outer form of the Tree of Life and its inner form, recently discovered by the author. The latter encodes the Tree of Life depiction of all levels of reality, including space-time, and confirms the Theosophical doctrine of the seven planes of consciousness. The Tree of Life descriptions of the UPA and all domains of superphysical consciousness are found to be analogous, indicating that the superstring is the microcosm of the spiritual macrocosm, having a superphysical as well as a physical aspect. The archetypal Divine Names are shown to prescribe both the psychically described structure of the subquark state of the superstring and its unified force, as well as their encoding in the outer and inner forms of the Tree of Life blueprint. The paper discusses implications for the nature of the 'M-theory' currently being sought by physicists as the basis of 11-d supergravity theory and the five known superstring theories.

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ARTICLE 5

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1. The Cosmic Tree of Life

At the heart of the Jewish mystical tradition of Kabbalah is the 'Tree of Life' (Fig. 1). This glyph depicts the ten divine qualities, or 'Sephiroth' (sing: Sephirah) as spheres connected by 22 'Paths' and arranged on three 'pillars' — the right-hand Pillar of Mercy, the central Pillar of Equilibrium and the left-hand Pillar of Severity (or Judgement). Starting from Kether at the top of the tree, Creation manifested by successive emanation of each Sephirah from the preceding one:

Kether→Chokmah→Binah→Chesed→Geburah→Tiphareth→Netzach→Hod→Yesod→Malkuth.

The first three Sephiroth constitute what Kabbalists call the 'Supernal Triad.' Corresponding to the Hindu Trimurti of Shiva, Vishnu and Brahma and to the Christian Holy Trinity (although not to the distorted interpretation of the latter by Christian theologians lacking mystical insight), the Sephiroth of the Supernal Triad stand as the triple Godhead, so to speak, *outside* manifestation. They are the source of all archetypal ideas of the Divine Mind, whereas the remaining seven, so-called 'Sephiroth of Construction' are the

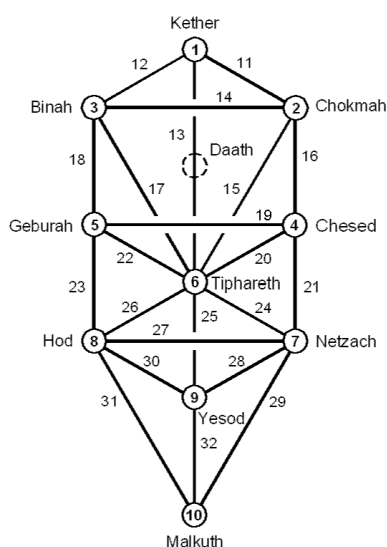


Figure 1. The Tree of Life.

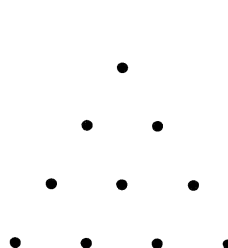


Figure 2. The tetractys.

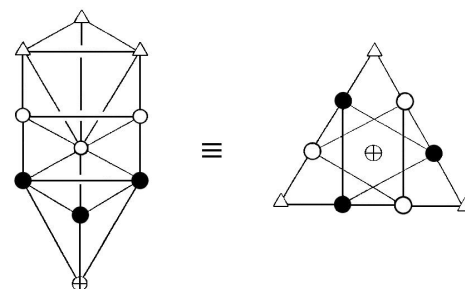


Figure 3. The Tree of Life is equivalent to the tetractys.

objective realisation of these, inspiring the pantheons of and goddesses of ancient cultures and civilisations, which were nothing other than anthropomorphic embodiments of the divine qualities projected from the depths of the collective unconscious into the conscious mind, where they took shape and became the object of religious worship.

Separating the Supernal Triad and Chesed is the 'Abyss.' Known as Daath (knowledge), it is not a Sephirah but represents a critical transition between the unmanifest and manifest stages of Creation, whilst in its evolutionary sense it signifies rebirth into a new condition through acquiring experiential knowledge.

The Pythagorean triangle, or tetractys (Fig. 2), is an array of ten dots (I shall call the latter 'yods,' after 'yod' (י), the tenth letter of the Hebrew alphabet, which somewhat resembles a dot). It is far more than a symbol for the number 10 — what mathematicians know as the 'fourth triangular number' (triangular numbers are integers which can be represented as triangular arrays of dots). *It is a far older representation of the Kabbalistic Tree of Life.* The three yods at the corners of the tetractys correspond to the Supernal Triad and its seven other yods correspond to the seven Sephiroth of Construction. I call the latter 'hexagonal yods' because six of them (corresponding to the six Sephiroth of Construction above Malkuth) are at the corners of a hexagon and the seventh (corresponding to Malkuth) is at the centre of this hexagon. As my book *The Mathematical Connection between Religion and Science* (1) proves, the equivalence between the tetractys and the Tree of Life (Fig. 3) provides a means for deciphering information encoded in the latter about the subatomic world.

In this book, I showed that the Tree of Life has an inner form which encodes the map of *all* levels of existence — both the space-time continuum and realms of existence interpreted by religions as heaven or the after-life. This map, which I call the 'Cosmic Tree of Life' (CTOL), consists of 91 overlapping Trees of Life. These trees are grouped into sets of seven representing the seven differentiations of each Sephirah of Construction. The lowest seven trees signify the seven subplanes of what Theosophists call the 'physical plane' (this corresponds to Malkuth), the next seven denote what they call the seven subplanes of the 'astral plane' (this corresponds to Yesod), and so on. The lowest **49** trees signify the **49** subplanes of the

seven planes constituting what H.P. Blavatsky, the great 19th century occultist, called (2) the cosmic 'terrestrial' or 'prakritic plane,' hereinafter to be called the 'cosmic physical plane.' The remaining 42 trees represent the subplanes of the six higher, cosmic planes, each of which also has seven subplanes. These cosmic planes are —in a highly metaphysical sense of the word which would create too much diversion to explicate here — the 'cosmic' realisation of the seven Sephiroth of Construction, the **49**-tree that maps the cosmic physical plane being the realisation of Malkuth on a spiritual scale, and the 42 higher trees that represent the six higher cosmic planes being the cosmic expression of the six Sephiroth of Construction above Malkuth (3). Because each plane and subplane correspond to a particular Sephirah of Construction as seven-fold modes of being, the lowest tree of CTOL, the lowest seven trees and the lowest **49** trees are analogous to one another, corresponding to the same Sephirah, Malkuth. As we shall see, this means that

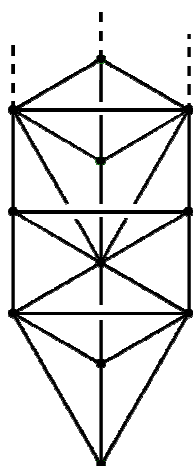


Figure 4. The 1-tree.

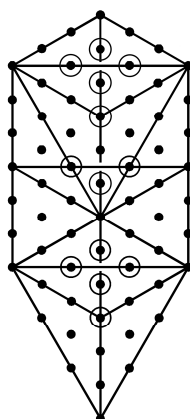


Figure 5. The 80 yods in the 1-tree.

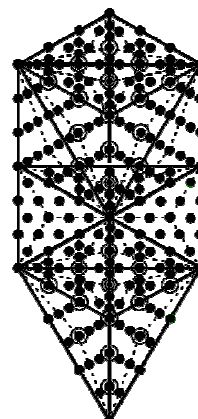


Figure 6. The 251 yods in the 1-tree with Type A triangles.

Circles are yods behind other yods.

they encode in different ways the *same* information about the nature of space-time, the basic units of matter in it and their forces — in other words, the 'Malkuth' aspect of reality, although it would be more accurate to say that these particles and forces are localised *conditions* of the space-time continuum itself rather than things existing in it.

The Sephirothic emanations of each tree in CTOL will be called 'Sephirothic levels' (SLs). CTOL has 550 SLs, where

$$550 = \begin{array}{c} 55 \\ 55 \ 55 \\ 55 \ 55 \ 55 \\ 55 \ 55 \ 55 \ 55, \end{array}$$

and

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

is the tenth triangular number, illustrating how the Pythagorean Decad (10) symbolised by the tetractys defines the SL population of CTOL. The lowest *n* trees of CTOL will be called the '*n*-tree.' It is not the same as *n* overlapping Trees of Life because, in the former, Daath of the *n*th tree is also Yesod of the (*n*+1)th tree and is therefore counted as an SL even though Daath is not a Sephirah, whereas in the latter Daath of the *n*th tree is not an SL, there being no higher tree. *n*-trees extend only to the 90-tree because CTOL is 91 overlapping trees, not the 91-tree.

The 1-tree (Fig. 4) consists of 19 triangles with 25 sides and 11 corners, a total of 55 geometrical elements, showing how the Decad also defines the geometrical properties of the lowest tree of CTOL. Each triangle can be considered either as a tetractys or as having three triangular sectors that are tetractyses (Type A triangle). In the former case, (Fig. 5) the 1-tree contains 80 yods; in the latter (Fig. 6), it comprises 251 yods, i.e., 171 more yods. $80 = 8 \times 10$, where 8 is the fourth even integer and 10 is the fourth triangular

number, and $171 = 19 \times 9$, where 19 is the tenth odd integer and 9 is the fourth odd integer after 1. This illustrates how the Pythagorean Tetrad (4) and Decad (10) prescribe these two yod populations of the 1-tree. Of the 251 yods, 11 are SLs, being corners of triangles, and 240 are yods *generated* by transformation of each triangle into three tetractyses. 11 is the 10th integer after 1 and

$$240 = \frac{4!}{4! \ 4! \ 4! \ 4!} \quad (4! = 1 \times 2 \times 3 \times 4)$$

This further illustrates the prescribing power of the Tetrad and Decad. The basic 240:11 differentiation between the two types of yods will be shown in Section 5 to be relevant to the structure of superstrings.

2. Inner for of the Tree of Life

As the lowest tree in CTOL, the 1-tree is literally its foundation. This explains why the number value of the Hebrew word Yesod (meaning 'foundation') for the second Sephirah of Construction is 80 even though the lowest tree in CTOL (representing the lowest subplane of the physical plane) formally corresponds to Malkuth, the seventh Sephirah of Construction, not to Yesod. As discussed in my book and in Article 4 on

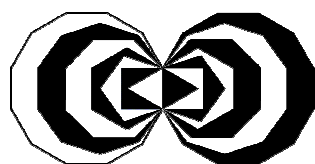


Figure 7. The inner form of the Tree of Life.

my website (4), the geometrical shape of the Tree of Life is but its outer, physical form (its Malkuth aspect). It has an inner form (Fig. 7), hitherto unknown to Kabbalists, which consists of two identical sets of seven regular polygons: the triangle, square, pentagon, hexagon, octagon, decagon & dodecagon. They are enfolded in one another and share an edge. I call this shared base of the polygons the 'root edge' because successive members of the seven polygons grow geometrically out of it, as reference 1 proves. The Tree of Life is 3-dimensional, Figure 1 depicting a Path that crosses another in the line of sight as a broken line because it lies *behind* it. The three Pillars of the Tree of Life do not lie in the same plane, so that the

diagram is really a projection onto the plane formed by its outer Pillars of 10 points, 22 lines & 16 triangles distributed in 3-dimensional space. As this plane contains the regular polygons, the root edge is the

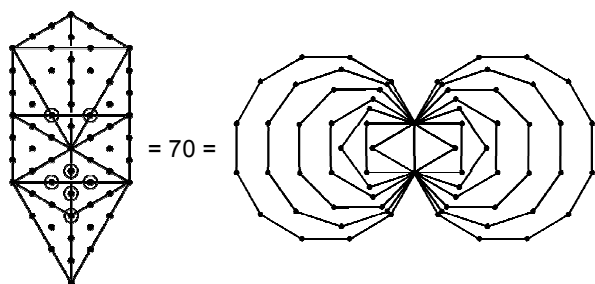


Figure 8. The (7+7) enfolded polygons have as many corners (70) as the Tree of Life has yods when its 16 triangles are tetractyses.

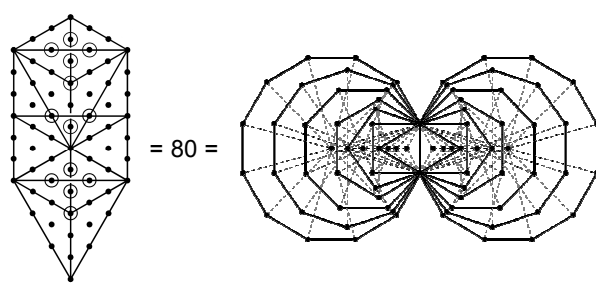


Figure 9. The 94 sectors of the (7+7) enfolded polygons have as many corners (80) as the 1-tree has yods when its 19 triangles are tetractyses.

projection onto this plane of the Path that connects Tiphareth and Daath in the 1-tree.

As proved in reference 1 and Article 4, the number values of the Godnames assigned to the ten Sephiroth:

Table 1. Number values of the Godnames.

