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ARTICLE 2

THE PHYSICAL PLANE AND ITS RELATION TO THE UPA/SUPERSTRING AND SPACE-TIME

A BREAKTHROUGH IN RELATING SCIENTIFIC, MYSTICAL AND OCCULT IDEAS

by

Stephen M. Phillips

Flat 7, "Grangewood," 40 Norwich Avenue West. Bournemouth. Dorset BH2 6AW. ENGLAND.

E-mail: Stephen@smphillips.8m.comWebsite: <http://smphillips.8m.com>

1. INTRODUCTION

In my new book *The Image of God in Matter* (1), I have proved the existence of a form of knowledge about the nature of space-time, matter, and higher levels of reality that encompasses the Jewish mystical doctrine of Kabbalah, teachings of Theosophy and recent developments in theoretical particle physics. This gnosis is mathematically encoded in the Kabbalistic Tree of Life (fig. 1), the remarkable, inner form of which my book reveals for the first time (fig. 2). This universal blueprint has beautiful mathematical properties indicative of its unique, preternatural status, for it is *par excellence* the only truly supernatural *physical object* that the human mind can contemplate, its design being not of human creation but originating in the mind of God. (My book presents overwhelming evidence for this claim.) As the DNA molecule encodes the future development of living cells, so too this blueprint encodes how the Tree of Life grows by self-replication to transform into the map of *all* levels of consciousness (I call this map of physical and superphysical realities the 'Cosmic Tree of Life,' or CTOL). It consists of 91 overlapping Tree of Life. They are encoded in one half of the inner form of the Tree of Life as 49 trees and in its other, mirror image half as 42 trees. Each of the 49 trees signifies a mode of being expressing the quality of one of the seven Sephiroth of Construction but differentiated seven times according to the same pattern, e.g., the Tiphareth aspect of Hod, the Malkuth aspect of Yesod, etc. This differentiation generates all possible varieties of human consciousness, including mystical or transpersonal levels of awareness. For example, the Tiphareth aspect of Netzach can be thought of as the experience of the divine in the world of nature, and the Hod aspect of Yesod is the mental level of the human

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E-mail: stephen@smphillips.8m.com

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1. Introduction

I have proved the existence of a form of knowledge about the nature of space-time, matter, and higher levels of reality that encompasses the Jewish mystical doctrine of Kabbalah, teachings of Theosophy and recent developments in theoretical particle physics. This gnosis is mathematically encoded in the Kabbalistic Tree of Life (Fig. 1), the remarkable, inner form of which my articles reveal for the first time (Fig. 2). This universal blueprint has beautiful mathematical properties indicative of its unique, preternatural status, for it is par excellence the only truly supernatural physical object that the human mind can contemplate, its design being not of human creation but originating in the mind of God. (My articles present overwhelming evidence for this claim.) As the DNA molecule encodes the future development of living cells,

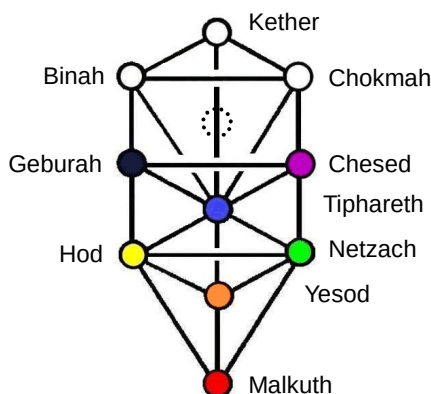


Figure 1. The outer Tree of Life.

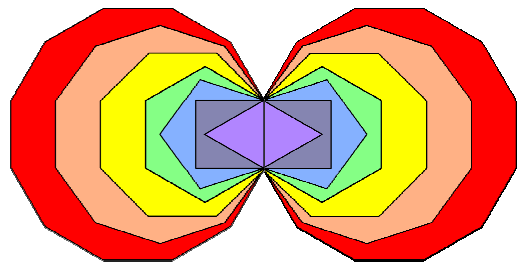


Figure 2. The inner Tree of Life.

so, too, this blueprint encodes how the Tree of Life grows by self-replication to transform into the map of all levels of consciousness (I call this map of physical and superphysical realities the 'Cosmic Tree of Life,' or CTOL). It consists of 91 overlapping Tree of Life. They are encoded in one half of the inner form of the Tree of Life as 49 trees and in its other, mirror image half as 42 trees. Each of the 49 trees signifies a mode of being expressing the quality of one of the seven Sephiroth of Construction but differentiated seven times according to the same pattern, e.g., the Tiphareth aspect of Hod, the Malkuth aspect of Yesod, etc. This differentiation generates all possible varieties of human consciousness, including mystical or transpersonal levels of awareness. For example, the Tiphareth aspect of Netzach can be thought of as the experience of the divine in the world of nature, and the Hod aspect of Yesod is the mental level of the human psyche, the vast set of ideas that a human being has of himself, his thought processes, memories, etc. However, this

differentiation is repeated, the 49 trees now collectively representing the 'cosmic' Malkuth level of God as though the levels of being that they signify were just kinds of 'sensory (objective) experience of the 'Great Chain of Being' by this one Cosmic Life. The six higher Sephiroth of Construction are differentiated $6 \times 7 = 42$ times to generate what may be regarded as the subjective modes of awareness of God (the yogi's 'samadi,' the 'nirvana' of Buddhism and the mystic's 'union with God' belong to these states of existence). All these levels of consciousness are therefore mapped by a total of $(49+42=91)$ overlapping Trees of Life.

This has the following Theosophical interpretation: H.P. Blavatsky (Fig. 3) stated in her magnum opus *The Secret Doctrine* (1) that there are seven planes of cosmic consciousness. The lowest, which she called the 'prakritic plane' (cosmic physical plane) consists of seven planes, each divided into seven sub-planes, making a total of 49 sub-planes. The six cosmic superphysical planes are likewise each divided into seven



Figure 3. H.P. Blavatsky.

sub-planes, making $(6 \times 7 = 42)$ sub-planes. The seven cosmic planes have $(49+42=91)$ sub-planes. Comparing this with CTOL, we see that the number of sub-planes and their 49:42 division correspond to the number of trees in CTOL and its division into 49 and 42 trees encoded in the two halves of the inner form of the Tree of Life. Thus CTOL maps the seven cosmic planes, each tree signifying a sub-plane as an *evolutionary level of consciousness*. One half of the blueprint encodes all levels of 'cosmic physical consciousness,' namely the 49 sub-planes. The other half encodes all levels of cosmic superphysical consciousness represented by the 42 cosmic superphysical sub-planes.

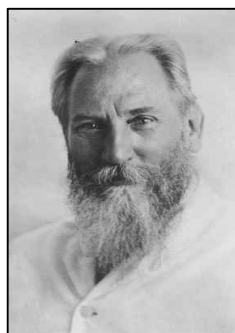
The lowest seven trees of CTOL signify (as we shall later see) all levels of human physical awareness, that is, brain-processed awareness of sensory channels of information and a subtler (but still *physical*) consciousness generated by the chakras of the etheric body (etheric clairvoyance, X-ray vision, clairaudience, etc). Higher trees signify (for humans, at least, not necessarily for extra-terrestrials) post-mortem states of existence that religions have traditionally given the collective name of 'Heaven,' 'Paradise'

and 'Devachan,' although it is important to realise that spiritual realms can be visited by the living as well in out-of-the-body-experiences, for Yeshua ben Miriam said: "The Kingdom of Heaven is within you."

A single Tree of Life represents the ten Sephiroth, the Divine Qualities or Emanations. 91 overlapping Trees of Life have 550 stages of Sephirothic emanation, which I have called 'Sephirothic levels' (SLs). $550 = 55 \times 10$, where 55 is the sum of the first ten integers (what mathematicians would call the tenth 'triangular number') and 10 is the sum of the first four integers (the fourth triangular number). This mathematical property of CTOL is one of many examples of the profound, prescriptive role of the Pythagorean Decad, 10, and Tetrad, 4, in determining the mathematical description of *all* levels of reality, including the 4-dimensional space-time of Einstein's Theory of Relativity and the 10-dimensional space-time predicted by superstring



Annie Besant



C.W. Leadbeater

Figure 4

theory. Indeed, the Pythagorean Triangle or tetractys (a triangular array of ten points arranged in four rows) is far more than a symbol for the number 10. It both generates the Tree of Life geometrically and is equivalent to it as a sacred symbol of the 10-fold nature of God. Superstring theory is merely one example of how this archetypal pattern determines the nature of reality. How it manifests in the subatomic world will be made evident in the next section.

Superstring theory promises to unify the strong and electro-weak forces with the gravitational force, which hitherto resisted all attempts to reconcile its description by Einstein's General Theory of Relativity with quantum mechanics. The theory pictures fundamental particles as vibrating loops of string ('superstrings') that, as they travel

through space, wind themselves around an extremely small, 6-dimensional space. Having different masses, the various modes of oscillation of a superstring are thought by advocates of the theory to be identifiable with known subatomic particles like electrons and quarks. However, the truth is more complicated than this because quarks are not fundamental particles, as we shall next discuss.

2. The UPA

In my previous books (2,3,4), I have proved incontrovertibly that quarks are bound states of three more basic particles that are 'subquark' states of the superstring. My proof takes the form of statistical and

detailed, qualitative analysis of the 114 years-old investigations (5) of Annie Besant and C.W. Leadbeater (Fig. 4), two well-known, early Theosophists, who claimed to have observed the atoms of the elements with the use of a yogic siddhi, or psychic power (given by Patanjali (c. 400 BC) the Sanskrit name of 'anima'). I have called this very rare ability to 'remote view' the subatomic world by the self-explanatory term of 'micro-psi.' I showed that the belief of Besant and Leadbeater that they described atoms with micro-psi is incompatible with the scientific picture of atoms and their nuclei. When, however, their psychic description of what they thought was the hydrogen atom is re-interpreted and then generalised to all the other elements, the thousands of details that they published over 38 years become understandable in terms of simple facts about atomic nuclei and the quarks making up the protons and neutrons inside them.