SEPHIRAH	GODNAME	NUMBER VALUE
Kether	EHYEH	21
Chokmah	YAH	15
	YAHWEH	26
Binah	ELOHIM	50
Chesed	EL	31
Geburah	ELOHA	36
Tiphareth	YAHWEH ELOHIM	76
Netzach	YAHWEH SABAOTH	129
Hod	ELOHIM SABAOTH	153
Yesod	EL ChAI	49
Malkuth	ADONAI	65
	ADONAI MELEKH	155

quantify geometrical properties of the two sets of seven polygons, i.e., the latter constitute the 'sacred geometry' (5) of the inner Tree of Life. Any geometrical object or set of objects that either embodies properties of the Tree of Life or is another level of differentiation of it constitutes an example of sacred geometry. It can always be recognised because its geometrical pattern will be mathematically defined by the Godname numbers shown above. Evidence that the two sets of seven enfolded polygons are such a

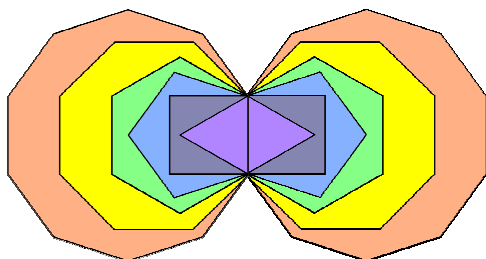


Figure 10. The first (6+6) enfolded polygons constitute a holistic system prescribed by the Godnames.

pattern are the facts that their 70 corners correspond to the 70 yods of the Tree of Life (Fig. 8) and that the 80 corners of the 94 triangular sectors into which the 14 polygons can be divided correspond to the 80 yods of the 1-tree with its 19 triangles turned into tetractyses (Fig. 9). Reference 1 and Article 4 in reference 3 show how the Godnames prescribe the two sets of polygons.

Within the inner form of the Tree of Life is another such holistic pattern. It consists of the two identical sets of the first six polygons (Fig. 10). Whether considered as groups of separate or enfolded polygons, the ten Godname numbers (shown below in **boldface** type) prescribe each set as follows:

Separate

EHYEH: 21	42 corners of 36 tetractyses (42 = 21 st even integer);
YAH: 15	150 (15 ×10) geometrical elements in 6 polygons;
YAHWEH: 26	26 corners of root edge and of 6 polygons outside their root edge;
ELOHIM: 50	50 corners of root edge and of (6+6) polygons outside their root edge;
EL: 31	31 sides of root edge and of 6 polygons outside root edge;
ELOHA: 36	36 corners and 36 sides of 6 polygons. 360 (36 ×10) hexagonal yods in (6+6) polygons;
YAHWEH ELOHIM: 76	76 corners, sides and independent centres of 6 polygons;
YAHWEH SABAOTH: 129	129 geometrical elements in root edge and in 6 polygons outside root edge other than centres;
ELOHIM SABAOTH: 153	153 geometrical elements in root edge and 6 polygons;
EL ChAI: 49	49 corners and sides in root edge and in 6 polygons outside root edge unshared with 1-tree;
ADONAI: 65	65 corners of 72 tetractyses outside root edge of (6+6) polygons and in 1-tree unshared with external corners of these tetractyses.

Enfolded

EHYEH: 21	21 corners of 6 polygons outside root edge unshared with 1-tree;
YAH: 15	165 hexagonal yods in 6 polygons, where $165 = 3 \times 55 = 3 \times (1^2 + 2^2 + 3^2 + 4^2 + 5^2)$ = sum of 15 squares; 328 hexagonal yods in (6+6) polygons (328 = sum of first 15 prime numbers);
YAHWEH: 26	26 corners in 6 polygons;
ELOHIM: 50	50 corners of (6+6) polygons;
EL: 31	31 sides of 6 polygons. 127 geometrical elements outside root edge (127 = 31 st prime number);
ELOHA: 36	360 (36 ×10) yods in (6+6) polygons unshared with tree;
YAHWEH ELOHIM: 76	76 boundary yods associated with 6 polygons unshared with 1-tree;
YAHWEH SABAOTH: 129	129 sides of 70 tetractyses of (6+6) polygons;
ELOHIM SABAOTH: 153	153 hexagonal yods unshared with tree associated with 6 polygons;
EL ChAI: 49	49 corners and sides outside root edge unshared with tree;
ADONAI: 65	65 sides of 35 tetractyses of 6 polygons;
ADONAI MELEKH: 155	155 hexagonal yods in 6 polygons unshared with tree.

The first six polygons enfolded in the lowest Tree of Life of CTOL have **26** corners prescribed by YAHWEH. Of these, the highest corner of the hexagon is also the lowest corner of the hexagon belonging to the set of polygons enfolded in the second lowest tree of CTOL, and similarly for those enfolded in each higher tree.

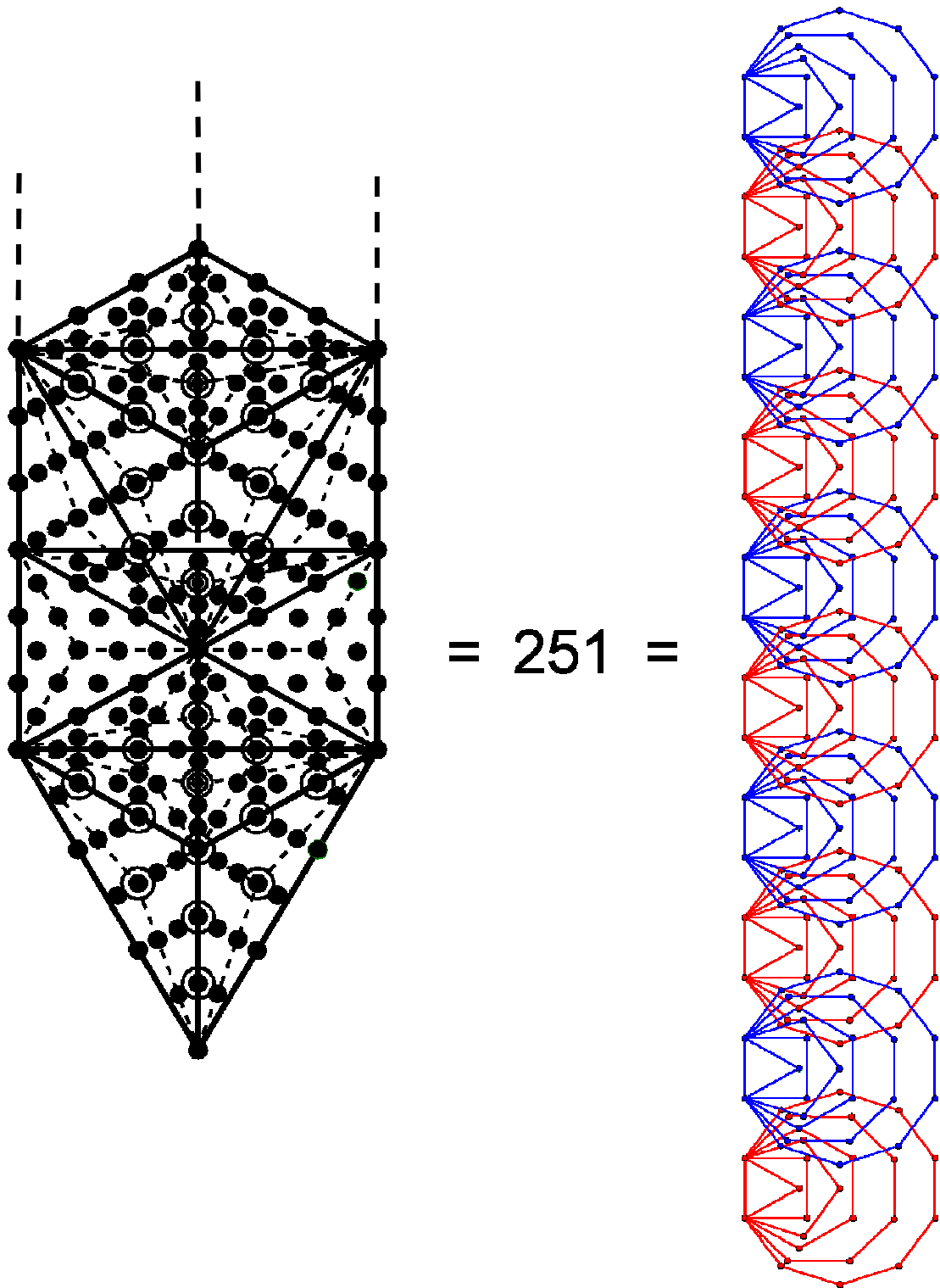


Fig. 11. The lowest tree in CTOL has as many yods (251) as the first six types of regular polygons enfolded in the ten lowest trees have corners. These 251 degrees of freedom denote the $(25 \times 10 + 1 = 251)$ space-time co-ordinates of points on the ten **26**-d strings constituting a superstring — the microphysical manifestation of the universal Tree of Life blueprint.

The number of corners of the $6n$ regular polygons enfolded in the n -tree $\equiv E(n) = 25n + 1$ ('1' denotes the highest corner of the hexagon associated with the n th tree). The number of corners of the 60 polygons (Fig. 11) enfolded in the 10-tree is

$$E(10) = 25 \times 10 + 1 = 251.$$

There are therefore as many corners of enfolded polygons in the 10-tree as there are yods in the 1-tree whose triangles are divided into three tetractyses. This reflects the fact that each Sephirah of the Tree of Life has a ten-fold differentiation represented by ten other Trees of Life, so that a single tree is equivalent to its further differentiation into 10 overlapping trees: the *inner form of the Tree of Life encodes its 10-fold multiplication*. This correspondence is further illustrated by the facts that:

- 1) the ten hexagons enfolded in the 10-tree have 11 corners that coincide with SLs on the Pillar of Mercy, one corner that coincides with Chokmah of the 10th tree (that is, Netzach of the 11th tree) being shared with a higher tree, leaving 240 corners. This $(10+1):240$ pattern of corners is analogous to the 10 Sephiroth of the 1-tree, Daath of the 1-tree (only an SL — Yesod — of the *next higher* tree) and the 240 yods of the 1-tree, as discussed in Section 1;
- 2) each of the 10 decagons enfolded in the 10-tree has eight corners outside their root edges, totalling 80 corners, so that the 251 corners of the 60 polygons consist of 171 corners of the first five polygons enfolded in each of ten trees and 80 corners of the sixth polygons outside their root edges. This corresponds to the 80 yods of the 1-tree with its triangles turned into tetractyses and the additional 171 yods generated by turning them into three tetractyses.

These correspondences exist because the set of six enfolded polygons constitutes an 'offspring' Tree of Life pattern prescribed by Godname numbers and possessing the same set of parameters (e.g., 251, 171 and 80) as that embodied in the parent Tree of Life. This set remains the same however many times a pattern divides into new patterns; these parameters are the 'genes' of the Tree of Life, determining generations of offspring in the image of itself.

The subatomic significance of the number 251 as a parameter of Tree of Life patterns like the 1-tree and the first six types of polygons enfolded in the 10-tree will be explained in Section 5.

3. The UPA

Between 1895 and 1908 (and intermittently thereafter until 1933) the two Theosophists Annie Besant and C.W. Leadbeater carried out investigations (6) into the structure of what they believed were atoms with the aid of a yogic siddhi, or psychic ability, called anima. Calling this form of remote viewing of the subatomic world 'micro-psi,' I examined (7) their observations of the supposed atoms of the elements and concluded that, although their belief that they had psychically magnified atoms was scientifically wrong, what they had actually observed was even more remarkable, through the use of a psychic faculty known to yogis for

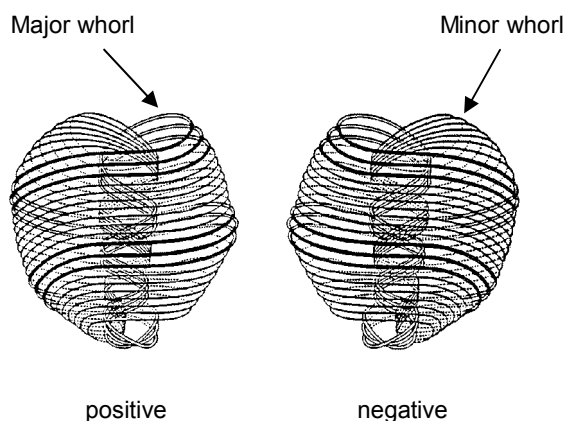


Figure 12. The two types of basic particles (UPAs) in matter are mirror images of each other.