According to these two Theosophists, the fundamental unit of matter making up atoms is what they called the 'ultimate physical atom' (UPA), also named the 'anu' — the Sanskrit word for 'atom.' It consists (Fig. 5) of ten bands or curves called 'whorls' that spiral in parallel tracks without touching one another $2\frac{1}{2}$ times around a roughly spherical surface, separating at its pointed, lower end into strands of three 'major whorls' and seven 'minor whorls,' which then coil upwards

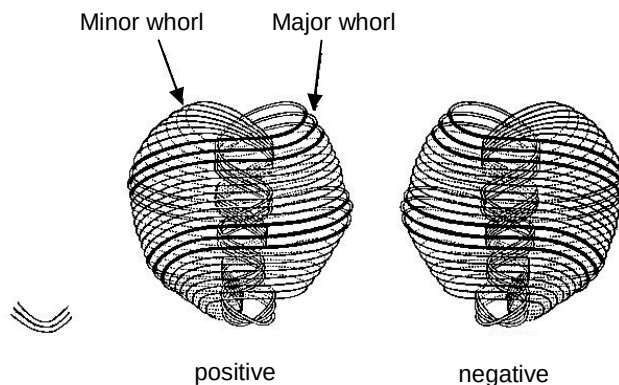


Figure 5. The two types of basic particles making up atoms are mirror images of each other.

in opposite senses around the axis of the UPA in intertwined helices, making another $2\frac{1}{2}$ revolutions before returning to their starting point at the top of the particle. An error of draughtsmanship occurred in the preparation of the diagram for the posthumous publication of the research of Besant & Leadbeater. The first (uppermost) major whorl was depicted at the bottom of the UPA as crossing over and spiralling back up to the top into the third major whorl. This cannot be correct because it would imply that nine, not, ten, whorls make up the UPA. Instead of twisting, the major whorls merely bend around at the bottom, as indicated on the left in Fig. 5.

Two types of UPAs were noticed: in the 'positive' variety the whorls wind clockwise (looking down from the top of the UPA), and in the 'negative' variety they spiral anticlockwise. Both types of UPA have three types of intrinsic motion: 1. each spins incessantly, 2. its axis wobbles, its direction rotating around a small circle (that is, its spin axis precesses), and 3. it has a regular pulsation — an expansion and a contraction.

Each whorl is a closed curve — in fact a helix with 1680 circular turns called '1st-order spirillae' (Fig. 6). Each of these coils is not a continuous line but, instead, is found when magnified with micro-psi, to be another helix with seven smaller, circular ('2nd-order spirillae') equally spaced around the circumference of

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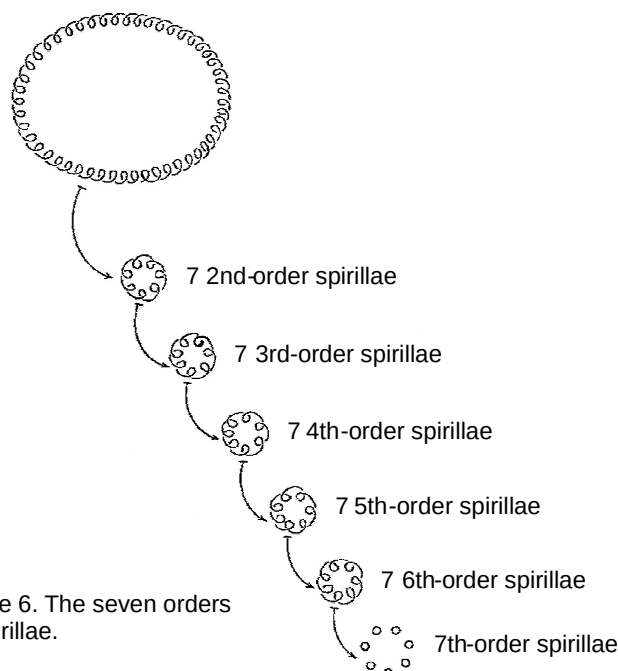


Figure 6. The seven orders of spirillae.

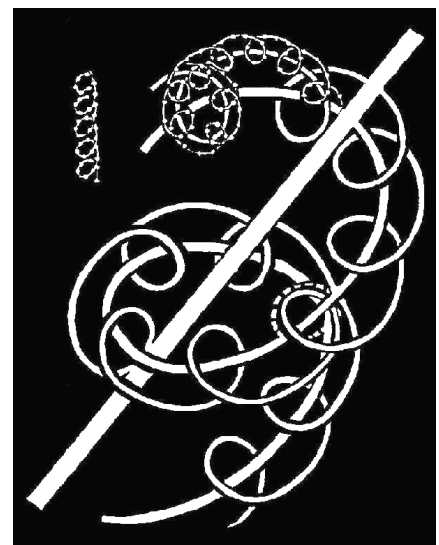


Figure 7. The helical winding of the seven orders of spirillae.

each 1st-order spirilla. These are themselves made up of seven smaller coils ('3rd-order spirillae'), and so on. There are seven orders of spirillae, a 7th-order spirilla comprising seven spherical bubbles spaced evenly along the circumference of the 6th-order spirilla (Fig. 7). They are not like soap bubbles, which have an inner and an outer surface, but are spherical (6) holes or cavities in what to Leadbeater's micro-psi vision seemed to be some kind of ambient, transparent plenum. They seemed to contain nothing and to lack any kind of intrinsic motion, remaining equidistant from one another as they wound around circles. The three, uppermost, so-called 'major' whorls appear 'thicker' than the remaining seven 'minor' whorls. This is due to the following difference in the packing of spirilla: 25 spirillae of any order in a minor whorl are made up of $25 \times 7 = 175$ spirillae of the next higher order. But in a major whorl 25 spirillae are composed of 176 spirillae of the next higher order, that is, an extra spirilla appears in every 25 spirillae, these additional spirillae augmenting the major whorls, which can be calculated to comprise over a billion bubbles.

I have proved that the mystically revealed, Jewish Godnames: EHYEH, YAH & YAHVEH, ELOHIM, EL, ELOHA, YAHVEH ELOHIM, YAHVEH SABAOTH, ELOHIM SABAOTH, EL ChAI and ADONAI MELEKH prescribe in progressively more concrete ways the Tree of Life mapping of space-time and its encoding of the mathematics of the superstring gauge symmetry group $E_8 \times E_8$. The dimension 496 of this group is the number of quantum states of the spin-1 particle transmitting the unified force between superstrings. Through gematria (the ancient system of extracting hidden meaning in the texts of scriptures), 496 has long been known by Kabbalists to be the number value of the Hebrew word 'Malkuth,' signifying the physical universe. This is no remarkable coincidence but has a profound reason revealed for the first time in my book. The number value of Cholem Yesodeth, its Mundane Chakra (the cosmic aspect of Malkuth) is 168. This is spectacular confirmation of the validity of Leadbeater's micro-psi observation of the UPA, in whose whorls he counted 1680 1st-order spirillae (the factor of 10 reflects the ten-fold, Tree of Life character of each helical whorl as the microscopic manifestation of one of the ten Sephiroth). My books have proved the UPA to be the superstring constituent of the up and down quarks comprising the protons and neutrons in atomic nuclei. Each whorl is a 1-dimensional string, the six higher orders of spirillae representing the winding of a string around the six higher circular dimensions of a 6-torus, which is the 6-dimensional version of the doughnut-shaped torus. This and many other pieces of mathematical evidence relating the structure of the UPA and the dynamics of superstrings to their prescription by Godnames and to their encoding in the Tree of Life prove beyond doubt that the UPA is the microscopic manifestation of the Kabbalists' 'Adam Kadmon,' or 'Heavenly Man' — truly the 'Image of God' in matter.

This article sets out the connection between the physical plane discussed in Theosophical literature, the UPA and the 26-dimensional space-time predicted by quantum mechanics for strings representing so-called 'bosons' with spins having integer values. My theory of the formation of UPAs from more general objects

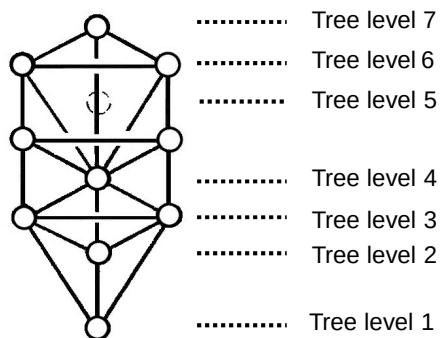


Figure 8. The seven levels of the Tree of Life.

than strings is outlined against the backdrop of the Tree of Life map of the physical plane. Besant's and Leadbeater's classification of the states of physical matter and their interpretation of the seven physical sub-planes is shown to be wrong vis-à-vis both particle physics and H.P. Blavatsky's teachings concerning the seven tattvas and their physical counterparts. Their etheric matter is alternatively interpreted as shadow matter, which superstring theory predicts to have *equal* status with ordinary matter but to be invisible — just as they claimed. The view held by a few Theosophists (7) that Leadbeater's notion of the 'etheric double' (supposedly, the body's duplicate in etheric matter) was his invention because it was never discussed in *The Secret Doctrine* is shown to be based upon a serious misreading of this book. The paper demonstrates a remarkable convergence of mystical, occult

and scientific ideas that is quantitative as well as qualitative. It proves that physical matter is ultimately structured according to the 'Image of God,' the microscopic embodiment of the universal Tree of Life blueprint. (This is analysed in more detail in Article 5.)

3. The physical plane

I shall refer to the lowest n overlapping trees in CTOL as the 'n-tree.' The physical plane is mapped by the 7-tree, the seven lowest Trees of Life in CTOL, each of its seven sub-planes being denoted by a tree. These physical sub-planes are said in Theosophy to have a meaning in terms of the seven states of physical matter that are supposed to exist on them, although their interpretation by Besant and Leadbeater is wrong for reasons to be discussed later. These sub-planes also have an evolutionary connotation in terms of levels of physical consciousness, although Theosophists do not agree on what the latter are. The

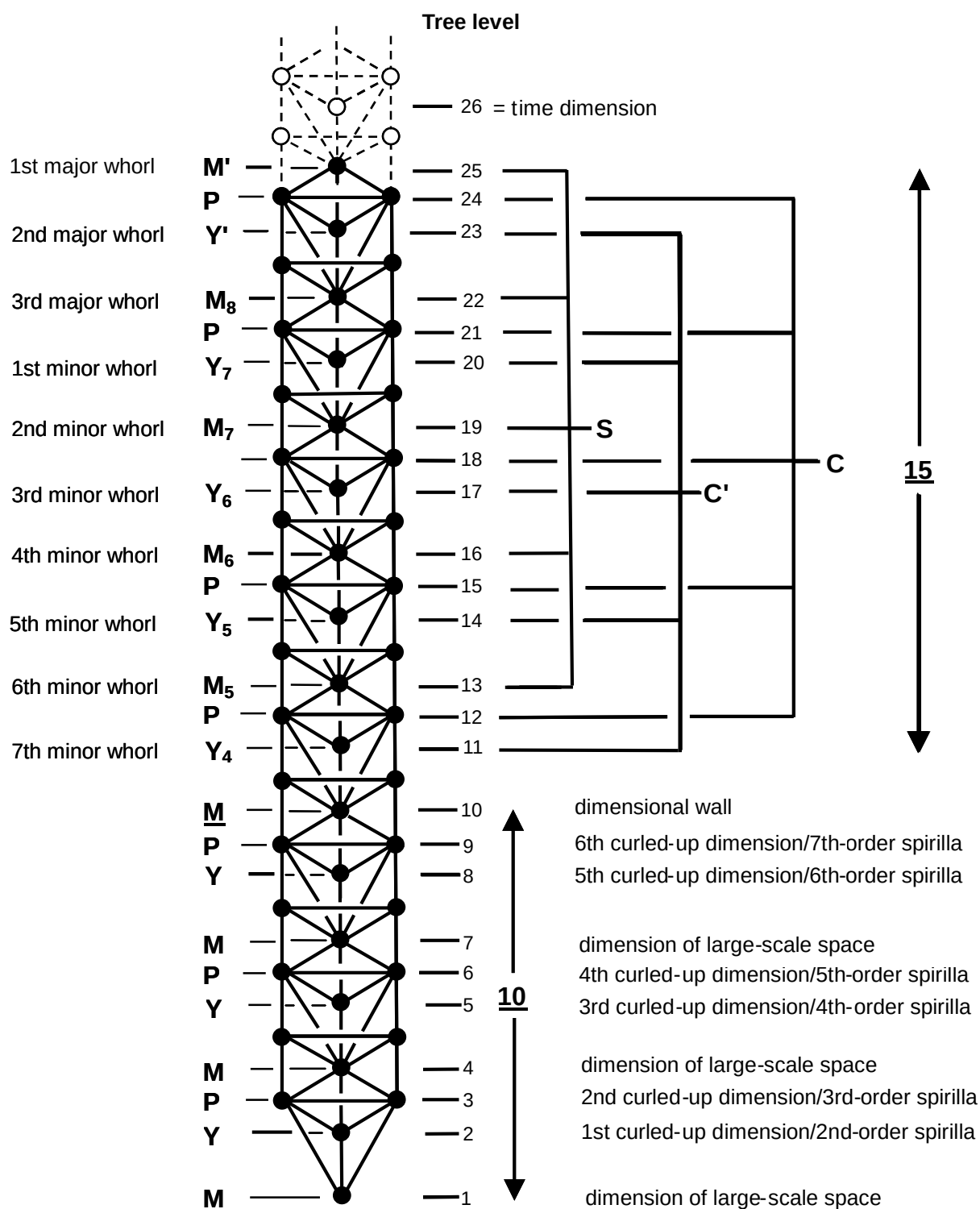


Figure 9. The 25 tree levels of the seven overlapping Trees of Life mapping the physical plane denote the 25 spatial dimensions of the 26-dimensional space-time predicted by string theory.

Tree of Life has what I define as seven 'tree levels' (Fig. 8). Through their overlapping (Fig. 9); the seven trees of the 7-tree span 25 tree levels (see Section 4). These denote the 25 spatial dimensions of the 26-dimensional space-time predicted by quantum mechanics for bosonic strings, whilst the 26th one (the lowest tree level above the 7-tree) marked by the 50th SL, Yesod of the ninth tree, denotes the dimension of time. This is how the number value 50 of ELOHIM, Godname of Binah, prescribes the 26 dimensions of space-time prescribed by the number value 26 of YAHWEH, Godname of Chokmah. YAH, the older Godname of Chokmah, prescribes the 25 dimensions because the top of the seventh tree marked by the 25th tree level is the 47th SL, where 47 is the 15th prime number 15 being the number value of YAH. The

Godname EL of Chesed also prescribes these 25 dimensions because 31, its number value, is the number of stages of vertical descent of what Kabbalists call the 'Lightning Flash' from the apex of the seventh tree to its nadir, Malkuth of the first tree. EL ChAI, the Godname of Yesod, prescribes the 26 tree levels because 49, its number value, is the number of SLs from the lowest Yesod of CTOL to Yesod of the ninth tree marked by the 26th tree level.

4. Bifurcation of space

According to supergravity theory, space-time is 11-dimensional. This is compatible with the quantum-mechanical requirement of 26 space-time dimensions for bosonic strings provided that supersymmetry operates in only ten of the 25 spatial dimensions to unify gravity with all other forces acting between superstrings. Physicists Edward Witten and Petra Hořava showed (8) that the tenth dimension can be

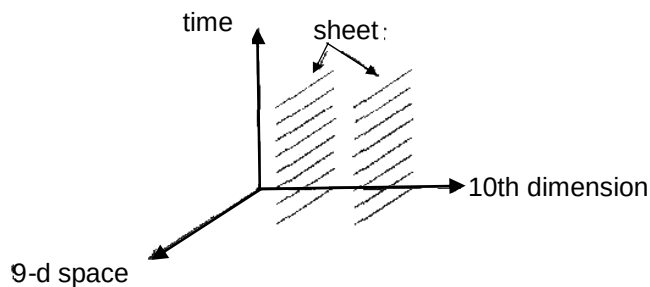


Figure 10. The two 10-d space-time sheets of ordinary and shadow matter.

shrunk into a segment of line, so that there would be two 10-dimensional universes, each at the end of the line and represented by sheets in Fig. 10. They are separated by a 'no man's land,' or dimensional gap between these universes across which superstrings cannot pass, the only force acting across this gap being gravity. The size of the tenth spatial dimension denoted by the tree level $\underline{M}$ can be chosen so that the strong, electroweak and gravity forces converge to a common strength at an energy scale of 10^{16} GeV, a thousand times less than the Planck scale of 10^{19} GeV, at which gravity was formerly expected to become strong when unified with these forces. This picture is incomplete, however, if strings are not fundamental objects but, instead, are formed

(as Michael Duff and others (9) have proposed) by the wrapping of so-called 'm-branes,' or m-dimensional objects, around one or more circular dimensions of a higher space. It is also inconsistent with Leadbeater's description of the seven orders of spirillae making up each whorl of the UPA, as now explained: an m-brane ($m > 2$) can become a string if it wraps itself around a curled-up, $(m-1)$ -dimensional space. There are six compactified dimensions predicted by superstring theory, leaving $[6 - (m-1) = 7 - m]$ compactified dimensions for the resulting string to curl around. But Leadbeater said that 1st-order spirillae wind about six progressively smaller circles whose planes are at right angles to one another. Each of these represents a circular dimension of the 6-dimensional compactified space predicted by superstring theory, so that $7 - m = 6$, i.e., $m = 1$, contrary to the initial assumption about the dimensionality m of the m-brane. Leadbeater's description of the UPA is therefore incompatible with the creation of strings from m-branes in 10-dimensional space-time. As the subquark state of a superstring, the higher-dimensional features of the UPA require the space in which it moves to have more than nine dimensions, which means that space-time must have the 26 dimensions predicted by quantum mechanics for bosonic strings, i.e., there must be 15 higher dimensions, the structural effects of which were beyond Leadbeater's micro-psi powers to discern in the UPA (10).

The separation:

$$25 = 10 + 15 \quad (1)$$

of the 25 spatial dimensions into the ten spatial dimensions of supergravity space-time and these 15 higher dimensions is mirrored in the 7-tree by the lowest ten tree levels spanned by the first two trees and the 15 levels of the uppermost five trees (see Figure 9). The top of the second tree is the 31st SL from the top of the seventh tree, showing how the number value 31 of the Godname EL prescribes the ten spatial dimensions of 11-dimensional space-time as well as the 25 spatial dimensions of 26-dimensional space-time. There are also 31 SLs from the SL that marks the 26th tree level denoting the dimension of time down to Yesod of the fourth tree that marks the last of the tree levels representing the higher 15 dimensions, i.e., EL prescribes also the latter and thus the division of the 25 dimensions into the 15 dimensions above the ten spatial dimensions of supergravity space-time. The Godname ADONAI MELEKH of Malkuth also prescribes this 10:15 division because the number value 65 of ADONAI is the number of SLs up to the top of the tenth tree in CTOL and the number value 155 of ADONAI MELEKH is the number of SLs up to the top of the 25th tree

The Pythagorean Tetrad 4 generates the numbers 10, 15 and 25 in the following way: 10 is the sum of the first four integers:

$$10 = 1 + 2 + 3 + 4.$$

15 is the total number of combinations of four objects:

$$15 = {}^4C_1 + {}^4C_2 + {}^4C_3 + {}^4C_4.$$

The number 4 is symbolised by a square because it has four corners. Dividing its four triangular sectors into tetractyses generates 25 points. Remarkably, 10 is the number of tree levels up to the bottom (Malkuth) of the fourth tree representing the fourth physical sub-plane, whilst 25 is the number of sub-planes up to the fourth sub-plane of the fourth plane represented by the 25th tree and prescribed by ADONAI MELEKH. Furthermore, counting from Chesed of the fourth tree (its first Sephirah of Construction), there are 25 SLs or stages of emanation of the four trees. The sub-plane expresses Netzach (the fourth Sephirah of Construction) in the plane corresponding to the same Sephirah, whilst the fourth sub-plane also corresponds to Netzach. The lowest four trees and 25 trees are therefore analogous, corresponding to the last four Sephiroth and representing four successive 7-fold cycles of emanation (SLs or trees).

5. Interpretation of tree levels

There are three types of tree levels: Malkuths (M) of trees, Yesods (Y) and Hod-Netzach Paths (P) (apart from the lowest tree, these are Binah-Chokmah Paths of the next lower tree). The 15 tree levels spanning the uppermost four trees of the 7-tree have the composition:

$$15 = 5(M) + 5(Y) + 5(P). \quad (2)$$

There is the same number of each type of tree level because there is one tree level of each type for each of the five Faces of the four trees extending down from the top of the 7-tree. Of the five M tree levels, three are Malkuths of the three highest trees in the 7-tree and two are Malkuths (M') of the eighth and ninth trees, i.e.,

$$5(M) = 2M' + 3M. \quad (3)$$

Of the five Y, four are Yesods of the four highest trees and one is Yesod (Y') of the eighth tree, i.e.,

$$5(Y) = Y' + 3Y. \quad (4)$$

The ten lowest tree levels have the composition:

$$10 = 4(M) + 3(Y) + 3(P). \quad (5)$$

Of the four M, the three lowest Malkuths represent the three dimensions of large-scale space and Malkuth of the fourth tree (M) denotes the short segment of the line separating the two 10-dimensional universes, as found by Witten and Hořava, i.e.,

$$4(M) = 3M + \underline{M}. \quad (6)$$

The three lowest Yesods (Y) and the three lowest Hod-Netzach Paths (P) represent the 6-dimensional compactified space of superstrings. Hence:

$$10 = 3M + 3(Y) + 3(P) + \underline{M}. \quad (7)$$

This 3:3:3:1 composition of the ten spatial dimensions of supergravity space-time is analogous to the three triplets of Sephiroth (Kether-Chokmah- Binah, Chesed-Geburah-Tiphareth and Netzach-Hod-Yesod) and Malkuth of the Tree of Life. As one might expect, the 11 supergravity dimensions conform to the Tree of Life pattern, the unique dimension of time formally corresponding to the non-Sephirah, Daath. As mentioned earlier, the size of the tenth spatial dimension corresponding to the tree level marked by Malkuth of the fourth tree sets the scale of unification of nature's forces. It is therefore appropriate that the Malkuth of a tree should define the strength of the $E_8 \times E_8$ -symmetric superforce acting between superstrings when unified gravity. The fact that it is Malkuth of the *fourth* tree is significant as well in view of the unique status of the number 4, or Pythagorean tetrad, in determining the character of the mathematics underlying the universal blueprint of the Tree of Life, as mentioned in Section 1. The seven dimensions of the compactified space of this 11-d space-time correspond to the seven Sephiroth of Construction and the six dimensions of the compactified space of superstring space-time corresponding to the six Sephiroth of Construction above Malkuth.