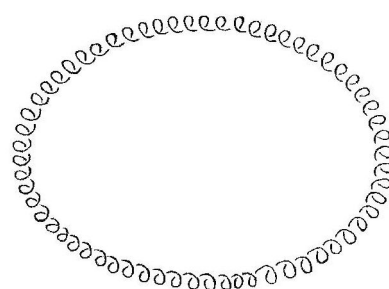


Figure 13. Each whorl is a helix with 1680 turns (1st-order spirillae).

thousands of years, Besant and Leadbeater had described not only protons and neutrons several decades before these constituents of atomic nuclei were discovered scientifically but also quarks (the particles binding together in groups of three to make the former) seventy years before these were conceived! Moreover, as explained in the next section, I showed that the observations of Besant and Leadbeater imply that physicists are wrong in assuming that quarks are fundamental. They claimed that atoms are built out of a basic particle they called the 'ultimate physical atom' (UPA). They noticed two varieties of UPAs (Fig. 12),

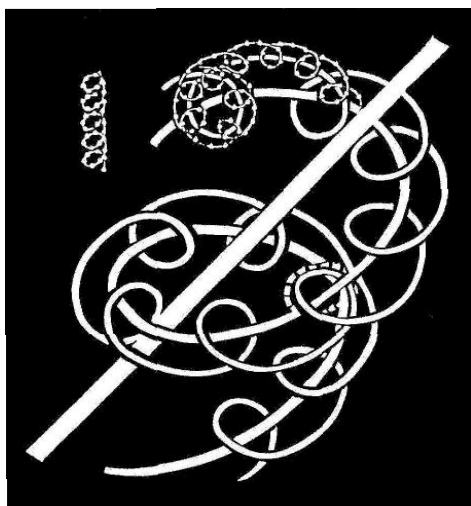


Figure 14. Toroidal winding of the 5th-, 6th- & 7th-order spirillae.

so-called 'positive' and 'negative' types. These consisted of ten closed curves, or 'whorls,' that spiralled, respectively, clockwise and anticlockwise (as seen from their broader end) $2\frac{1}{2}$ times around a vertical axis and then $2\frac{1}{2}$ times about the same axis in narrower spirals, making in all five revolutions. Three curves ('major whorls') appeared thicker than the remaining seven 'minor whorls.' None of the whorls touched another. When magnified, each whorl was seen to be a helix with 1680 turns (8) (Fig. 13). When magnified, each of these turns, or '1st-order spirillae,' ceased to look like a circle but became a helical coil with seven turns, or '2nd-order spirillae.' Each of these circular turns was really a coil with seven turns, or '3rd-order spirillae,' and so on. There were seven orders of spirillae, the 7th-order consisting of seven bubbles, or rather what looked like spherical holes, arranged at equal distances along the circumference of a circle (Fig. 14).

Although this 7-fold multiplication of higher order spirillae was true for the minor whorls, Leadbeater discovered that every set of 25 1st-order spirillae comprised 176, not 175, 2nd-order spirillae, every 25 2nd-order spirillae comprised 176 3rd-order spirillae and so on for the other orders of spirillae. The packing

of these extra spirillae in the major whorls made them look thicker than the minor ones. My book explains the sacred geometrical basis of this augmentation by one spirilla of every 175 spirillae of the next lower order.

4. UPA as subquark superstring

By analysing the micro-psi descriptions of the first 20 elements in the periodic table (later extended to 48 elements (9)) in terms of the known protons and neutrons in atomic nuclei and the known types of quarks in them, I proved beyond reasonable doubt that UPAs are constituents of quarks. I also identified these 'subquarks' with what physicists call 'superstrings.' According to superstring theory, fundamental particles are like wriggling, vibrating strands or loops of string, the different modes of vibration that they execute creating particles with different masses and other properties. Spinning subatomic particles are found to possess angular momentum that is either an integer multiple of the so-called 'Planck constant' $\hbar$, i.e., 0, $\hbar$, $2\hbar$, $3\hbar$, etc, or a half-integer multiple, i.e., $\hbar/2$, $3\hbar/2$, $5\hbar/2$, etc. The assumption that both types of particles are really different spin states of one entity is called 'supersymmetry.' String-like particles that incorporate this symmetry are called 'superstrings.' Five basic types of superstring theory have been discovered. They all predict that space-time is 10-dimensional, six higher dimensions creating a microscopic-sized space beyond the familiar three dimensions of large-scale space. Once discounted as a viable theory of gravity and point-like supersymmetric particles, so-called 'supergravity theory,' which predicts that space-time is 11-dimensional, has recently been shown to yield 10-dimensional superstrings. So physicists are currently seeking what they call the 'M-theory' ('M' stands for magic, mystery or membrane), which they now realise yields these six theories as its low-energy limit for different states of the vacuum. I outlined my proposal for this theory in the addendum of reference 1 and in Article 2 on my website (see ref. 4).

Each whorl of the UPA makes five revolutions about its spin axis, so that the UPA is shaped by fifty revolutions of its ten whorls. I interpret their 1st-order spirillae as oscillations in ordinary space of a circularly polarised wave along a string. The 2nd-order spirillae are the seven loops of a string winding around a circular, curled-up dimension of space, and similarly, for the higher orders of spirillae. The six higher orders are therefore the winding of a string around the 6-dimensional, curled-up space predicted by superstring theory. The space is what mathematicians call a '6-torus,' a 6-dimensional generalisation of the doughnut consisting of six perpendicular circles. Remarkably, this space has been considered for its simplicity by string theorists but rejected for technical reasons that turn out to be irrelevant because they are based upon the wrong assumption that quarks — and the mathematics of the force binding them together in protons and neutrons — are fundamental. The deviation of the UPA from the current superstring picture of matter is that — at least for the subquark state of a superstring — it consists not of one loop but of ten loops. Spinless strings were originally found by physicists to be 26-dimensional. I interpret (10) whorls as closed, string-like projections in 3-dimensional space of an object in 26-dimensional space-time called an '11-brane.' This means that whorls have 25 spatial dimensions, 15 more curled-up dimensions than the six higher superstring dimensions accurately depicted by Leadbeater as the six progressively smaller circles around which the six higher orders of spirillae wind. Each bubble in a 7th-order spirillae is a surface, *not* a solid object, its two dimensions showing that space-time extends beyond that predicted by

superstring theory.

5. Inner form of Tree of Life encodes string structure

As the subquark state of a superstring, the UPA consists of ten whorls with 1680 1st-order spirillae. Each whorl is a closed string-like curve in **26**-dimensional space-time, the 1st-order spirillae representing oscillations of a circularly polarised wave. A point or event is located in this space-time by **26** numbers: its

25 spatial co-ordinates and the time co-ordinate. Ten independent points, each lying on a different string, have a total of $10 \times 25 + 1 = 251$ co-ordinates. These are called bosonic field variables because geometrical co-ordinates are ordinary numbers, which commute like the mathematical operators representing spinless particles (so-called 'bosonic fields'). 25 independent variables are associated with each curve, 24 of them representing transverse co-ordinates and one being the longitudinal co-ordinate measured along the curve, so that the ten curves possess 240 transverse co-ordinate variables, 10 longitudinal co-ordinate variables and their common time co-ordinate.

The 25 corners of the first six polygons enfolded in successive overlapping trees signify geometrical degrees of freedom. These are the co-ordinate variables of the ten strings/whorls of the superstring/UPA represented by ten overlapping Trees of Life. Although a composite object extending into **15** higher dimensions of space, the superstring as such is still 1-dimensional, moving in a space with nine dimensions (eight transverse to the string, one longitudinal). Hence the number 80 ($=10 \times 8$) is the number of transverse co-ordinate variables of the ten strings comprising the superstring in 10-dimensional space-time. These are symbolised by the 80 corners of the ten decagons outside their root edges. 171 is the sum of the common time co-ordinate (1), the number (10) of longitudinal co-ordinate variables of these strings and the number ($10 \times 16 = 160$) of transverse co-ordinate variables in the higher, 16-dimensional space beyond superstring space-time. The time co-ordinate corresponds to the highest corner of the hexagon enfolded in the tenth tree, the ten longitudinal co-ordinates correspond to the ten opposite corners of hexagons coinciding with Chokmah and Netzach of each of the ten trees and the 160 remaining co-ordinates correspond to the 160 other corners.

In my book *The Mathematical Connection between Religion and Science*, I show that there are 264 yods in the seven enfolded polygons when their 47 triangular sectors become tetractyses, i.e.,

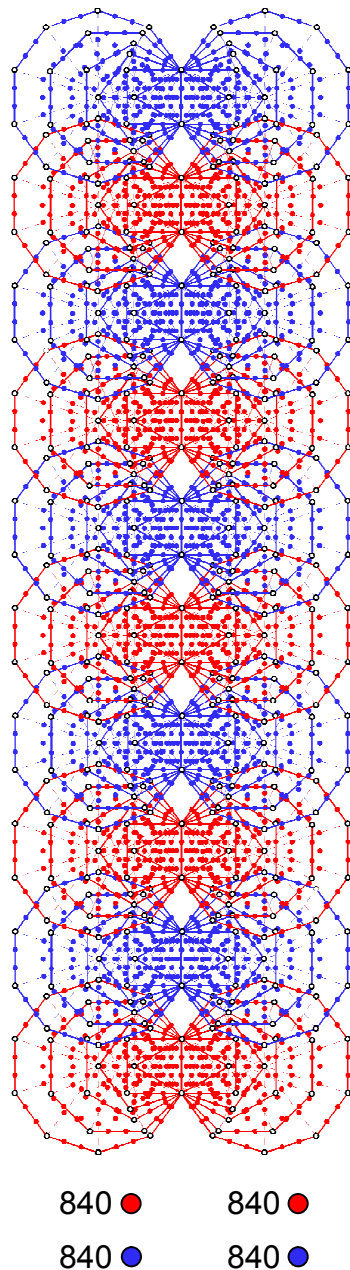


Figure 15. The first (6+6) polygons enfolded in 10 overlapping trees have 3360 yods other than corners when their sectors are tetractyses. They symbolise the 3360 1st-order spirillae in one revolution of the 10 whorls of the UPA/superstring.

the hexagon is shared with the hexagon enfolded in the next higher tree, the number of yods in the 6n polygons enfolded in the n-tree = $194n + 1$. These include E(n) corners, leaving

$$194n + 1 - E(n) = 194n + 1 - (25n+1) = 169n$$

$$260 = \begin{array}{c} 26 \\ 26 \quad 26 \\ 26 \quad 26 \quad 26 \\ 26 \quad 26 \quad 26 \quad 26 \end{array}$$

yods are outside their shared, root edge, illustrating how the Godname YAHWEH with number value **26** prescribes the inner form of the Tree of Life. 47 is the **15**th prime number, showing how the older Godname YAH with number value **15** defines the set of polygons. The dodecagon has 73 yods (69 yods outside its root edge). Therefore, the number of yods in the first six polygons = $264 - 69 = 195$. Noting that the topmost corner of

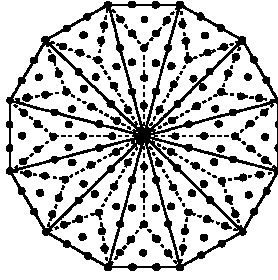


Figure 16. A dodecagon with Type A triangles as sectors has 181 yods.

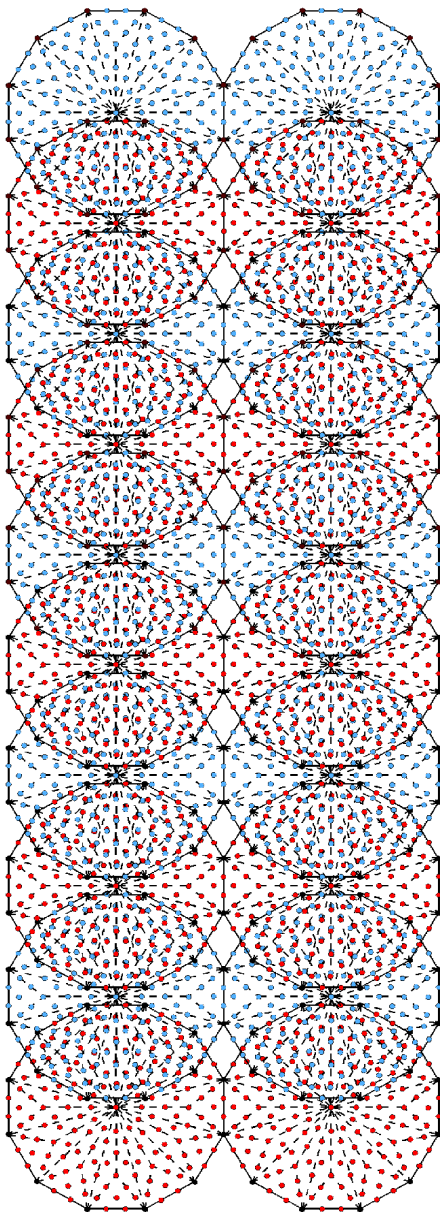


Figure 17. The 3360 yods other than corners in the (10+10) dodecagons enfolded in the 10-tree mapping the 10-d heterotic superstring symbolise the 3360 1st-order spirillae in each of the five revolutions of the 10 whorls of the UPA/superstring. The 1680 yods in a set of ten dodecagons symbolize the 1680 spirillae in an outer or inner half of one complete revolution of these whorls. The two mirror-image sets of dodecagons represent the inner and outer halves of the UPA.

840 ● 840 ●
840 ● 840 ●

yods other than corners. The four yods in each root edge of a set of polygons consist of two endpoints analogous to corners and two hexagonal yods within the latter. One endpoint and one hexagonal yod are associated with each set of polygons enfolded on either side of each tree. The number of yods other than corners associated with n sets of polygons enfolded on either side of the n -tree = $169n - n = 168n$. 168 is the number value of *Cholem Yesodeth*, the Mundane Chakra of Malkuth (11). The 251 corners of the 60 polygons enfolded on either side of the 10-tree mark out a geometrical pattern containing $168 \times 10 = 1680$ yods other than corners associated with each set (Fig. 15). This explains (apart from the Tree of Life factor of 10) why the UPA has 16800 1st-order spirillae, 1680 per whorl. Yods making up the tetractyses in the polygons other than their 251 corners — degrees of freedom *hidden* within their geometrical shapes — denote 1st-order spirillae.

If the 12 sectors of a dodecagon are each turned into three tetractyses, i.e., if each sector is regarded as a Type A triangle, the number of yods is 181 (Fig. 16). The number of corners of the dodecagon is 12, so that the number of yods *generated* by the transformation of its sectors into tetractyses = $181 - 12 = 169$. Of these, two hexagonal yods are on the root edge, one yod being associated with one dodecagon and the other associated with the other dodecagon belonging to the second set of seven enfolded polygons. Each dodecagon therefore has $169 - 1 = 168$ intrinsic yods. In other words, there are as many intrinsic yods in the last regular polygon generated by dividing its sectors into three tetractyses as there are yods other than polygonal corners associated with the first six polygons — truly, a remarkable property of the inner form of the Tree of Life! The Godname ELOHA of Geburah prescribes the structural parameter 168 because its number value **36** is the number of tetractyses in such a transformed dodecagon (it is also the number of yods on its boundary). The other dodecagon also has 168 generated yods that are intrinsic to it. The two dodecagons have 336 such yods, where

$$336 = 2^2 + 6^2 + 10^2 + 14^2.$$

Since $336 = 1680/5$ and each whorl of the UPA comprises 1680 1st-order spirillae and makes five revolutions, 336 is the number of 1st-order spirillae in one revolution of a whorl. The Pythagorean Tetrad defines this structural parameter because 336 is the sum of the squares of four integers, starting with $2^2 = 4$ and adding squares of integers differing successively by 4. The ten dodecagons enfolded on both sides of five overlapping Trees of Life contain 1680 generated yods (Fig. 17). This suggests that one revolution of each whorl represents a cyclic Tree of Life pattern, the UPA embodying **50** cycles prescribed by the number value of ELOHIM. The three major whorls comprise $3 \times 5 = 15$ revolutions or cycles, where **15** is the number value of YAH. The fact that a Godname appears here suggests that the three major whorls represent another Tree of Life pattern within that of the ten whorls. This is supported by the fact that points on each major whorl in **26**-dimensional space-time have $3 \times 25 + 1 = 76$ space-time co-ordinate variables, where **76** is the number value of YAHWEH ELOHIM.

6. Cyclic patterns of 25 spirillae

The seven minor whorls have $7 \times 25 = 175$ spatial co-ordinate variables. These whorls, too, constitute a Tree of Life pattern because they correspond to the seven Sephiroth of Construction. 175 is therefore a structural parameter of the superstring. As

$$E(n+7) - E(n) = 7 \times 25 = 175,$$

this number is the number of corners of the ($7 \times 6 = 42$) regular polygons of the first six types enfolded on either side of every seven trees, the emanation of seven trees being a complete cycle because the n th and $(n+7)$ th trees correspond to the same Sephirah, just as the n th and $(n+7)$ th SLs in CTOL are the same Sephirah, from whatever SL counting is started. 175 degrees of freedom express this 7-fold emanation of trees or Tree of Life structures like the seven minor whorls, and this applies also to *each* minor whorl as well. Every section of a whorl will have a 7-fold differentiation quantified by 175 geometrical degrees of freedom, whilst every Tree of Life pattern amongst these degrees of freedom will have another 7-fold differentiation expressed by 175 new degrees of freedom, and so on. This explains why, according to Leadbeater, 25 n th-order spirillae in a minor whorl comprise 175 $(n+1)$ th-order spirillae. (Actually, he merely said that 100 spirillae of every order comprise 700 of the next higher order if it belongs to a minor whorl and 704 if it belongs to a major whorl. But he did state that each spirillae in a minor whorl was made up of seven spirillae of the next higher order, implying the above statement).

Each successive circular dimension of superstring space is the result of a cycle of emanation of seven trees representing the seven Sephiroth of Construction. At any level of winding of a string around a given dimension, the Tree of Life pattern has 25 degrees of freedom symbolised by the 25 independent corners of the first six polygons. But that Tree of Life pattern is the *result* of the emanation of seven trees whose inner form has 175 degrees of freedom. So the 25 degrees of freedom have a composite character, being

compounded from 175 higher degrees of freedom. This compositeness extends to the highest superstring dimension, described by Leadbeater as being a circle around which seven similar, equally spaced, hollow bubbles (12) revolve. Each spirillae of a given order consist of seven spirillae of the next higher order, each corresponding to a Sephirah of Construction, and every 25 of the former spirillae, being a Tree of Life

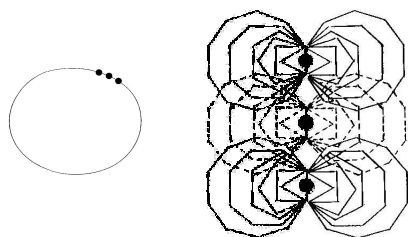


Figure 18. If we imagine 70 overlapping Trees of Life bent around a closed curve, their 840 polygons of the first six types have 3360 corners. They are the Tree of Life counterpart of the 3360 1st-order spirillae in one revolution of the 10 whorls of the UPA.

pattern, consist of 175 of the latter. A whorl is the string manifestation of 70 successive cycles of emanation of a Tree of Life pattern of 25 spirillae, the first spirillae in a section of 25 starting this cycle being the last spirillae in the adjoining section that ends the previous cycle, i.e., there are 24 independent stages in each cycle, so that $1680 = 70 \times 24$. These are analogous to the 24 transverse modes of planar oscillation of a string existing in **26**-dimensional space-time. The counterpart to these sections of 25 spirillae in the first six polygons enfolded on either side of each tree is the set of 25 corners associated with either set, 24 per tree. The hexagons enfolded in two overlapping trees share one corner. Treating it as the start of a cyclic pattern, the end of the cycle is the 25th corner. This is the corner of the same hexagon that is shared with the hexagon of the next tree, the corresponding start of the next cycle. The cycle of 25 displayed by the seven orders of spirillae has its counterpart in the inner Tree of Life as the 25 corners that are intrinsic to the first six polygons enfolded in each tree.

The 70 cycles are represented by a ring of 70 overlapping trees (Fig. 18). Their first six types of polygons have $70 \times 24 = 1680$ corners, the last corner of the hexagon enfolded in the 70th tree being shared with the first corner of the hexagon of the 1st tree adjacent to it in the ring. These cycles are symbolised by the 70 corners of the (7+7) regular polygons and by the 70 yods in a Tree of Life whose triangles are tetractyses (see Figure 8). The former consist of 35 corners (denoted by red yods) associated with one set of seven polygons and 35 corners (blue yods) associated with the other set (Fig. 19). They correspond in the Tree of Life to the 35 red yods in its 'trunk' defined by the point (Kether), line (Path joining Binah and Chokmah), triangle (Chesed, Geburah and Tiphareth) and tetrahedron (Netzach, Hod, Yesod and Malkuth) and to the 35 blue yods in its 'branches.' This means that the distinction between the trunk and branches of the Tree of Life manifests in the superstring/UPA as its inner and outer halves, each created by 25 revolutions of its 10 whorls and comprising 1680 1st-order spirillae.

In Article 2 on my website, I have proposed that the UPA/superstring is formed by a 11-dimensional object called an '11-brane' wrapping itself around ten circular dimensions of **26**-dimensional space-time to create ten whorls which then each wind around the six, compactified, superstring dimensions. The whorls cannot result from such wrapping around one or more of the latter dimensions because this would lead to fewer

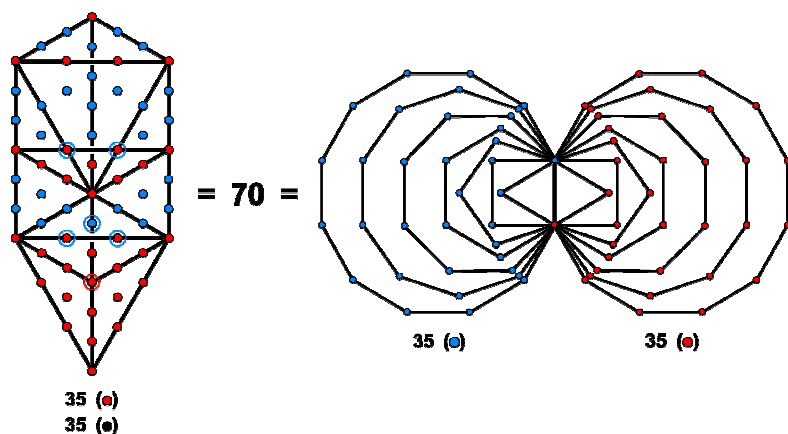


Figure 19. The trunk of the Tree of Life consists of the 35 red yods in the sequence of point (Kether), line (Chokmah-Binah Path), triangle (Chesed-Geburah-Tiphareth) & tetrahedron (Netzach-Hod-Yesod-Malkuth). The remainder (the branches) contain 35 yods as well. This 35:35 division corresponds in the inner Tree of Life to the 35 corners associated with each set of seven polygons.

orders of spirillae representing windings of strings around the remaining dimensions than were counted by Leadbeater. As mentioned earlier, examining this winding, he noticed that — unlike in a minor whorl, where 100 spirillae of a given order comprise 700 spirillae of the next higher order — in a major whorl they comprise 704 spirillae. In other words, four extra spirillae of the next higher order are added to each 100, one to every 25. This means that three of the ten whorls make an extra turn about every next higher circular dimension every time they wind 25 times around the lower circular dimension, so that during this time the 25 successive spirillae winds 176 times around the next higher dimension, not 175 times, as in the case of the minor whorls. Remembering that the number of corners in the $6n$ polygons enfolded in n

overlapping trees is given by $E(n) = 25n + 1$, there are $E(7) = 25 \times 7 + 1 = 175 + 1 = 176$ corners in the 42 polygons of the first six types enfolded in seven overlapping trees. But only 175 of these represent independent geometrical degrees of freedom because the highest corner of the hexagon (denoted by '1' in the expression for $E(n)$) is also the lowest corner of the hexagon enfolded in the next higher tree. The question arises: why have three strings manifested the *complete* number of degrees of freedom marking out a Tree of Life pattern of 25 spirillae, including that shared with one of the polygons enfolded in an *eighth* tree? According to *Occult Chemistry*, the major whorls are: "undergoing a change — may in fact be in process of growth, as there is reason to suppose that these three thicker spirals originally resembled the

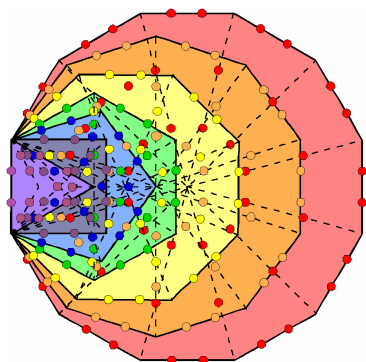


Figure 20. 176 hexagonal yods lie on the edges of the 47 tetractyses in the 7 enfolded polygons.

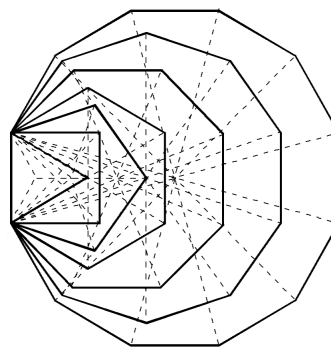


Figure 21. The 7 enfolded polygons have 174 vertices, edges & triangular sectors.

others" (13). What this reason is Besant and Leadbeater never specified, as was left unanswered the questions of how long ago the word 'originally' signifies and whether the augmentation has ended or is still going on. In terms of the equivalence between the tetractyses and Tree of Life, the three yods at the corners of the former correspond to the Supernal Triad of Kether, Chokmah and Binah. In terms of the correspondence between both these geometrical symbols and the ten dimensions of superstring space-time, the corner yods and Supernal Triad bear a formal correspondence to the three large-scale dimensions of space-time. The remaining yods and Sephiroth correspond to the dimension of time (symbolised by the central yod denoting Malkuth) and the six compactified dimensions (symbolised by the six yods at the corners of a hexagon, which represent the Sephiroth of Construction above Malkuth). In terms of the UPA being the microscopic manifestation of the tetractys and Tree of Life, its three major whorls correspond to the corners of the tetractys and to the Supernal Triad. Hence there is a correspondence between its major whorls and the large-scale dimensions. Physicists believe that the latter quickly flattened out after the Big Bang, whilst the six remaining dimensions, which correspond to the six higher Sephiroth of Construction, remained curled up. The scientific reason for this is not yet known. But the *Kabbalistic* reason for three dimensions becoming distinct from the rest is clear: the ten dimensions conform to the archetypal pattern of the Tree of Life and have to reflect the basic distinction between the triple Godhead standing outside Creation and the seven Sephiroth of Construction, which manifest in it. The three large-scale dimensions of space are the counterpart of the Supernal Triad, whilst the seven compactified dimensions are the counterpart of the seven Sephiroth of Construction.