6. The UPA as a 11-brane

The six orders of helical spirillae shown in Fig. 6 to comprise each 1st-order spirilla of the UPA signify the toroidal winding of a string about six circular dimensions belonging to the 10-dimensional space-time of superstrings, of which the UPA is subquark state. What role do the 15 higher dimensions play in that part of

the structure of the UPA unobserved by Leadbeater because it extended beyond the limit of his micro-psi vision? (*En passim*, because he noticed what looked to him like seven similar, spherical holes evenly spaced along the circumference of the circular 6th-order spirilla, he *did* discern two of these 15 higher dimensions as the surface of these bubbles. This shows that whorls are actually structures in the larger space-time of 26 dimensions predicted by quantum mechanics for bosonic strings). 1-dimensional strings, or '1-branes,' can result from the wrapping of a 2-dimensional sheet, or '2-brane,' around a circle (a 1-dimensional, curled-up space), the resulting cylinder behaving effectively as a string if its radius is very small. A string can also be formed from the wrapping of an n-brane (with $n \geq 3$) around a compactified, (n-1)-dimensional space. Because the superstring UPA is a bundle of ten closed, 1-dimensional strings moving in 10-dimensional space-time, these strings must be generated by the wrapping of a single n-brane around (n-1) of the curled-up dimensions of a higher, 15-d space, where $n \leq 15$. In my theory, $n = 11$ and the 15-dimensional space has the form:

$$15 = S \times C \times C', \quad (8)$$

where S, C and C' are each 5-dimensional spaces, C and C' being similar. It can be shown that the 11-brane can wrap itself around either $S \times C'$ to generate ten 1-dimensional strings, the geometrical symmetry of the remaining space C generating the E_8 symmetry of the forces between the resulting superstring, or just S to create five 1-dimensional strings, the symmetry of the space C' generating E_8' (since C' is similar to C, its symmetry creates a similar symmetry group), so that the resulting superstring winds trivially in a topological sense around the remaining space C, turning it into a singlet representation of E_8 . The wrapping of the 11-brane around the 10-dimensional space $S \times C'$ automatically creates a singlet representation of E_8' for the superstring composed of ten strings because it does not wind around C'. The ordinary matter superstring (a singlet state of E_8) therefore has ten strings, whereas the shadow matter superstring (a singlet state of E_8') is predicted to be made up of five strings. Up till now, theorists have had to define ordinary and shadow matter as singlet representations of the other's unified gauge symmetry group because they could not explain why the gauge symmetry group E_8 appears twice in the symmetry group describing superstring forces free of quantum anomalies. My theory provides a natural explanation of why these two kinds of matter appear in superstring theory: an 11-brane can wrap around either ten or five curled-up dimensions of the higher, 15-dimensional space. The former creates an ordinary matter superstring; this is the UPA with its ten whorls. The latter creates a shadow matter superstring, which is predicted to comprise five whorls.

Comparing equations 2 and 8,

$$S = 5(M), \quad (9)$$

$$C = 5(P), \quad (10)$$

and

$$C' = 5(Y). \quad (11)$$

Remarkably, the three types of tree levels spanning the uppermost five trees parallel the 5:5:5 bifurcation of the 15-d space predicted by my theory. The ten whorls of the UPA are 1-dimensional strings formed by the wrapping of orthogonal faces of the 11-brane around the ten dimensions corresponding to the tree levels defined by the five Malkuths and five Yesods. As, according to equations 3 and 4,

$$5(M) + 5(Y) = 2M' + 3M + Y' + 4Y \quad (12)$$

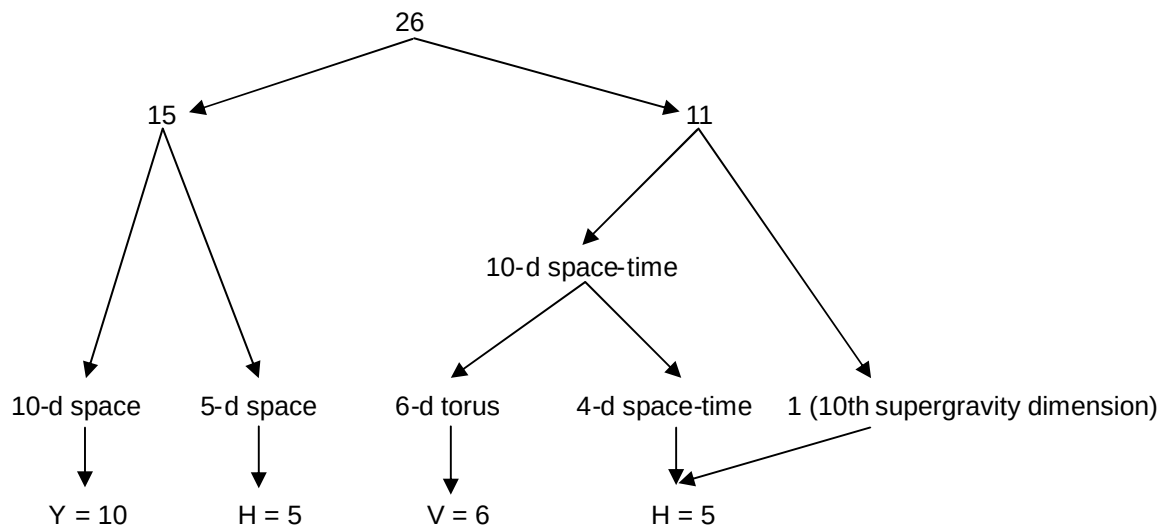
$$= (2M' + Y') + 3M + 4Y, \quad (13)$$

the ten whorls consist of three formed by wrapping of the 11-brane around dimensions represented by the Malkuths of the ninth and eighth trees ($2M' = M_9 + M_8$) and the Yesod of the eighth tree ($Y' = Y_8$), three formed from dimensions corresponding to the Malkuths of the three highest trees ($3M = M_7 + M_6 + M_5$) and four formed from dimensions represented by the Yesods of the four highest trees ($4Y = Y_7 + Y_6 + Y_5 + Y_4$). This 3:3:4 differentiation of the ten, curled-up dimensions responsible for the ten whorls of the UPA reflects the division of the ten Sephiroth of the Tree of Life into Supernal Triad, the triplet of Chesed, Geburah & Tiphareth, and the quaternary of Netzach, Hod, Yesod and Malkuth forming its Lower Face, illustrating that the UPA is the microscopic manifestation of the Tree of Life. But, as the set of three M tree levels overlaps the set of four Y tree levels, this correspondence leads to the appearance of the minor whorls in the downward sequence: 4th, 1st, 5th, 2nd, 6th, 3rd and 7th, which is out of step with the sequence in the Tree of Life of their corresponding Sephiroth. Intuitively, one expects a new 10-fold Tree of Life pattern created in space by the downward emanation of the 7-tree to follow the order of emanation of the ten Sephiroth. In order to maintain this order, the seven minor whorls must, as the microscopic manifestation in space-time of

the seven Sephiroth of Construction, correspond to the natural downward sequence of seven tree levels: Y_7 , M_7 , Y_8 , M_8 , Y_5 , M_5 , and Y_4 .

As might be expected, a similar Tree of Life pattern was found in equation 5 for the tree levels denoting the ten spatial dimensions of supergravity space-time. Of the ten tree levels generating the ten whorls, three (M_9 , M_8 and Y_8) are shared with trees beyond the seventh tree that denote the lowest two sub-planes of the Theosophical 'astral plane.' Although part of the Tree of Life mapping of the *physical* plane, their shared function with a superphysical (astral) domain makes it fitting to make these three tree levels correspond to the Supernal Triad in the Tree of Life structure of the UPA, i.e., its three major whorls, whilst the seven tree levels belonging *exclusively* to the 7-tree as the map of the seven physical sub-planes correspond to its seven minor whorls.

If this correlation between whorls of the UPA and tree levels is correct, then equations 3 and 9 indicate that the shadow matter superstring with five whorls created by the alternative wrapping of a 11-brane around the curled-up dimensions of $S \times C$ should have two, not three, major whorls. The significance of this may be that the three major whorls of the UPA correspond to the Supernal Triad of Kether, Chokmah and Binah, or what Theosophists call the three 'Logoi' (in Christian parlance — but *not* in Christian interpretation — the 'Holy Trinity' or 'Three Persons of the Godhead'). This means that the second major whorl corresponds to the Second Logos, the so-called 'Outpouring' from which is the life-force that Hindus call 'prana,' whilst the interpretation in Section 10 of shadow matter as etheric matter means that the superstring predicted to have five whorls is the basic unit of etheric matter, the pranic energy contained within which may be one of the energy-fields of the shadow matter superstring. Lacking a third major whorl corresponding to the Third Logos, whose Outpouring is Fohat, the shadow matter superstring builds up only the subtle vehicle of physical consciousness — the etheric body, not its outer shell, which is assembled from superstrings of ordinary matter by means of the form-building forces that have their source in Fohat.



It is remarkable that the dimensionalities of the various spaces into which my theory predicts 26-dimensional space-time bifurcates are the letter values of YHVH (YAHVEH), the later version of the Godname of Chokmah given by God to the Jewish people, according to their traditions (see above). The letter values $Y = 10$ and $H = 5$ of YH (YAH), the older Godname of Chokmah, denote, respectively, the dimensionality of the 10-dimensional, curled-up space, around which the wrapping of the 11-brane creates the whorls/strings of the UPA, and the 5-dimensional space whose geometrical symmetry determines the gauge symmetry group E_8 . Alternatively, the letter value 11 of VH is the dimensionality of the 11-brane, the value $V = 6$ being the dimensionality of the space formed by the 5-dimensional space S and the dimension extending along the strings and the value $H = 5$ being the dimensionality of the space S' , whilst the number value 15 of JH is the dimensionality of that part of space-time 'outside' the 11-brane. A remarkable duality of dimensional connotation thus exists between the two pairs of letters in YHVH:

$$15 = YH \quad | \quad VH = 11$$

whereby the number value 11 of VH is the dimensionality of both the 11-brane and supergravity space-time, whilst the number value 15 of YH is the dimensionality of both the space-time outside the 11-brane and the remaining space outside supergravity space-time. This duality reflects the transformation of 26-dimensional space-time into the space-time domain of superstrings — both 10-fold Tree of Life patterns.