Evidence that the numbers 175 and 176 are, indeed, structural parameters of the superstring is provided by the following facts:

1. 176 hexagonal yods lie on the 88 edges of the 47 tetractys sectors of the seven enfolded polygons making up the inner Tree of Life (Fig. 20). Just as the number 176 delineates the shape of the first six types of polygons enfolded in the 7-tree in terms of their 176 corners, so, too, this number measures the boundaries of the sectors of the seven enfolded polygons. Just as one corner is not intrinsic to the polygons enfolded in the 7-tree because it is also a corner of the hexagon in the set of polygons enfolded in the eighth tree, leaving 175 corners that are intrinsic, so, too, one of the 176 hexagonal yods is not intrinsic to the set of seven enfolded polygons because it is associated with the mirror-image set of polygons, leaving 175 hexagonal yods that can be regarded as belonging exclusively to each set. The total number of hexagonal yods in both sets = $175 + 175 = 350 = 2 + 3 + 4 + \dots + 26$, where **26** is the number value of YAHWEH.
2. the 47 sectors of the seven enfolded polygons have 41 corners and 88 edges, i.e., 176 geometrical elements (Fig. 21). Of these, the uppermost corner of the hexagon coincides with the lowest corner of

the hexagon enfolded in the next higher tree, so that 175 geometrical elements are intrinsic to the seven enfolded polygons enfolded in any given tree. We see manifested in the sacred geometry of the inner Tree of Life the same split: $176 = 1 + 175$ as appears in Leadbeater's account of the augmentation of orders of spirillae in major whorls relative to minor whorls. It is, of course, not a coincidence because the heterotic superstring is the microscopic manifestation of the Tree of Life, and so his observation of the toroidal winding of its whorls must reflect the geometrical properties of this universal blueprint.

The distinction between macroscopic and microscopic dimensions of space has left its mark in the way three of the ten strings comprising the superstring wind differently from the other seven around the compactified dimensions of superstring space-time. Presumably, the ten whorls of the UPA all resembled one another during the brief time after the Big Bang or (if we believe the inflationary cosmological model) during the inflationary epoch preceding it before three dimensions started to flatten out to provide the directions for expansion of the universe. Physicists believe that this was accompanied by breaking of the symmetry of the gauge group E_8 into that of smaller subgroups, such as E_6 . It is interesting that the number of transverse co-ordinate variables of the ten string-like whorls is $10 \times 24 = 240$, which is the number of so-called 'non-zero roots' of E_8 defining certain types of charges that are sources of 240 of the 248 gauge fields of E_8 whilst the number of such variables in three whorls is $3 \times 24 = 72$, which is the number of such roots in E_6 , a subgroup of E_8 and a popular group for accommodating the known forces of the Standard Model in particle physics. It suggests that all ten whorls resembled one another at the beginning of the Big Bang when the symmetry of the superstring force was exact, and that the subsequent breakdown in its symmetry to E_6 led to three string components of the superstring acquiring slightly different winding numbers in their winding modes to those of the other seven components, eventually creating the particular states of the superstring constituents of up and down quarks. The encoding of the structure of the UPA in the inner form of the Tree of Life makes it clear that — as a Tree of Life pattern — it is *complete*, that is, the augmentation of major whorls relative to minor whorls cannot proceed further. The winding of the ten string-like components of the superstring about the six compactified dimensions is no longer changing with cosmological time.

It was stated earlier that the whorl (a circle, topologically speaking) is the manifestation of 70 Tree of Life patterns of 25 1st-order spirillae which total 1680 spirillae because the first member of a section is also the last of the preceding one, the last stage of each cyclic pattern being the first stage for the next cycle. As each whorl is the microscopic manifestation of a Sephirah, which is itself ten-fold, the 70 cycles are really ten sets of seven cycles, each set comprising 168 1st-order spirillae. The Tree of Life analogy of this was discussed in Section 5, where it was shown that, associated with either set of the first six polygons with

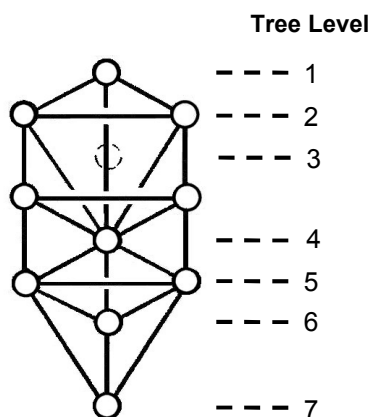


Figure 22. The seven tree levels of the Tree of Life.

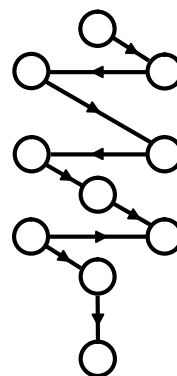


Figure 23. The stages of descent of the Lightning Flash.

their sectors turned into tetractyses, are 168 yods other than the **26** corners defining the shapes of the polygons, so that enfolded in ten overlapping trees are 60 such polygons with 1680 yods other than their $E(10) = 251$ corners. Each cycle contains 24 independent spirillae, these corresponding to the 24 corners associated with each set of polygons that are not also shared with polygons enfolded in the next higher tree. Noticing that $168 = 7 \times 24$, it is remarkable that there should be as many such corners of the seven sets of polygons enfolded in seven overlapping trees (namely, 168) as there are yods other than corners associated with each set of polygons enfolded in *one* tree. However, it is not mysterious, for every seventh SL in CTOL is the corresponding Sephirah of another tree, so that the inner forms of seven trees representing these SLs encode the cyclic pattern of emanation of each tree.

It will now be shown that this strong association between the superstring parameters 251 and 168 persists in the mathematical description of realms of consciousness far beyond the space-time domain of physical consciousness, that is, the UPA is a microcosm of the spiritual macrocosm, embodying analogous mathematical cycles.

7. Tree levels

As well as the vertical division of the Tree of Life into the Pillars of Mercy, Equilibrium and Severity, it has seven horizontal levels, which will be called 'tree levels' (Fig. 22). These are Kether, the Path joining Chokmah and Binah, Daath, Tiphareth, the Path joining Netzach and Hod, Yesod and Malkuth. Whilst not a Sephirah, Daath of any tree in a set of overlapping trees other than its highest is Yesod of the next higher tree and so for consistency must be defined as a tree level if Yesod is defined as such. The exception to this is Daath of the 91st tree, the last tree in CTOL. This is not a tree level because there is no higher tree for which this Daath is Yesod. The so-called 'Lower Face' of the 1-tree (this is the kite-shaped set of the lowest five Sephiroth) is spanned by four tree levels, whilst each of the n higher Faces adds three tree levels. Hence the numbers of tree levels in the n -tree and in n overlapping trees are:

n-tree	n overlapping trees
$A(n) = 3n + 4$	$\hat{A}(n) = 3n + 3,$

According to Kabbalah, God's will descend from Ain Soph Aur (the Absolute) as a Line of Light, starting as Kether and descending in ten stages (Fig. 23). Although not a Sephirah, Daath must be counted as a stage for the sake of consistency because it becomes Yesod of the next higher tree — unless there is no higher tree, in which case Daath is not regarded as a stage of descent, just as it is then not an SL. There are three horizontal jumps of the 'Lightning Flash' and seven vertical stages of its descent from Kether to Malkuth. The Lightning Flash descends vertically from Tiphareth of the 1-tree in three stages and in four stages in each of the n higher Faces of the n -tree. Hence the number of stages of vertical descent of the Lightning Flash from Kether of the n th tree is

n-tree	n overlapping trees
$O(n) = 4n + 3$	$\hat{O}(n) = 4n + 2.$

Important parameters appearing in later discussion are:

$$A(7) = 25, A(49) = 151 \text{ and } \hat{A}(91) = 276,$$

and

$$O(7) = 31, O(49) = 199 \text{ and } \hat{O}(91) = 366.$$

Three more formulae are given here for the sake of future reference. The number of SLs in the n -tree is

$$S(n) = 6n + 5.$$

The numbers of SLs on the central pillar of the n -tree and in n overlapping trees are

n-tree	n overlapping trees
$N(n) = 2n + 3$	$\hat{N}(n) = 2n + 2.$

The numbers of yods in the n -tree and in n overlapping trees with their triangles turned into tetractyses are

n-tree	n overlapping trees
$Y(n) = 50n + 30$	$\hat{Y}(n) = 50n + 20.$

Notice that the number of yods in each successive tree = $Y(n+1) - Y(n) = 50$, i.e., ELOHIM with number value **50** prescribes the yod population of successive trees, in keeping with the 'feminine' archetype of form associated with Binah.

Firstly, let us consider **50** overlapping trees. The former contains $\hat{Y}(50) = 50 \times 50 + 20 = 2520$ yods. There are ten yods from its top to the Path joining Chokmah and Binah of the **50**th tree, leaving $2520 - 10 = 2510$

$$= \begin{array}{ccccccc} & & 251 & & & & \\ & 251 & & 251 & & & \\ = & & 251 & & 251 & & 251 \\ & 251 & & 251 & & 251 & \end{array}$$

yods. **50** is the number value of ELOHIM, Godname of Binah. The number of yods below Binah of the **50**th tree is that in 251 tetractyses. This Binah is the 101st SL on the Pillar of Severity, where 101 is the **26**th prime number and **26** is the number value of YAHWEH, Godname of Chokmah. As illustrated many times in my book *The Universal Nature of Sacred Geometry*, a Tree of Life pattern always comprise **50**

mathematical objects or elements prescribed by ELOHIM. In the case of the Tree of Life itself, it comprises 10 corners and 22 sides of 16 triangles, as well as two tetrahedra, making a total of **50** geometrical elements. In the case of the two sets of six enfolded polygons, they have **50** corners. In the case of the UPA, we saw earlier that its **50** revolutions are Tree of Life cycles that can be each represented by a Tree of Life whose inner form contains 336 yods in its first (6+6) polygons marked out by their **50** corners. Although their meaning in CTOL as subplanes of consciousness is, of course, different from their interpretation as revolutions in the context of the UPA, we see that the same number 251 appears as a parameter: either 251 tetractyses or 251 space-time co-ordinate variables of the ten string-like whorls of a subquark superstring.

8. Analogous patterns in CTOL and in the UPA

Now consider the **50**-tree. Binah of the **50**th tree in CTOL is the 248th SL, counting from its top. In other words, there are 248 emanations down to Binah of the **50**th tree. ELOHIM thus prescribes the very number of gauge bosons of E_8 , the gauge symmetry group describing the unified superstring force. A formal correspondence can be said to exist between every such emanation and every quantum state of the gauge particle mediating the unified force between superstrings. This may seem hard to believe in view of the 42 trees down to the **50**th tree with this number of emanations representing the cosmic superphysical planes — indescribable realms of consciousness even beyond the Buddhists' Nirvana! What on earth (or in heaven), it may be asked, could such transcendental realities have to do with the subatomic particles transmitting superstring forces? The question is misconceived. The existence of a mathematical analogy between subatomic particles and spiritual realms does not imply any *causal* connection between them. Academic though it may seem, the correspondence is nevertheless real, for the occult law of correspondence has no limit of application. The unified force between superstrings has significance reaching to the highest levels of the spiritual cosmos because these basic units of physical matter are the microscopic manifestation of the Divine Life in space-time and their forces — themselves particles — reflect how many microscopic states of matter the latter can indwell.

There are 251 SLs down to Geburah of the **50**th tree, the *last* SL before Kether of the **49**th tree — the highest point of the cosmic physical plane. The significance of this is that the latter Sephirah marks the beginning of the cosmic physical plane, the **49**th tree representing the highest subplane of this plane. There are therefore 251 emanations before the cosmic plane corresponding to Malkuth is reached. Malkuth of this tree is the 264th SL from the top of CTOL. Remarkably, this is the number of yods in the inner form of the Tree of Life — the seven enfolded regular polygons — when their 35 sectors are turned into tetractyses (see reference 1).

The number of yods in the **49**-tree is

$$Y(49) = 50 \times 49 + 30 = 2480,$$

that is, it is made up of as many yods as there are in 248 separate tetractyses. 2480 is the number of components of the 248 10-dimensional gauge fields of the superstring gauge symmetry group E_8 . In other words, the yods symbolise the ten components of each gauge field! This is another remarkable illustration of how Godnames prescribe superstring parameters (in this case, EL ChAI with number value **49**). It is truly fitting that the Tree of Life representation of the cosmic physical plane should embody a number of such physical significance as 248. That this is no coincidence is shown by the following consideration: the 1-tree represents the lowest subplane of the physical plane, just as the **49**-tree represents the lowest cosmic plane. It contains

$$Y(1) = 50 + 30 = 80$$

yods, i.e., the number of yods in eight tetractyses. The Tree of Life has

$$\dot{Y}(1) = 50 + 20 = 70$$

yods, i.e., the yods in seven tetractyses, 10 extra yods (one tetractys) being added to the latter when it becomes the 1-tree. There are $2480 - 80 = 2400$ yods in the **49**-tree above the 1-tree, i.e., the yods in 240 tetractyses. The exceptional group E_8 has what mathematicians call 248 'simple roots' made up of 240 'non-zero roots' and 8 'zero roots,' the latter comprising seven of a certain kind and one of another kind. We see that the root structure of E_8 has its exact analogous pattern in the yod population of the **49**-tree: 240:7:1. The reason for this is that this section of CTOL is analogous to the 7-tree, the cosmic physical plane being the cosmic counterpart of the physical plane, and so the **49**-tree *must* encode parameters of superstring physics because superstrings are the units of matter in the physical plane mapped by the 7-tree. The number of SLs on the central pillar of CTOL above the top of the 7-tree is

$$\tilde{N}(91) - N(7) = 2 \times 91 + 2 - (2 \times 7 + 3) = 167.$$

The highest point of the Tree of Life representation of the physical plane is therefore the 168th SL on the central pillar from the top of CTOL. This explains why the number value of Cholem Yesodeth, the Mundane Chakra of Malkuth, is 168, for this plane, being the physical universe, corresponds to Malkuth. This is confirmed by the following connection between the 7-tree and its cosmic counterpart, the **49**-tree. As

$$O(49) - O(7) = 199 - 31 = 168$$

(see formulae listed above), the Lightning Flash descends in 168 vertical steps from the top of the **49**th tree to the top of the 7th tree. As there are 299 SLs in the **49**-tree and 47 SLs in the 7-tree, the number of SLs in the former above the latter is $299 - 47 = 252$. These stages of descent of the Lightning Flash therefore span 251 SLs, the first stage generating Chokmah and Binah of the **49**th tree, the second generating Daath of this tree and the last stage generating Kether of the 7th tree — the highest point of the 7-tree. Once again, the number 251 is found to be associated with the number 168.

Yet another example of this association is as follows: using formulae given earlier, it is easily found that the 168th SL on the central pillar from the bottom of CTOL (Yesod of the 84th tree) is the 251st tree level. 168 Sephirothic emanations denoting equilibrium or balance between the 'force' aspect of the Pillar of Mercy and the form aspect of the Pillar of Severity span 251 tree levels. This is the macrocosmic counterpart of what was found earlier for the UPA/superstring, namely, that its ten strings with 251 space-time co-ordinate variables spiral 16800 times in 3-dimensional space. The number 251 determines not only the number of gauge bosons mediating superstring forces but also essentially the number of circularly polarised waves running around the string components of the subquark superstring. This is not a coincidence, because the same number quantifies a cycle of physical creation structurally characterised by the number 168, as we saw in Sections 2 and 5 for the generic case of the 1-tree with its 251 yods and their counterpart in the form of the 251 corners of the first six polygons enfolded in ten overlapping Trees of Life, each with 168 associated yods other than these corners.

The number of tree levels in CTOL above the 7-tree is

$$\dot{A}(91) - A(7) = 276 - 25 = 251,$$

i.e., the 251st tree level from the top of CTOL is the **26**th tree level, showing how the Godname YAHWEH with number value **26** prescribes this cosmic parameter. But reference 1 and Article 2 on my website proposed that the 25 tree levels of the 7-tree be interpreted as the 25 spatial dimensions of a bosonic string, the **26**th tree level signifying the dimension of time. There are therefore 251 tree levels in CTOL down to the appearance of time and the space-time continuum. As

$$\dot{A}(91) - A(49) = 276 - 151 = 125$$

and

$$A(49) - 26 = 151 - 26 = 125,$$

there are 126 tree levels in CTOL down to the top of the **49**th tree and a further 125 tree levels down to the **26**th tree level (Fig. 24). The next SL after the 251st from the top of CTOL marks the commencement of emanation of the **49**th tree, and this is the *midpoint* of the cycle of 251 tree levels leading to the appearance of time. The six cosmic planes above the cosmic physical plane represent levels of (for lack of a better phrase) 'cosmic consciousness' embodying the divine qualities of the six Sephiroth of Construction above Malkuth and their $6 \times 7 = 42$ differentiations generated by 251 Sephirothic emanations. They represent a halfway stage towards the final emergence of space-time at the **26**th tree level. This is Daath of the 8th tree and the **50**th SL, i.e., ELOHIM as well as YAHWEH determines the location of time in CTOL. As CTOL has 550 SLs, the **50**th SL is the 501st SL from the top of CTOL, i.e., the 251st SL from the 251st SL from the top. The appearance of time marks the completion of one cycle of 251 tree levels and two successive cycles of emanation of 251 SLs, the last emanation of the first cycle being the first of the second cycle. This 2-in-1 cyclic pattern simply reflects the fact that the number of SLs in every n trees after the r th tree is

$$N(n+r) - N(r) = 6(n+r) + 5 - (6r+5) = 6n,$$

whilst the number of tree levels in every n trees is

$$A(n+r) - A(r) = 3(n+r) + 4 - (3r+4) = 3n,$$

i.e., every n trees contain twice as many SLs as tree levels. The completion of the tree level cycle is the start of another '251 cycle,' this time it being the creation of the 251 space-time co-ordinate variables of the ten string components of a UPA/superstring, the first being the time co-ordinate itself (since the cycle takes place in time), followed by the 25 co-ordinate variables of each string. The number of space-time co-ordinate variables in five of these strings $5 \times 25 + 1 = 126$, the five other strings having 125 spatial co-

ordinate variables, as do the former. The ten strings are the microscopic manifestation of the ten Sephiroth of the Tree of Life, so that the number 126 differentiates the uppermost five Sephiroth spanning the Upper Face of the Tree of Life from the five spanning its Lower Face. Tiphareth, the centre of the Tree of Life, is the joining point of the two Faces and marks the halfway stage in the emanation of the ten Sephiroth. This corresponds in CTOL to the commencement of the cosmic physical plane — the middle point not of CTOL but of that part of it (consisting of 84 trees) which is beyond space-time represented by the seven lowest trees.

9. Inner Tree of Life encodes the '251 cycle'

It will now be shown that the 251 string co-ordinate variables are symbolised by the corners of the first six regular polygons enfolded in each of ten overlapping Trees of Life representing the strings (in other words, that they constitute a *complete* Tree of Life pattern). Each set of polygons have **26** corners, 25 intrinsic to each set because they share corners of their hexagons, except the tenth, which has **26** corners, the topmost corner of its hexagon being unshared because it is the last of the set. The number of intrinsic corners of the 6n polygons enfolded on either side of n overlapping trees is

$$\acute{E}(n) = E(n) - 1 = 25n.$$

$\acute{E}(5) = 125$, so that the lowest five sets of polygons have 125 intrinsic corners and the uppermost five sets have

$$E(10) - \acute{E}(5) = 251 - 125 = 126$$

corners. The number quantifying the number of geometrical degrees of freedom (namely, polygonal corners) generated halfway in the emanation of ten trees is that locating the halfway point in the emanation of CTOL before space-time appears, namely, the commencement of emanation of the tree representing the highest subplane (**49th**) of the cosmic physical plane. The section of CTOL beyond space-time is itself a Tree of Life pattern in the sense that it is precisely analogous to the geometry of the inner form of ten overlapping Trees of Life.

It is remarkable that 126 is the sum of the four types of combinations of the letters A, H and I in AHIH, the Godname of Kether:

$$A = 1, H = 5, I = 10$$

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

The 126th odd integer is 251 and the 251st odd integer is 501, the number of SLs down to the point in CTOL where space-time appears.

Being of fundamental significance, the number 251 is prescribed by not only EHYEH but also the other Godnames. An easy way of showing this is to consider the 41-tree, which has

$$S(41) = 6 \times 41 + 5 = 251$$

SLs. 41 is the **21st** odd integer, and the 251st SL is both the **49th** SL below the top of the **49th** tree in CTOL and the bottom (Malkuth) of the **49th** tree from the top of CTOL, showing how EL ChAI with number value **49** determines this number. The 251st SL is also the 127th tree level, where 127 is the **31st** prime number, showing how EL with number value **31** prescribes this number. The 251st SL is the 150th tree level from the top of CTOL, where $150 = 15 \times 10$, showing how YAH with number value **15** prescribes the number 251.

We saw earlier that the 251 yods of the 1-tree with its 19 triangles divided into three tetractyses consist of 11 corners of these triangles (ten SLs and Daath) and 240 hidden yods generated by constructing the 1-tree out of tetractyses. These 251 yods correspond to the ten longitudinal co-ordinate variables of the ten strings of the UPA/superstring, their time co-ordinate and their 240 transverse co-ordinate variables, 24 per string. Their correspondence in the six polygons enfolded in each of ten trees is the ten highest and lowest corners of the nine hexagons — the highest (unshared) corner of the uppermost hexagon and the 240 other corners. Their correspondence in the root edge and seven separate polygons is the 240 hexagonal yods of these polygons and the 11 yods comprising the four yods of the root edge and the seven centres of the polygons (this is also a Tree of Life pattern because, as shown in reference 1 and in Article 4 of reference 4, its properties are defined by the Godnames). This 240:11 differentiation is therefore fundamental, being shown by the 1-tree, 10 overlapping trees and the inner form of the Tree of Life. Its

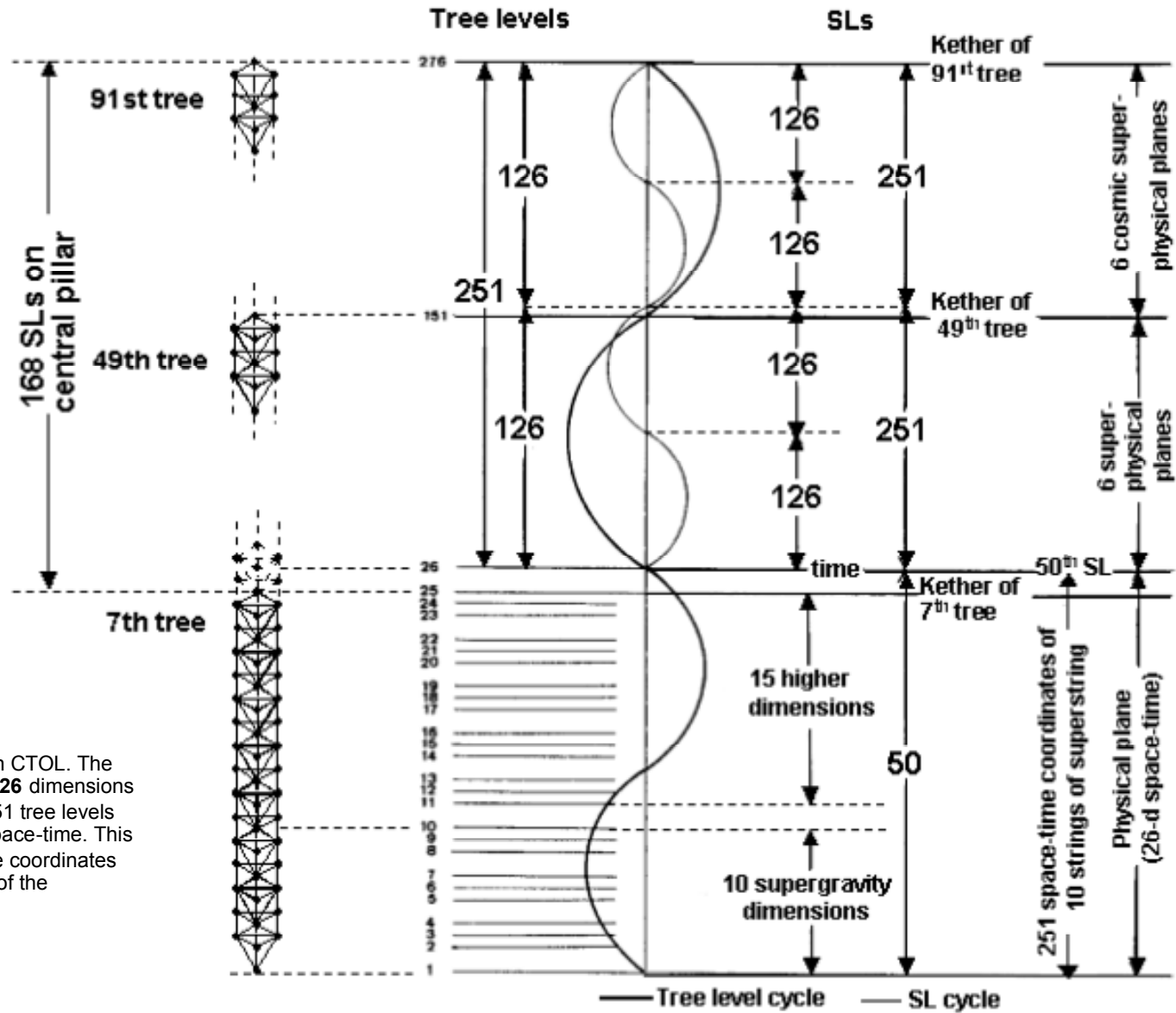


Figure 24. The tree levels in CTOL. The lowest **26** levels signify the **26** dimensions of space-time. There are 251 tree levels down to the beginning of space-time. This is the number of space-time coordinates of points on the ten whorls of the UPA/heterotic superstring.

correspondence in the 251 tree levels in CTOL down to that signifying the time dimension is as follows: the number of tree levels above the 11-tree is

$$\hat{A}(91) - A(11) = 276 - (3 \times 11 + 4) = 276 - 37 = 239.$$

The top of the 11th tree is therefore the 240th tree level from the top of CTOL. The next lower tree level is the **36th** from the bottom of CTOL. Counting from here, there are 11 tree levels down to the **26th** tree level, which is the **50th** SL. Counting from the **36th** tree level, there are **21** SLs down to the **26th** tree level. The Godnames EHYEH with number value **21**, YAHWEH with number value **26**, ELOHIM with number value **50** and ELOHA with number value **36** therefore prescribe this set of 11 tree levels. They indicate the importance of these levels, which correspond to the ten longitudinal co-ordinate variables of its strings and their time co-ordinate.