Further evidence for the way in which 26-dimensional space-time conforms to the Tree of Life blueprint is

the fact that its 22 compactified dimensions are analogues to the 22 Paths of the latter. The trunk of the Tree of Life comprises the point (Kether), the line (Path connecting Chokmah and Binah), triangle (Paths joining Chesed, Geburah and Tiphareth) and tetrahedron (Netzach, Hod, Yesod and Malkuth and the six Paths joining them). The 26 geometrical elements present in the trunk consist of one tetrahedron, five triangles and their ten edges and ten corners. The 22 Paths therefore consist of ten belonging to the trunk and twelve belonging to the remainder of the tree. This 10:12 division of Paths corresponds to the ten dimensions around which the 11-brane wraps itself to form ten strings and the remaining twelve compactified dimensions made up of the five dimensions of the space C, the dimensional segment separating the two 10-dimensional space-times of superstrings and the six compactified dimensions of the latter. In other words, the distinction between the trunk of the tree as its 'skeletal' framework and its superstructure is realised in the two roles — formative and dynamic — which the ten and twelve dimensions play in the creation of the UPA as a superstring: the former dimensions build up its skeletal structure just as the corresponding Paths shape the trunk, whilst the latter generate the symmetry of the

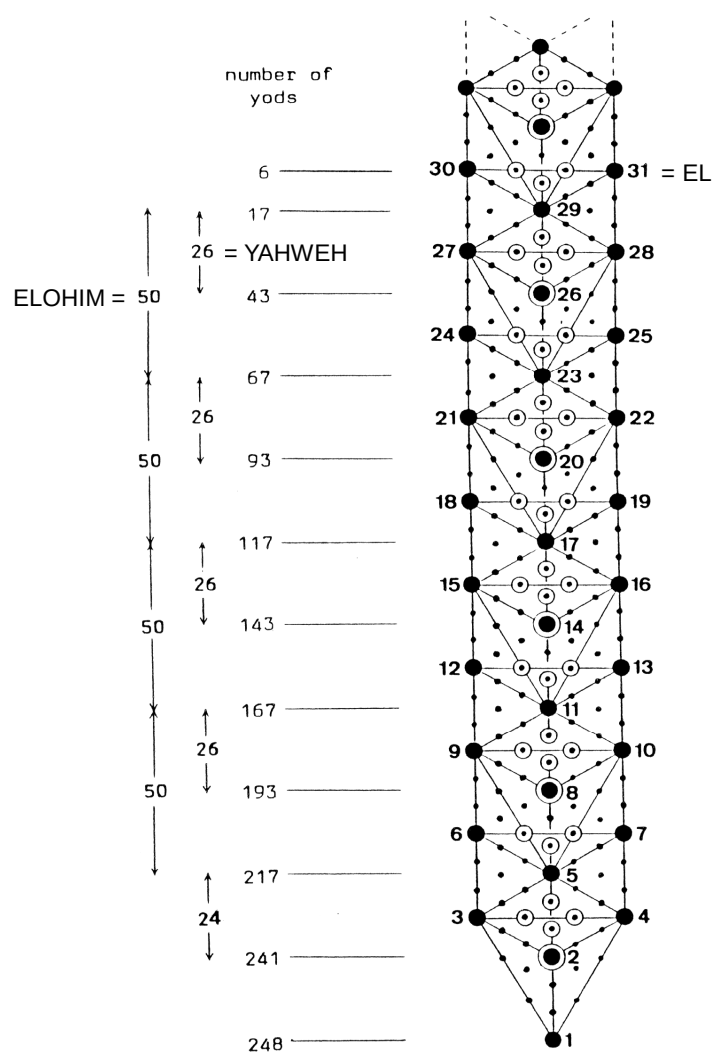


Figure 11. A 5-dimensional space mapped by five overlapping Trees of Life contains 248 yods up to the 31st SL, Chesed of the fifth tree, which is its first Sephirah of Construction. Each yod symbolises a gauge boson of the superstring gauge symmetry group E_8 . The number 26 of YAHWEH is the number of yods between Tiphareth and Yesod of successive trees. The number value 50 of ELOHIM is the number of yods between Kether of successive trees.

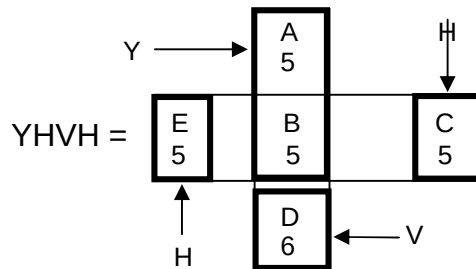
unified superstring force and its subsequent breaking into smaller subgroups of E_8 .

Evidence that some 5-dimensional space exists, the symmetry of whose geometry generates the unbroken gauge symmetry group E_8 of superstring forces transmitted by 248 gauge bosons is the fact that, when the 67 triangles in a 5-tree modelling five dimensions of space (*not* the lowest five trees in CTOL) are converted into tetractyses (Fig. 11), there exist 248 points of 48 tetractyses up to the 31st SL, which is Chesed (the first Sephirah of Construction) of the fifth tree. The Godname EL of Chesed has the number value 31. EL therefore prescribes the dimension of E_8 , each point denoting a different quantum state of the gauge boson transmitting the unified superstring force.

Points in ten 1-dimensional strings comprising the superstring of ordinary matter located in the remaining 5-dimensional space C have positions defined by $(10 \times 5 = 50)$ spatial co-ordinates, whilst points in the five

1-dimensional strings forming the shadow matter superstring existing in the remaining 10-dimensional space $C \times C'$ are located by $(5 \times 10 = 50)$ co-ordinates. The number value 50 of ELOHIM, the Godname of Binah embodying archetypes of form, prescribes the two alternative ways in which the 11-brane can wrap itself around either five or ten dimensions to create two kinds of matter whose interactions are governed by identical gauge symmetry groups.

Points on the ten strings of a superstring of ordinary matter moving in 11-dimensional space-time separating two 10-d superstring space-times have $(10 \times 10 + 1 = 101)$ space-time co-ordinates; points on the five strings of a shadow matter superstring have $(5 \times 10 + 1 = 51)$ space-time co-ordinates. 101 is the 26th prime number, whilst 51 is the 26th odd integer. Hence, the number value 26 of YAHVEH defines the total



A+B = 10 whorls/strings of UPA/superstring
 C = E_8 symmetry of UPA/superstring force
 A = 5 whorls/strings of shadow matter superstring
 B = E_8' symmetry of shadow matter superstring
 D = 6 circular dimensions (6 higher spirillae)
 E = 4-d space-time + 10th spatial dimension

number of co-ordinates or numbers fixing the location of points on *either* type of superstring. Points on the strings making up a superstring of ordinary matter are specified in 4-dimensional space-time by $(10 \times 3 + 1 = 31)$ space-time co-ordinates, whilst the strings of a shadow matter superstring are located by $(5 \times 3 = 15)$ spatial co-ordinates. The number value 31 of EL, Godname of Chesed, quantifies the total number of geometrical degrees of freedom of ordinary superstrings in 4-dimensional space-time, whilst the number value 15 of YAH quantifies the number of geometrical degrees of freedom of shadow matter superstrings in ordinary, 3-dimensional space.

7. Tattvas & planes

According to Blavatsky's *The Secret Doctrine*, each of the seven planes has its own characteristic state of matter successively differentiated out of Mulaprakriti, the 'pre-cosmic root substance.' The matter of each plane is called an Element, or tattva. The matter of the physical plane is the Earth Element or prithivi tattva, which has seven states. Their Theosophical interpretation, due to Besant and Leadbeater, is the solid, liquid and gaseous states of matter and four types of so-called 'etheric matter,' all composed of UPAs. There are two insuperable problems with this view: firstly, although it may seem natural to correlate the solid state of matter with the Element Earth, the liquid state with the Element Water, and the gaseous with the Element Air, this is wrong because *The Secret Doctrine* makes clear that the Elements Water and Air signify the matter of superphysical planes, not that of the physical universe. The ancient belief that physical matter is compounded from the four Elements of Earth, Water, Air and Fire is merely the exoteric version of the occult doctrine that it has seven states that are counterparts of these and three other Elements. Even *The Secret Doctrine* sometimes speaks of the four Elements Earth, Water, Fire and Air as though they defined the material world (one passage (11) even refers to them as 'entirely physical'), whereas what is being referred to in the discussion of the evolution of terrestrial life are states of the Earth Element. Secondly, Besant and Leadbeater correlated in a 1:1 way their seven states of physical matter with the seven sub-planes of the physical plane. But their classification has no room for the Earth counterpart of the Element Fire. Instead, it identifies the fourth state of matter as the fourth (densest) kind of etheric matter. But Blavatsky stated categorically (12) that Ether is the physical correspondence to Aether (Akasha), the fifth Element, and so it must be the fifth state of the Earth Element, not the fourth, although in some of her tables of the tattvas (e.g., *The Secret Doctrine* (Adyar ed.), vol. 5, p. 478), she creates confusion by wrongly listing the vayu tattva, or Element of Air, as the fourth Element and the tejas tattva, or Element of Fire, as the third Element, in disagreement with the classification of Besant and Leadbeater (as well as scientific thought), in which the gaseous state is the third state of matter. If one, and only one, sub-plane corresponds to each state, then etheric matter must exist on the fifth sub-plane, not the fourth, to which belongs the Earth counterpart of the Element Fire. This is radiant energy of every kind, including infrared radiation — heat — and visible light.