240 is the number of non-zero simple roots of E_8 , whilst 126 is the number of non-zero roots of E_7 , the largest exceptional subgroup of E_8 . The next largest exceptional subgroup is E_6 with 72 non-zero roots. The 72nd tree level from the top of CTOL is Kether of the 67th tree, where 67 is the number value of Binah. E_8 has $(240 - 72 = 168)$ more non-zero roots than E_6 , and below the top of the 67th tree there are 168 tree levels and 336 SLs down to the top of the 11th tree marking the 240th tree level from the top of CTOL. In view of the latter fact, it is remarkable that 67 overlapping Trees of Life have

$$\hat{Y}(67) = 50 \times 67 + 20 = 3370$$

yods, i.e., 3360 yods below Binah of the 67th tree defined by its number value, where

$$3360 = \begin{array}{ccccccc} & & & 336 & & & \\ & & & 336 & 336 & & \\ & & 336 & 336 & 336 & & \\ & 336 & 336 & 336 & 336 & 336 & \end{array}$$

(as the Tree of Life in Figure 8 indicates, the tetractys formed by Kether, Chokmah and Binah of the highest tree contains ten yods, leaving 3360 yods below its horizontal base). Moreover, each set of (6+6) polygons enfolded in a tree contains 336 yods other than their **50** corners, so that the 120 polygons enfolded in ten overlapping trees have 3360 yods other than their 482 corners. 3360 is in fact a Tree of Life parameter because it is the number of 1st-order spirillae comprising each revolution of the ten strings of the UPA ($16800/5 = 3360$). As there are 67 yods below Binah in the 1-tree when its 19 tetractyses are turned into tetractyses (Fig. 25), we see how structural parameters of the superstring are encoded in the Tree of Life and its cosmic counterpart. Amazingly, the gematria number value of Binah has a geometrical basis, denoting the number of yods below it in the 1-tree.

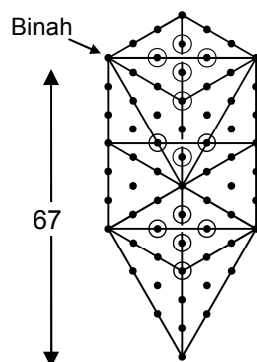


Figure 25. 67 yods are below Binah of the 1-tree when its 19 triangles are tetractyses.

The numbers 72, 168 and 240 have the following geometrical significance in relation to the UPA/superstring: each whorl/string has 24 transverse co-ordinate variables. The three major whorls of the UPA therefore have $3 \times 24 = 72$ such variables, the seven minor whorls have $7 \times 24 = 168$ variables and all ten whorls have 240 variables.

The division:

$$240 = 126 + 114$$

created in the 240 tree levels in CTOL down to the top of the 11th tree by the midpoint of the set of 251 tree levels down to the **26th** one is found in the Pascal's Triangle representation of 240 by the first **21** binomial coefficients other than 1:

$$240 = \begin{array}{ccccccc} & & & 2 & & & \\ & & & 3 & 3 & & \\ & & 4 & 6 & 4 & & \\ & 5 & 10 & 10 & 5 & & \\ 6 & 15 & 20 & 15 & 6 & & \\ 7 & 21 & 35 & 35 & 21 & 7 & \end{array}$$

The sum of the six coefficients at the base of the triangle is 126. This is the number of tree levels spanning the cosmic superphysical planes down to the top of the **49-tree**, which maps the cosmic physical plane. The sum of the **15** other coefficients is 114, which is the number of tree levels from the top of the **49th** tree to the top of the 11th tree. The number value **21** of EHYEH, Godname of Kether, therefore determines the number 240 and the number value **15** of YAH, Godname of Chokmah, determines the number 114.

The geometrical meaning of this array of binomial coefficients is as follows: mathematicians call the space formed by a set of n points an 'n-simplex.' For example, the 0-simplex is just a point, the 1-simplex is the line joining two points, a 2-simplex is an equilateral triangle, and a 3-simplex is a solid tetrahedron. The trunk of the Tree of Life is just the sequence of these four simplexes. An r -simplex formed by a subset r of n points is called a 'face.' The number of faces of dimension r in an n -simplex is the binomial coefficient:

$$\binom{n+1}{r+1} = \frac{(n+1)!}{(r+1)!(n-r)!}$$

This is the $(r+1)$ th number in the n th row of the array shown above. The numbers n in each row are simply the numbers of 0-, 1-, 2-dimensional, etc., faces in, respectively, 1-, 2-, 3-, 4-, 5- and 6-dimensional simplexes. There are 114 faces in the first five of these and 126 faces in the last one.

10. Godnames define superstring structure & forces

In the addendum of reference 1 and in Article 2 of reference 4, I showed that the 25 tree levels of the 7-tree signify the spatial dimensions of **26**-dimensional space-time. Tree levels can represent Trees of Life. This is why ADONAI MELEKH, Godname of Malkuth, has a number value (**155**) which is the number of SLs in the 25-tree, the number value **65** of ADONAI being the number of SLs in the 10-tree corresponding to the ten spatial dimensions of the space-time predicted by supergravity theories. In general Godname numbers define sections of CTOL bearing a correspondence to either space-time or some subspace relevant to superstrings and their bosonic string components. They also specify patterns or sets of numbers that sum to structural and dynamical parameters of superstrings. Ways in which Godnames determine the form of the UPA/superstring and its E_8 -symmetric, unified force are summarised below:

KETHER: EHYEH = 21

- 1) **21**st SL on Pillar of Equilibrium is Kether of 9th tree; EHYEH prescribes 9 spatial dimensions of superstring;
- 2) **21**st SL on Pillar of Severity is Binah of 10th tree; EHYEH prescribes 10-d space-time of superstrings;
- 3) average number of 1st-order spirillae per revolution of bosonic string/whorl

$$= \begin{array}{cccc} 21 & 21 & 21 & 21 \\ 21 & 21 & 21 & 21 \\ 21 & 21 & 21 & 21 \\ 21 & 21 & 21 & 21; \end{array}$$

- 4) sum of **21** different pairs of integers: 1, 2, 3, 4, 5, 6 & 7 = 168 = number of Mundane Chakra of Malkuth;
- 5) sum of **21** combinations of 5 integers from: 2,4,6,8,10,12,14 = 840 = number of spirillae in inner or outer half of bosonic string/whorl;
- 6) sum of **21** combinations of 5 integers from: 4, 8, 12, 16, 20, 24 & 28 = 1680 (note that this arithmetic progression is defined by the Pythagorean Tetrad, both the first term and the difference between successive terms being 4);
- 7) sum of 35 combinations of 4 integers from: 3, 6, 9, 12, **15**, 18 & **21** = 1680, where

$$3 + 6 + 9 + 12 + \mathbf{15} + 18 + \mathbf{21} = 84 = \begin{array}{cc} 1^2 & 3^2 \\ \square & \\ 7^2 & 5^2 \end{array} = \begin{array}{cc} \mathbf{21} & \mathbf{21} \\ \square & \\ \mathbf{21} & \mathbf{21} \end{array}$$

- 8) sum of **15** combinations of 4 integers: **21**, 42, 63, 84 (**21** units apart) = 1680, where

$$\begin{array}{ccc} & \mathbf{21} & \\ \mathbf{21} & \square & 42 \\ 84 & & 63 \end{array} = \begin{array}{cccc} & \mathbf{21} & \mathbf{21} & \\ & \mathbf{21} & \mathbf{21} & \mathbf{21} \\ \mathbf{21} & \mathbf{21} & \mathbf{21} & \mathbf{21}; \end{array}$$

- 9) number of spirillae in 3 major whorls = $3 \times 1680 = \mathbf{21} \times 240$, where 240 is sum of first **21** binomial coefficients other than 1 in Pascal's triangle;
- 10) **21** separate 1-trees with triangles turned into tetractyses contain 1680 yods;
- 11) number of SLs in every 35 trees composed of 1680 vertices, lines, triangles & tetrahedra = 210

$$= \begin{array}{cccc} & \mathbf{21} & & \\ & \mathbf{21} & \mathbf{21} & \\ & \mathbf{21} & \mathbf{21} & \mathbf{21} \\ \mathbf{21} & \mathbf{21} & \mathbf{21} & \mathbf{21}; \end{array}$$

- 12) **21**st odd integer = 41, where $41^2 - 1 = 1680$, i.e., EHYEH prescribes the number of 1st-order spirillae in a whirl/bosonic string;
- 13) the first 6 enfolded polygons have **21** generated corners. Enfolded in the 10-tree, these polygons have 1680 boundary yods and 1680 associated yods other than their corners, i.e., EHYEH prescribes the 1680 1st-order spirillae in a whorl;
- 14) the $(6 \times 7 = 42)$ polygons of the first 6 types enfolded in 6 overlapping trees have

$$210 = \begin{array}{ccccccc} & & & & 21 & & \\ & & & & 21 & 21 & \\ & & & 21 & 21 & 21 & \\ 210 = & 21 & 21 & 21 & & & \\ & 21 & 21 & 21 & 21 & & \end{array}$$

corners: EHYEH prescribes the compactified 6-d space of superstrings mapped by 6 overlapping trees;

CHOKMAH: YAHWEH = 26

- 1) a bosonic string has **26** space-time dimensions;
- 2) **26**th triangular number = 351 = number of corners of 70 polygons enfolded in 10-tree corresponding to 10-d space-time. YAHWEH prescribes dimensionality of space-time of superstring as well as of bosonic string;
- 3) the first 6 polygons have **26** corners. First $(6+6)$ polygons enfolded in 10-tree have 1680 boundary yods. YAHWEH prescribes 1680 1st-order spirillae in **26**-d bosonic string;

CHOKMAH: YAH = 15

- 1) **15** dimensions of bosonic strings beyond 11-d supergravity space-time;

BINAH: ELOHIM = 50

- 1) the superstring/UPA has **50** revolutions of its component bosonic strings/whorls;
- 2) the first $(6+6)$ enfolded polygons have **50** corners. ELOHIM prescribes 1680 1st-order spirillae symbolised by yods in polygons other than their corners.
- 3) Binah of **50**th tree is 248th SL from top of CTOL. ELOHIM prescribes number of gauge bosons of superstring gauge symmetry group E_8 ,

CHESED: EL = 31

- 1) 336 is arithmetic mean of first **31** square integers. EL prescribes average number of spirillae per revolution of bosonic string/whorl;
- 2) number of spirillae in inner or outer half of superstring/UPA = 8400 = arithmetic mean of **31** square integers: $5^2, 10^2, 15^2, \dots, 155^2$;
- 3) 9-tree has **31** tree levels. EL prescribes 9 spatial dimensions of superstrings;
- 4) 1680 is sum of **31** combinations of 5 numbers: 7, 14, **21**, 28, 35. EL prescribes 1680 spirillae;
- 5) 10 bosonic string components of superstring/UPA have **31** co-ordinates in 4-d space-time;
- 6) **31**st prime number (127) is number of triangles in 10-tree. EL prescribes 10-d space-time of superstrings;

GEBURAH: ELOHA = 36

- 1) first 6 separate polygons have **36** corners. Enfolded in 10-tree, they have 1680 boundary yods. ELOHA prescribes 1680 spirillae of whorl/bosonic string;
- 2) 7 enfolded polygons have **36** corners. Sum of 70 integers: 3, 5, 7, ... 141 assigned to corners of $(7+7)$ enfolded polygons = 3×1680 . ELOHA prescribes number of spirillae in 3 major whorls.
- 3) 6 overlapping trees have **36** enfolded polygons of first 6 types: ELOHA prescribes 6-d compactified space of superstrings whose dimensions are mapped by 6 overlapping trees;

TIPHARETH: YAHWEH ELOHIM = 26 + 50 = 76

- 1) the superstring/UPA consists of **50** revolutions of 10 closed, **26**-dimensional strings;
- 2) first $(6+6)$ enfolded polygons defining superstring parameter 1680 have **50** corners, **26** per set of 6;
- 3) first 6 polygons enfolded in 3-tree have **76** corners (**26** in 1st tree, **50** in 2nd & 3rd trees). YAHWEH ELOHIM prescribes longitudinal and two transverse, large-scale dimensions of superstring/UPA when these are represented by trees;
- 4) first 6 polygons enfolded in 6-tree have 151 corners. $151 = 76$ th odd integer. YAHWEH ELOHIM prescribes 6 compactified dimensions of superstrings;

NETZACH: YAHWEH SABAOth = 26 + 103 = 129

- 1) $16800 = 4(11+13+15+\dots+129)$;
- 2) $480 (=10 \times 48)$ corners of 10 sets of 7 separate polygons become 351 corners of 70 polygons enfolded in 10-tree, i.e., **129** corners coincide in their enfolding. YAHWEH SABAOth prescribes 10-d space-time;

- 3) Kether of **26th** tree is **129** SLs below top of CTOL. YAHWEH SABAOTH prescribes **26** dimensions of bosonic strings;
- 4) **129** generated yods in CTOL up to 1st Sephirah of Construction of 3rd tree. YAHWEH SABAOTH prescribes three large-scale dimensions of superstring space-time;

HOD: ELOHIM SABAOTH = 50 + 103 = 153

- 1) **153rd** SL is Hod of 24th tree. **153rd** SL from Hod of 1st tree is Kether of 25th tree specified by ADONAI MELEKH, Godname of Malkuth. ELOHIM SABAOTH prescribes both **26-d** space-time and 25 spatial dimensions of bosonic string/whorl;
- 2) 9-tree has **153** Paths. ELOHIM SABAOTH prescribes nine spatial dimensions of superstrings mapped by nine trees;

YESOD: EL ChAI = 49

- 1) an octagon has **49** yods with its sectors turned into tetractyses and 121 yods with its sectors turned into three tetractyses. A pair of such octagons has 168 yods surrounding their centres. EL ChAI prescribes structural parameter of superstring/UPA;
- 2) **49-tree** (without Daath) has 1680 vertices, lines and triangles;
- 3) number of spirillae in 7 minor whorls = **49**×240, where $240 = (49^2 - 1)/10$;
- 4) Yesod of 9th tree is **49th** SL from Yesod of 1st tree. EL ChAI prescribes 9 spatial dimensions of superstring/UPA mapped by 9 trees;
- 5) Yesod of 25th tree is **49th** SL on Pillar of Equilibrium from Yesod of 1st tree. EL ChAI prescribes 25 spatial dimensions of bosonic string/whorl. Also:

$$25 = \frac{1 + 2 + 3 + \dots + 49}{49}$$

- 6) 490th SL from top of CTOL is Chesed of 10th tree up to which CTOL contains 496 yods. EL ChAI prescribes the ten dimensions of superstring space-time and the dimension 496 of the superstring symmetry groups $O(32)$ and $E_8 \times E_8$;

MALKUTH: ADONAI = 65

- 1) Kether of 10th tree is **65th** SL. Below it are 1680 yods in all triangles of 10-tree divided into three tetractyses. First six types of polygons enfolded in 10-tree have 1680 boundary yods. ADONAI prescribes the dimensionality of superstring space-time and 1680 spirillae of bosonic string/whorl;
- 2) **65th** SL on Pillar of Equilibrium is Malkuth of 33rd tree. The 33-tree contains 1680 yods;

ADONAI MELEKH = 155

- 1) 25-tree has **155** SLs. ADONAI MELEKH prescribes the 25 spatial dimensions of the bosonic string/whorl;
- 2) **155** is arithmetic mean of first 29 triangular numbers, where $29^2 - 1 = 840 = \text{sum of 28 odd integers after 3}$. Hence 8400 (number of spirillae in inner or outer half of UPA) is sum of 280 odd integers, where 280 is number of *Sandalphon*, Archangel of Malkuth;
- 3) number of spirillae in inner or outer half of superstring/UPA = 8400 = arithmetic mean of **31** square numbers: $5^2, 10^2, 15^2, \dots, 155^2$.

Other ways in which Godnames prescribe the geometry of the superstring/UPA are as follows:

- 1) each string component in 10-dimentional space-time has nine spatial co-ordinate variables. The total number of their superstring space-time co-ordinate variables is therefore $10 \times 9 + 1 = 91$, the same as the number of trees in CTOL. As $n^2 = \text{sum of first } n \text{ odd integers}$ and $91 = 1^2 + 2^2 + 3^2 + 4^2 + 5^2 + 6^2$, 91 is sum of $(1+2+3+4+5+6=21)$ odd integers, where **21** is the number value of EHYEH;
- 2) each string has two transverse dimensions belonging to large-scale space. The number of time and large-scale transverse co-ordinates of ten strings = $10 \times 2 + 1 = 21$, the number value of EHYEH;
- 3) each string has three large-scale dimensions. The number of co-ordinate variables of ten strings in 4-dimensional space-time = $1 + 10 \times 3 = 1 + 30 = 31$, the number value of EL (note that, in terms of its letter values $EL = 1 + 30$);
- 4) my theory (14) of how the superstring is formed from a higher dimensional object predicts that its whorls are string-like in a **15-dimensionat** space comprising the ten dimensions of supergravity space-time and five higher dimensions. **15** is the number value of YAH (note that, in terms of its Hebrew letter values, $YH=10+5$);
- 5) each string-like whorl has ten spatial dimensions in supergravity space-time. The number of such space-time co-ordinate variables of ten strings = $10 \times 10 + 1 = 101 = 26\text{th prime number}$, showing how YAHWEH with number value **26** prescribes the number of supergravity co-ordinate variables of the superstring. The number of such co-ordinate variables beyond supergravity space-time = $251 - 101 =$

150. The distinction:

$$251 = 101 + 150$$

between co-ordinates in supergravity space-time and spatial coordinates in the higher, **15**-dimensional space has its correspondence in the cycle of 251 tree levels discussed earlier. Counting upwards in CTOL from the **26**th tree level, which marks the time dimension and the end of this cycle, the 101st tree level is the 126th from the bottom of CTOL and the 151st from its top, having 150 tree levels above it. 151 is the **76**th odd integer, showing how the Godnames YAHWEH ELOHIM with number value **76** and YAH with number value **15** prescribe the demarcation between the 11 supergravity dimensions and the higher dimensions of **26**-dimensional space-time.

11. Analogies between UPA, 49-tree & CTOL

The numbers 101 and 151 are parameters of the **49**-tree representing the cosmic physical plane, this having

$$A(49) = 3 \times 49 + 4 = 151$$

tree levels and

$$N(49) = 2 \times 49 + 3 = 101$$

SLs on the central pillar of CTOL. The cosmic physical plane is the manifestation of a *complete* series of emanation of the seven Sephiroth of Construction. This is true for the UPA/superstring for which, being the cosmic counterpart of the physical plane whose unit of matter is the UPA, the **49**-tree is a counterpart, the time variable and 100 supergravity spatial variables of the UPA/superstring being analogous to the lowest SL on the central pillar of the **49**-tree and the 100 SLs above it on the central pillar belonging to the latter. Viewed in this light therefore, it should not seem so surprising that the number of yods in the **49**-tree with its triangles turned into tetractyses is that of 248 separate tetractyses symbolising the 248 10-dimensional gauge fields of the superstring symmetry group E_8 ! Nor should it be surprising (however remarkable) that **49** overlapping Trees of Life consist of 1680 triangles, sides and corners (15), i.e., 1680 geometrical elements constitute its structure, just as the same number of 1st-order spirillae make up a whorl of the analogous UPA/superstring. That two such numbers — one (248) originating in a scientific theory of basic subatomic particles, the other (1680) in a psychic description of these particles — could arise by chance in the very same context is implausible in the extreme, just as it is that there should happen to be 168 yods other than corners associated with either set of the first six polygons enfolded in the Tree of Life. Rather, the co-presence of scientific and psychically obtained parameters in the very section of CTOL that is analogous to the UPA is evidence that the subquark state of a superstring is the analogous microcosm of the spiritual cosmos. Truly, "as above, so below."

Being analogous to the **49**-tree and therefore an even higher counterpart to the 7-tree, CTOL itself is analogous to the UPA in that its 91 Trees of Life correspond to the 91 co-ordinate variables of the ten strings of the UPA/superstring in superstring space-time. This explains why ADONAI, the Godname of Malkuth with number value **65**, prescribes the lowest ten trees of CTOL, which have **65** SLs, for these trees would correspond to the ten-superstring co-ordinate variables of the lowest string/whorl of the UPA, this whorl corresponding to Malkuth, the last of the Sephiroth of the Tree of Life. Instead, however, of ordering the trees of CTOL in terms of the descending sequence of the ten whorls, nine trees per whorl signifying its nine spatial co-ordinate variables in superstring space-time, suppose that we order them in terms of the ten superstring dimensions, ten trees per spatial dimension symbolising the ten corresponding co-ordinate variables of the whorls, with the time co-ordinate being the lowest tree. EL, the Godname of Chesed with number value **31**, prescribes the **31**-tree with

$$N(31) = 2 \times 31 + 3 = 65$$

SLs on its central pillar. These trees would correspond to the $1 + 10 \times 3 = 31$ co-ordinate variables of the ten strings in 4-dimensional space-time — the most 'Malkuth' level of CTOL (notice that this ordering even reproduces the letter values of EL: E = 1 and L = 30). We see that — however the trees are ordered — ADONAI prescribes the Malkuth level of the UPA, i.e., its structural aspect, which it should do, being the Godname of that Sephirah. The top of the **31**st tree is the Malkuth of the 33rd tree, the yod population up to this tree being

$$Y(33) = 50 \times 33 + 30 = 1680.$$

In other words, the Godname of Malkuth prescribes the number of 1st-order spirillae of each whorl. These are circular polarised waves propagating around a closed string in 4-dimensional space-time — the most

'material,' or Malkuth, aspect of the microscopic manifestation of the Tree of Life. Other ways in which ADONAI determines this number are discussed in reference 1.

12. Conclusion

As the blueprint governing the nature of reality, including space-time, the Tree of Life has a hitherto unknown inner form that encodes its self-replication to map all possible levels of this reality. This map is found to confirm the Theosophical doctrine of seven planes of consciousness. Different levels of encoding of information in its outer form have their remarkable correspondences in its inner form. Earlier work identified as a superstring constituent of quarks the basic unit of physical matter psychically described by Besant and Leadbeater. This allows a model-free comparison between their description and the superstring picture. Leadbeater's account of the structure of this particle confirms one of the simple models for the curled-up space predicted by superstring theory but implies that space extends into even higher dimensions. Correspondence between the Tree of Life and a section of its inner form prescribed by the ten Godnames indicates that the string-like features of the particle must be **26**-dimensional. Its quantitative features — the 1680 1st-order spirillae, the seven orders of spirillae, the five revolutions of its whorls and the augmentation of sections of 25 spirillae in their next higher order by a factor of 1 in 175 — are all represented in the geometrical properties of this section of the inner form of the Tree. This constitutes remarkable, independent confirmation of such psychically obtained information about the structure of the fundamental constituent of matter. Further correspondences are found between the geometrical degrees of freedom implicit in the string structure of the subquark superstring and stages in the Sephirothic emanation of the 84 trees beyond space-time signifying higher realms of existence. These indicate that the mathematical design of the subquark superstring is analogous to that of the spiritual whole of which it is the ultimate physical part. Conforming to the Tree of Life blueprint, matter is made in the "Image of God" as well as man himself.

Notes & references

- 1) *The Mathematical Connection between Religion and Science*, Stephen M. Phillips (Antony Rowe Publishers, England, 2009);
- 2) *The Secret Doctrine*, H.P. Blavatsky, 5th (Adyar) ed. (Theosophical Publishing House, Adyar, Chennai, India, 1962), vol. 5, pp. 524–527;
- 3) See ref. 1 for further discussion of this matter;
- 4) <http://www.smphillips.8m.com>;
- 5) For a rigorous definition of the term 'sacred geometry', see ref. 1 and Article 3 in ref. 4;
- 6) *Occult Chemistry*, Annie Besant and C.W. Leadbeater, 3rd ed. (Theosophical Publishing House, Adyar, Chennai, India, 1951);
- 7) *Extra-sensory Perception of Quarks*, Stephen M. Phillips (Theosophical Publishing House, Wheaton, USA, 1980);
- 8) We can be sure that Leadbeater accurately determined this number because he counted it 135 times in UPAs observed in different chemicals, the number being the same for positive and negative UPAs;
- 9) *ESP of Quarks and Superstrings*, Stephen M. Phillips (New Age International, New Delhi, India, 1999);
- 10) Ref. 4, Article 2;
- 11) For a discussion of the beautiful, Pythagorean properties of this number, see chap. 10 of ref. 1. See Article 1 for a discussion of the Pythagorean character of superstring/bosonic string theories;
- 12) According to my unpublished research with a Canadian Buddhist claiming micro-psi ability that passed preliminary blind and double-blind tests, these bubbles are not spherical but tori. Leadbeater did not notice a minute hole passing diametrically through their cores that give them the topology of a doughnut. Their toroidal surfaces extend into **15** dimensions of space beyond superstring and supergravity space-times. These extra dimensions are required for spinless strings to be consistent with the principles of quantum mechanics. The string-like whorls of the UPA are really rolled-up sheets constituting a higher-dimensional membrane (see Article 2 in ref. 4 and the addendum in ref. 1);
- 13) Ref. 6, p. 19;
- 14) See Article 2 in ref. 4 and the addendum in ref. 1;
- 15) See chap. 4 of ref. 1.