8. Seven states of the prithivi tattva

Contrary, therefore, to what Besant and Leadbeater supposed, there cannot be more than one sub-plane associated with the Ether differentiation of the Earth Element. One is, of course, at liberty to call loosely its three highest states 'etheric matter' to distinguish them from ordinary matter. If one does, however, one

must remember that only one of these states, strictly speaking, is true Ether — the matter of the etheric body, for example. The basis for these two Theosophists teaching that there are four etheric sub-planes was solely their clairvoyant investigation of atoms. But it depends on the validity of their working assumption that it was atoms that they psychically observed and assigned to the third lowest sub-plane because science told them that gases are the third state of matter and are composed sometimes of single atoms. My books have proved irrefutably that this presupposition is false. As the objects they thought were atoms were not such, their reason for allocating them to the third sub-plane — the gaseous state comprising atoms and molecules — ceases to be valid. Furthermore, contrary to what they believed, the particles released from disintegration of their supposed atoms do not comprise different states of their etheric matter. Instead, they are simply subquarks, quarks, diquarks and other bound states of subquarks originating in the nucleons making up atomic nuclei. Investigation of the types of particles Besant observed at different stages of her disintegration of what she thought were atoms reveals that similar particles were sometimes assigned to different sub-planes. For these, there can be no reason to assign them to one sub-plane rather than to another.

So why did only four stages of disintegration seem to be necessary, in apparent confirmation of the existence of four grades of etheric matter? Believing that the particles inside what they wrongly thought were atoms formed etheric matter as soon as they became free and mistakenly presupposing that the solid, liquid and gaseous states of matter exist on different sub-planes of the physical plane, Besant and Leadbeater inferred that etheric matter existed on its four highest sub-planes. They catalogued the products of disintegration of their supposed atoms influenced by their certainty that the released particles had to belong to one or other of these sub-planes, with free UPAs being the condition of matter on the highest physical sub-plane. As a result, they made the way they psychokinetically broke up subatomic particles and classified their constituents fit their preconceptions about how many etheric states of matter there had to be.

Although Besant and Leadbeater prescribed to a view of matter as a hierarchy of ever increasing complexity and aggregation of basic units, they departed from this in regarding the solid, liquid and gaseous phases as on the same par as their four etheric states of matter composed of ever more complex groups of UPAs. This is because, unlike the latter states, the former are made up of the *same* types of particles, namely atoms. In fact, Besant and Leadbeater's classification of the states of physical matter mixes two ways of defining them. The first is based upon their correct idea of a hierarchy of ever more complex aggregates of particles extending through the planes. The second notion is particle concentration, which depends not on the complexity of aggregation of particles but on how close they are to one another. Their etheric matter was classified according to the former idea, whereas their three, so-called 'dense physical' states of matter differ essentially in the latter respect. To be consistent with the teachings of *The Secret Doctrine*, Besant's and Leadbeater's interpretation of the states of physical matter must be replaced by one based upon the proper meaning of the tattvas and their differentiations.

This deviation of their categorisation of the states of physical matter from what is found in *The Secret Doctrine* was influenced by what turned out to be their incorrect interpretation of their clairvoyant investigation of atoms, as well as by a contemporary but false notion that physical atoms had to be composed of etheric particles. But what is the proper view? There is no one-to-one association between sub-planes as levels of physical consciousness and 'states of matter' even in the proper sense of states of the Element of Earth. The correspondence is only formal, not substantive. The one-to-one correspondence is the latter only between planes and tattvas because, by definition, a tattva is the matter of a particular plane of consciousness. Sub-planes denote levels of consciousness primarily, and it makes no sense to associate a level of consciousness with just the solid state, another with the liquid state and a third with the gaseous state if these conditions of matter are supposed to be of what each kind of consciousness is (or, in past evolutionary epochs, was) cognisant! The seven modifications of the prithivi tattva, or Earth Element, bear a formal correspondence to the seven Elements. But this does not mean that the lowest three states have to have the particular connotation of 'solid,' 'liquid' and 'gas' suggested by the words 'Earth,' 'Water' and 'Air,' which denote the tattvas of the three lowest planes, not physical sub-planes. The seven states of Earth must conform to the general principle that they represent ever more complex stages of aggregation. The conceptually confused classification of Besant and Leadbeater, which mixes together three phases of bulk matter, each made up of the same kinds of particles, namely atoms, with four kinds of matter composed of subatomic particles with differing numbers of UPAs breaks this rule vis-à-vis its lowest states — solids, liquids and gases — and must be rejected.

My theory that superstrings are formed from 11-branes wrapped around the dimensions of a higher, compactified space suggests the following seven-fold classification of states of the Element Earth:

1. 26-d space-time 'fabric';
2. 11-brane-solitonic vibration of space-time fabric;

3. 1-d strings emerge from wrapping of 11-brane around ten circular dimensions;
4. superstring as bundle of ten strings (ordinary matter) or five strings (shadow matter);
5. quark as bound state of three subquark states of superstring;
6. proton as bound state of three quarks;
7. hydrogen atom as bound state of proton and electron (simplest atom).

This exhibits a natural hierarchy of increasing complexity. They are not 'states of matter' in the macroscopic sense discussed in Theosophical literature and do not exist on separate sub-planes of consciousness but span the whole of the arena of the physical plane, which is synonymous with 26-dimensional space-time. Instead, these units are the seven differentiations of the prithivi tattva, or fabric of 26-dimensional space-time, whose topology and curvature determine the forces and states of superstrings. The UPA is the fourth differentiation of this tattva, not the first, as Leadbeater supposed. The argument that the UPA *must* be the first state because he did not notice whorls existing on their own is wrong because my theory predicts that the more minute gauge bosons transmitting the superstring force are like loops of string and, had Leadbeater examined them with micro-psi, he would, indeed, have observed single whorls. The basic building block of the chemical elements — the hydrogen atom — is the seventh and last level of compositeness and the fourth, counting from the UPA. Such complete units exhibiting Tree of Life structures are always realised as the fourth stage in their formation, illustrating the Pythagorean principle of a 4-fold process building up phenomena at every level of the cosmos.

Leadbeater did not report observing any more rudimentary object than the UPA on the physical plane (viz. the 11-brane) because his micro-psi vision did not extend beyond the ninth tree level of the 7-tree denoting the sixth circular dimension of the 6-dimensional compactified space predicted by superstring theory, although it would be more accurate to say (as stated earlier) that he did notice two more dimensions of the UPA as the *surface* of the bubbles comprising them.

The seven stages of formation of the simplest atom represent a complete 7-fold cycle of the kind discussed in Theosophical literature. In fact, the hydrogen atom constitutes the fourth Tree of Life pattern after the 11-brane, whorl and UPA, for the three triplets of subquark states of superstrings in the three quarks of the proton and its orbiting electron (another superstring state) correspond, respectively, to the three triads of Sephiroth and to Malkuth.

It was pointed out earlier that the tenth tree level marked by Malkuth of the fourth tree denotes the tenth supergravity spatial dimension from which superstrings are excluded. The first, fourth and seventh tree levels marked by the Malkuths of the first, second and third trees denote the three dimensions of large-scale space, whilst the six tree levels: 2, 3, 5, 6, 8 and 9 denote the six circular dimensions around the second, third, fourth, fifth, sixth and seventh orders of spirillae of the UPA wind. The appearance of the six compactified superstring dimensions is interrupted twice by the manifestation of the two dimensions of large-scale space transverse to the longitudinal dimension of the strings themselves. As trees represent sub-planes, and Malkuth is the physical manifestation of the Tree of Life, this means that the three lowest sub-planes, which Leadbeater ascribed to the solids, liquid and gaseous states of matter, do span the familiar 3-dimensional space occupied by these phases. However, they do not represent different phases, because they are all ultimately made of superstrings extending in 24 of the 25 spatial dimensions created by the emanation of the 7-tree mapping the seven physical sub-planes. Malkuth of the fourth tree marks the one dimension they do not extend in. Hence, although they exist in all the dimensions but one spanning the sub-planes, superstrings behave as such only in the space spanning the lowest three sub-planes. Particles do not exist that extend only in the 15 dimensions spanning the uppermost four sub-planes. This is not simply because these dimensions are all curled up. Quantum mechanics does not allow them to exist in fewer than 25 spatial dimensions. If they did, they would be so-called 'ghost states' — quantum states which physicists regard as unphysical because, unlike real quantum states, they have negative probabilities of occurrence. So Leadbeater's etheric particles do not exist in the sense that he meant. An alternative interpretation of etheric matter will be proposed in Section 10.

Some Theosophists have been dubious of scientific theories of matter that require hidden dimensions of space because they think that Blavatsky denied that there are more than three dimensions of space. The passage in *The Secret Doctrine* (13) which they cite as evidence refers to fashionable speculations at the time of its writing about a fourth dimension of space suggested by the astronomer Professor Zöllner in order to explain the physical phenomena that he claimed to witness during his widely reported séance experiments with the American medium Slade (he is the person referred to by Blavatsky as "some bold thinkers have been thirsting for a fourth dimension, to explain the passage of matter through matter, and the production of knots upon an endless cord." Far from rejecting the possibility of higher, microscopic dimensions of space, she merely declares in this passage that higher, large-scale dimensions are irrelevant to understanding such psychic phenomena, explanations of which, she said, need a sixth characteristic of

matter, namely what she called 'permeability' — the characteristic of etheric matter which would become part of human perception in the future. Then she states: "So long as there are foot-rules within the resources of Kosmos, to apply to matter, so long will they be able to measure it three ways and no more" (14). What she was referring to, of course, is *bulk* matter belonging to the everyday world of the five senses. Her prohibition of more than three dimensions of the large-scale universe has no relevance to the question of a higher, curled-up dimensionality of subatomic particles, and Blavatsky's remarks cannot therefore be used to justify the view that the basic particles making up atoms extend in no more than three dimensions.

The tattvas are the states of matter belonging to the seven planes. According to Blavatsky: "The three 'states,' so-called, of our terrestrial matter, known as the 'solid,' 'liquid,' and 'gaseous,' are only, in strict accuracy, *substates*" (15). In other words, they are not tattvas and are not synonymous with the Elements Earth, Water and Air, as is commonly supposed, even by some Theosophists who claim to have a deep knowledge of her *magnum opus*. Indeed, these phases of matter are not differentiations of the basic substance, or tattva, of the physical plane, namely the prithivi tattva, because they are made up of the *same* kind of particles, namely, atoms, differing essentially only in the mobility of these common constituents and not in the latter's level of complexity or aggregation, as proper tattvic differentiations should. It is wrong to regard the solid, liquid and gaseous states of matter as being the physical counterparts of the cosmic Elements of Earth, Water and Air. The seven cosmic Elements actually refer to the root matter of the seven planes, not to the seven differentiations of the Earth Element said to correspond to the seven sub-planes of the physical plane. Where Besant and Leadbeater went wrong was, firstly, to ignore altogether the Element of Fire and its physical correlate (probably because they ascribed to the exoteric misconception that it was literally fire, which they regarded as a vapour or gas) and, secondly, to forget the one-to-one correspondence between planes, physical sub-planes and tattvas, being sufficiently influenced by the contemporary scientific idea of matter composed of the ether to assign etheric matter to four highest physical sub-planes, whereas in fact it corresponds only to the third highest sub-plane, Ether correlating with the third cosmic Element, Akasha, or Aether, the matter of the third highest plane.

Blavatsky took pains to emphasise that her Ether was not the ether of Victorian physicists, into which Besant and Leadbeater turned it by claiming that chemical atoms consist of etheric particles. Her Ether is 'differentiated Substance' (16) (the third state of the prithivi tattva), whereas ether was a basic, homogenous, undifferentiated substance and Besant's and Leadbeater's basic unit of etheric matter was even a particle — the UPA. Despite, however, her denial that Earth, Water and Air signify the solid, liquid and gaseous states, Blavatsky's references in *The Secret Doctrine* to the four most material cosmic Elements in the evolution of the planet Earth and its life-forms sometimes reverted to these exoteric meanings, speaking of the predominance of each Element in successive evolutionary epochs as if she meant no more than the changing geology of the planet's landscape.

Supposing that each differentiation of the Element Earth — the prithivi tattva — corresponds to a physical sub-plane (this does not mean that it *exists* in it) and that each sub-plane of each plane formally corresponds to a tattva, then the *n*th state of Earth corresponds to the *n*th physical sub-plane and *n*th tattva denoting the matter of the *n*th plane, to which its *n*th sub-plane corresponds, so that the *n*th physical sub-plane corresponds to the *n*th sub-plane of the *n*th plane, where $n = 1-7$. The

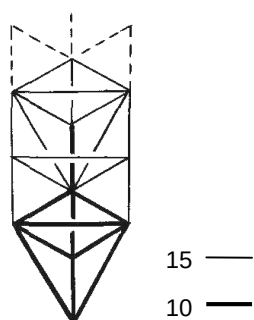


Figure 12.

fourth physical sub-plane, which is associated with the fourth state of the Earth Element, therefore corresponds to the fourth sub-plane of the fourth plane, that is, the 25th sub-plane. This is why there are both 25 SLs from Chesed of the fourth tree in CTOL representing the fourth physical sub-plane and 25 trees mapping the sub-planes up to its analogous counterpart, the fourth sub-plane of the fourth plane. The ancient occult teaching that the four Elements of Earth, Water, Air and Fire make up the physical world finds a relevance here, for it is not coincidental that the divine name ADONAI MELEKH attached to Malkuth denoting the physical universe prescribes the spatial dimensionality of matter because its number value 155 is the number of SLs up to the top of the 25th tree, the 25 sub-planes spanning the four planes (the matter of which these Elements denote) up to the sub-plane in the fourth plane corresponding to the fourth Element. The Godname of Malkuth has this number value because the 7-tree representation of the physical universe formally corresponds to Malkuth, the six remaining sets of seven trees up to the 49th tree corresponding as planes to the six higher Sephiroth of Construction.

Being the 'Malkuth' level of the 7-tree (the physical plane), the 1-tree also corresponds to the latter, and so it is not surprising that the parameter 25 appears in the 1-tree as the 25 Paths connecting its eleven SLs, i.e., as the 25 *shape-generating* edges of its 19 triangles (Fig. 12). Of these Paths, nine create the Lower Face of the 1-tree and 16 extend above it. One of the latter joins Tiphareth and Daath and is what I call the

'root edge' separating two similar sets of seven regular polygons as one half of the inner form of the Tree of Life. This leaves 15 Paths joining the Lower Face to the Upper Face. Because the 1-tree is analogous to the 7-tree, its 25 Paths divide up into the same 10:15 ratio as that found for the tree levels of the latter. The Path joining Tiphareth and Daath can be said to be the counterpart of the tenth dimension linking the two 10-dimensional space-times of superstrings, whilst the remaining 15 Paths outside the Lower Face correspond to the 15 dimensions of 26-dimensional space-time 'outside' the space-time where *superstrings* exist as such. The 49-tree, which maps the 49 sub-planes of the seven planes, is also analogous to the 1-tree and 7-tree, being the Malkuth level of CTOL itself. It is defined by the number 25 because 49 is the 25th odd integer, whilst 97, the 25th prime number, is the number of SLs on the central pillar of CTOL up to Malkuth of the 49th tree. As the Hermetic axiom states: "As above, so below."

9. The etheric double controversy

The Besant/Leadbeater interpretation of the sub-planes of the physical plane is wrong. It was based upon their false belief that what they called 'magnifying clairvoyance' described molecules and atoms in their natural state. It also rested upon their mistaken assumption that simply disintegrating atoms was enough to transfer their constituent particles to the various etheric sub-planes that they said were undetectable by scientific instruments (in fact high-energy physicists perform such processes routinely with their particle accelerators and register particles released from the break-up of atomic nuclei with spark and bubble chambers). Leadbeater never seems to have viewed the matter of the etheric body with micro-psi (there is no reference to this in his writings), in which case he had no reason to believe that particles that he thought he had observed inside atoms exist in the etheric double — this was merely an unwarranted assumption. Sometimes for the reason that physicists have not discovered a form of matter with the properties of etheric matter, sometimes because they believe that Blavatsky did not refer to this concept in her writings, some Theosophists have doubted the existence of etheric matter (17). Others like Dr. E. Lester Smith, FRS (discoverer of vitamin B12) have thought (18) that it was not part of the physical plane, although, by the time he wrote his book *Inner Adventures* (19), he had changed his mind, coming to the view (mistaken, as it turned out) that physicists already had discovered etheric matter and suggesting that plasma states and all free subatomic particles were part of the etheric condition of matter.

Some Theosophists cite the following passage from *The Secret Doctrine* as support for their belief that etheric matter does not exist:

"Occult Science recognises seven Cosmic Elements — four entirely physical, and the fifth (Ether) semi-material, which will become visible in the Air towards the end of our Fourth Round, ... The remaining two are as yet absolutely beyond the range of human perception." (20).

But this does not say that the Element Ether does not exist yet, merely that it will become visible during the current epoch of evolution (the Theosophical 'Fourth Round'). Nor does it say that two more Elements as states of matter will come into *existence* in the sixth and seventh Rounds, only that humans will notice them then. Hence their objection to the current existence of the Element Ether (and therefore to the reality of the etheric body) is based upon a misreading of the text. What Blavatsky means here by 'Elements' is, of course, actually the *states* of the Element Earth, which have traditionally been called 'Elements.'

That the belief of some Theosophists that Ether does not yet exist is based upon their misreading of *The Secret Doctrine* is further supported by the following passages from this book: firstly, discussing the reference by a stanza to the appearance of the cosmic Elements, Blavatsky remarks:

"Of these, four Elements are now fully manifested, while the fifth — Ether — is only partially so, as we are hardly in the second half of the Fourth Round, and consequently the fifth Element will manifest fully only in the Fifth Round." (21).

Secondly, elsewhere in *The Secret Doctrine* (22), it is stated:

"Metaphysically and esoterically, there is but ONE ELEMENT in Nature, and at the root of it is the Deity; and the so-called seven Elements, of which *five* have already manifested and asserted their existence, are the garment, the *veil*, of that Deity, direct from the essence whereof comes MAN, whether considered physically, psychically, mentally or spiritually. Four Elements only are generally spoken of in later antiquity, while five only are admitted in philosophy. For the body of Ether is not fully manifested yet, and its noumenon is still the 'Omnipotent Father Aether', the synthesis of the rest."

Notice that Blavatsky asserts categorically here that five Elements have manifested, although only partially so in the case of the fifth Element, Ether. This statement discredits the argument of these Theosophists that

the etheric double cannot exist or be identical to her term 'linga sharira' (see following paragraph) because she said that Ether does not yet exist.

Controversy also arose amongst some Theosophists over the meaning of Blavatsky's term, 'linga sharira.' A few believe that Besant and Leadbeater deviated seriously from her classification of what she called the human 'Principles' by (among other errors) re-interpreting her synonym for this Sanskrit term — astral body — as the etheric body, wrongly allocating it to the physical plane instead of to the astral plane, on which they believe Blavatsky meant it to exist. This argument is easily resolved. In her 'Notes on Some Oral Teachings' (23), Blavatsky states: "The body is not a principle in Esoteric Parlance, because the body and the Linga are both on the *same plane*" (my italics). Ignoring the fact that this denial of the body as a principle contradicts what she stated in her *The Key to Theosophy* and elsewhere in her *The Secret Doctrine* (e.g., page 165 of volume 4 of its Adyar edition, where she lists the physical body as a Principle), this statement proves categorically that she regarded as 'physical' what she meant as *linga sharira*, so that it can be nothing other than the etheric double later described by Besant and Leadbeater, which they said is on the *same plane* as the physical body. It cannot be what *they* called the 'astral body' because, as the vehicle of astral consciousness, the latter (by definition) functions on the astral plane, not on the *same plane* as the physical body.

Confirmation that the *linga sharira* is the etheric body appears on page 454 of volume 5 of *The Secret Doctrine*, where correspondences between the seven Principles, the notes of the musical scale and states of matter are tabulated. The term 'sthula sarira,' which, meaning the physical body, is a Principle, according to *The Key to Theosophy*) is replaced there by 'Chhaya, Shadow or Double.' On page 565 of volume 5 of *The Secret Doctrine*, she says: "The Chhaya is the same as the Astral Body." But the table of correspondences on page 454 shows that the state of matter corresponding to Chhaya is Ether! This indicates incontrovertibly that what she called the 'astral body' bears a correspondence to the fifth Element, Ether. **This can only mean that her *linga sharira* is nothing other than the term 'etheric double' coined by Besant and Leadbeater.**

Here is an argument confirming this deduction: according to *The Secret Doctrine* (24), the *linga sharira* is: "the inert vehicle or form on which the body is moulded; the vehicle of Life. It is dissipated very shortly after the disintegration of the body." This is untrue if the *linga sharira* refers to the astral body, in which consciousness functions after death. But it makes perfect sense if the *linga sharira* is the etheric body which, existing on the physical plane, dies with the physical body.

The views of some Theosophists that the notion of an etheric body made up of currently existing etheric matter is absent from Blavatsky's writings stem from their serious misreading of them. But, during the decades following the publication of Besant's and Leadbeater's clairvoyant investigation of atoms in their book *Occult Chemistry*, some influential Theosophists explained the obvious discrepancies between these observations and the scientific model of the atom by proposing that the UPA was wholly non-physical, perhaps belonging, instead, to the astral plane. As evidence, they cited a statement in the last paragraph of the opening page of chapter 11 of the 1st edition of *Occult Chemistry*:

"To astral vision ether is a visible thing, and is seen permeating all substances and encircling every particle...."

In 1895, when this passage was written, the term 'etheric vision' had not yet been coined by Besant and Leadbeater, who were still using Blavatsky's term 'astral' in the sense that *she* meant it, i.e., to denote subtle levels of the physical plane to which she assigned *what she meant* by her term 'astral body.' So doubters who use this passage to support their opinion that the UPA belongs to the astral plane are confusing the earlier meaning of the term 'astral' — as used here — with what became the standard meaning popularised after 1895 in the books of Besant and Leadbeater. Quite apart from this, the kind of psychic faculty that makes the etheric body visible ('etheric vision') is not the same thing as magnifying clairvoyance, which is remote-viewing of microscopic, not macroscopic, objects. It is therefore wrong to infer from the above statement that, being observed with astral vision, the UPA must belong to the astral, not the physical, plane, for neither etheric nor astral vision magnifies objects and so by definition was not used to make UPAs visible. This erroneous term for magnifying clairvoyance appears only once in the 1895 *Lucifer* paper partly reproduced in the first edition of *Occult Chemistry*, and it is omitted from the third edition, presumably because the latter's editor, C. Jinarajadasa, who assisted Besant and Leadbeater during many of their psychic investigations of atoms, realised that it was wrong in the context of their terminology, which had long been established by 1951, when this edition appeared.

10. Etheric matter as shadow matter

The issue still to be resolved is not whether the notion of etheric matter appears in *The Secret Doctrine* or

was invented by Leadbeater — a muddleheaded argument created by a misreading and misunderstanding of this book, as well as by confusion amongst some Theosophists stemming from Besant's and Leadbeater's change of terminology. The question is, rather, what this mysterious matter really is, given that they misinterpreted what they thought were atoms and falsely related what they saw with micro-psi to what was visible to their etheric vision — a different psychic faculty altogether. As discussed earlier, superstring theory predicts the existence of so-called 'shadow matter' which holds equal status with ordinary matter but which is invisible across the whole range of the electromagnetic spectrum, interacting with the former only gravitationally. Physicists (25) have speculated that this as yet undiscovered matter could form stars and planets, pervade interstellar space and be even all around us on Earth. My work showing how the mathematics of the gauge symmetry group E_8 governing shadow superstring interactions is encoded in the Tree of Life as the universal blueprint leads me to conclude that:

ETHER, THE THIRD STATE OF THE PRITHIVI TATTVA, IS SHADOW MATTER.

If this is correct, *The Secret Doctrine* would then be right (even if not in the sense it meant) in saying that Ether will manifest in the current Round of evolution because, as a fundamental variety of so-called 'dark matter,' invisible shadow matter may be already showing its presence to astronomers through its gravitational holding together of the stars and interstellar gases in galaxies, which rotate too fast for their motions to be stabilised by visible matter. As explained earlier, it would also explain the curious statement in *The Secret Doctrine* that Ether will appear in Air. This does not, of course, refer literally to the air in the Earth's atmosphere but to the Element Air (hence the use of a capital 'A'). But this would be nonsensical had Blavatsky meant the fourth cosmic Element, because physical matter could not exist on the fourth plane corresponding to this Element. It could have meant only 'gases,' the state of matter traditionally said to correspond to Air. Her prediction would be confirmed if and when shadow matter is detected amidst the gases pervading galaxies through its stabilising gravitational pull on the revolution of stars around their centres.

According to superstring theory, forces other than gravity acting between shadow matter particles also cannot be detected by any instrument made up of ordinary matter because the virtual 'messenger particles' transmitting them do not interact with particles of ordinary matter except gravitationally, which is too weak a force to be practical. The energy radiated by shadow matter is therefore also invisible to normal sight. I propose that the energy fields of shadow matter are the Earth state corresponding to the sixth (Anupadaka) tattva. According to my theory, shadow and ordinary matter superstrings are the two types of superstring resulting from the wrapping of an 11-brane around, respectively, five and ten curled-up dimensions of space. Could the 26-dimensional space-time continuum itself, which physicists know from Einstein's General Theory of Relativity behaves as though it were a stretchable fabric, be the first state of the Earth Element, formally corresponding to the first cosmic Element, the Adi tattva? Tabulated below are the possible correlations between the *physical* counterparts of the seven tattvas and the general states of matter predicted by my theory:

DIFFERENTIATION OF PRITHIVI TATTVA	CORRESPONDING TATTVA/ELEMENT	STATE OF PHYSICAL MATTER
1st	Adi/Sea of Fire	fabric of 26-d space-time continuum ('quantum foam')
2nd	Anupadaka/Divine Flame	energy fields of shadow matter & dark energy (includes physical prana)
3rd	Akasha/Aether	shadow matter (etheric matter)
4th	Tejas/Fire	energy fields of ordinary matter
5th	Vayu/Air	nuclear state
6th	Apas/Water	atomic state
7th	Prithivi/Earth	molecular state

} ordinary matter

This correlation restores a position for Fire absent from the Besant/Leadbeater system of classification of states of matter, which wrongly interpreted the UPA as the atomic unit of the prithivi tattva, the Element of Earth. There will be different types of etheric matter as different kinds of shadow matter. But they do NOT correspond to tattvas or exist on separate sub-planes, as Leadbeater and Besant supposed. Indeed, none of these states of matter exist solely on one particular sub-plane, although they bear a formal correspondence to them.

If Ether is shadow matter, the 'permeability' characteristic of Ether in the next Round referred to in *The Secret Doctrine* (26) would be due to the fact that someone using his (by then) evolved organ of etheric

sight — the shadow matter counterpart of eyes (the etheric ajna chakra, or so-called ‘third eye’) — would notice that any shadow matter appearing opaque and solid to his psychic sight can pass freely through ordinary matter. This is because particles of ordinary and shadow matter can interact only by the force of gravity, which is many order of magnitudes weaker than the forces bonding each kind together, so that, even though bonded together strongly in their respective solid objects, shadow matter particles would move through particles of ordinary matter without hindrance. Objects made of ordinary matter would appear translucent, if not invisible because, according to superstring theory, the photons that stimulate the rods and cones in the eye cannot in principle interact with any form of shadow matter that might make up this organ of etheric sight. Conversely, objects made of shadow matter would be invisible to ordinary sight, just as the etheric body is supposed to be.

Although conceived earlier in 1986 by me in the unpublished manuscript of my book *The Image of God in Matter*, the identification of etheric matter with shadow matter first appeared in print in 1988 in the journal *Enquiry* and then in the book *Shadow Matter and Psychic Phenomena*, by the same writer, Dr. G.D. Wassermann, who was formerly Reader in the Theory and Philosophy of Biology at the University of Newcastle upon Tyne and Associate Editor of the *Bulletin of Mathematical Biology*. But, judging from the serious technical faux pas in his book, this materialistic biologist appears to have little professional understanding of particle physics, and his explanations of psychic phenomena in terms of shadow matter and its forces make too many ad hoc assumptions and use too few facts to make his theorising good science, even making allowance for the theoretical study of shadow matter being still in its infancy.

11. The physical plane

Besant and Leadbeater confused the significance of the physical sub-planes as differentiations of physical matter with their evolutionary meaning as levels of consciousness, as if the two always had to go hand in hand. They assigned both normal human consciousness and ordinary matter to the three lowest sub-planes but failed to explain how the former evolved only within them. Theosophists even now do not agree on what the physical sub-planes signify. I propose their following meaning as levels of *human* physical consciousness attained by evolution:

PHYSICAL SUBPLANE	FORM OF PHYSICAL CONSCIOUSNESS
1	remote viewing of etheric/shadow matter universe;
2	remote viewing of ordinary universe (includes anima/micro-psi);
3	awareness of local etheric/shadow matter universe (etheric vision);
4	current (Round 4) human sensory awareness of local physical universe;
5	human sensory awareness in Round 3;
6	human sensory awareness in Round 2;
7	human sensory awareness in Round 1. }
	past epochs of human evolution

Notice that etheric sight correctly corresponds to the same (third) sub-plane as Ether, the third differentiation of the prithivi tattva. Remote viewing is a form of *physical* awareness because it refers to the physical world. It represents a free-roaming awareness, which is unrestricted by the mechanisms that govern how information is gathered by the five senses operating from the fixed locality of the human body. Sub-planes 3, 2 and 1 would represent future states of human physical awareness. The first two are already being experienced by psychics as, respectively, etheric vision and remote vision of localities and events in different parts of the world.

12. Conclusion

The 25 tree levels of the seven lowest trees in CTOL representing the seven sub-planes of the physical plane signify the 25 dimensions of space predicted by quantum mechanics to be needed by bosonic strings. With the UPA proven by my earlier work to be a subquark constituent of up and down quarks, its ten whorls and six higher orders of spirillae are explained by, respectively, the wrapping of an 11-brane around ten curled-up dimensions and the winding of the resulting ten strings around the six circular dimensions of the 6-dimensional, compactified space predicted by superstring theory. The claim by a few Theosophists that Leadbeater invented the etheric body is shown to be based upon their misreading of *The Secret Doctrine*, not on the inconsistency of his classification of states of physical matter and sub-planes with Blavatsky's teachings about the seven tattvas and principles. Any classification of planes and tattvas consistent with her ideas must associate etheric matter with only *one* sub-plane — the fifth, not four sub-planes. Planes signify modes of being, and sub-planes signify differentiations of these levels of consciousness corresponding to the meaning of the seven Sephiroth of Construction, which are ultimately behind all 7-fold correspondences in occultism. This made it wrong of Besant and Leadbeater to ignore the occult law of correspondence by assigning only four of the seven states of the prithivi tattva to the seven

sub-planes, whether or not they interpreted them correctly. Etheric matter is identified as shadow matter. The picture of physical reality currently emerging from so-called 'M-theory' is of two parallel universes occupying the same 9-dimensional space (in particular familiar 3-dimensional space) but separated by another dimension whose microscopic size sets the common scale of the strengths of the forces of nature (these include those binding subquarks together as quarks and therefore awaiting discovery). Invisible shadow matter is confined to one universe, visible ordinary matter is confined to the other. If the former is etheric matter, this means that it does not occupy precisely the same space as ordinary matter and can interact with the latter only gravitationally, remaining invisible to scientific detectors, just as Theosophists always claimed for etheric matter, even though it pervades the living body as its etheric double. Etheric matter would then exist on a higher sub-plane only in the sense that it belongs to an all-pervading, parallel universe — the shadow matter universe — whose observation requires a higher level of physical consciousness using a sense organ still to be evolved by the majority of humans. Of course, even the smallest subatomic particle is 'alive' in the fundamental sense of being a microcosmic manifestation of the one Divine Life and exists on higher planes as well. But science yet can describe only the Malkuth level of this existence and the laws that govern it. This paper has integrated its scientific description with Kabbalistic and Theosophical ideas in order to provide a more complete understanding of the physical universe.

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