

6837 <sup>E</sup>/m 6865

## Stephen M. Phillips

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# The Connection Between Fibonacci Numbers and the Pythagorean Musical Scale

by

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## Abstract

The first 55 notes above the tonic of the Pythagorean musical scale comprise 26 overtones. This is the gematria number value of Yahweh (YHWH), the well-known name of God. The gematria number values of its letters are the numbers of overtones in consecutive sets of notes whose numbers are Fibonacci numbers, 55 being the tenth of these numbers. The 21:34 division of notes determined by YH and WH creates a 3:5 division of the eight octaves spanned by the 55 notes. Their counterparts in the 1-tree are the 21 geometrical elements in its Lower Face and the 34 elements outside the latter. The 21:34 division appears in the inner form of the Tree of Life as the 21 corners of the triangle, octagon & decagon and the 34 corners of sectors that are either centres of polygons or corners of the square, pentagon, hexagon & dodecagon. This division manifests in the five Platonic solids as the 21 vertices & centres of the tetrahedron, octahedron & cube and as the 34 vertices & centres of the icosahedron & dodecahedron. It also distinguishes the geometry of the faces of the first four solids from that of the fifth solid. There are 55 Sephirothic levels (SLs) on the central pillar of the 26-tree mapping the 26-dimensional space-time predicted by quantum mechanics for spinless strings. Their 21:34 division distinguishes the nine superstring dimensions from the sixteen higher, bosonic string dimensions. The same division distinguishes the three large-scale dimensions from the six compactified dimensions. This means that Fibonacci numbers, which pattern and give proportion to many living things, also determine and divide the very dimensionality of space-time. This division is reflected in the sacred geometries of the Tree of Life and the five Platonic solids, providing evidence of a universal blueprint that governs matter and life.

## 1. Introduction

Fibonacci numbers are members of the infinite series of numbers:

**0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377...**

in which, starting from the third number, each number is the sum of the two previous ones. The ratio of two consecutive numbers converges towards the Golden Ratio  $\Phi = 1.61803398...$  as they become larger and larger. They appear widely in Nature (1). This article shows how they group notes in the Pythagorean musical scale in a way that corresponds to the geometrical composition of the Tree of Life and the five Platonic solids, as well as to the dimensionality of the space-time of superstrings and bosonic strings.

Table 1. Number values of the ten Sephiroth in the four Worlds.

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

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

# 1. Fibonacci numbers in the Pythagorean musical scale

Table 2 displays the first 55 notes in the Pythagorean musical scale above the tonic of the first octave (red numbers are Fibonacci numbers):

Table 2. The first 55 notes above the tonic of the Pythagorean scale.

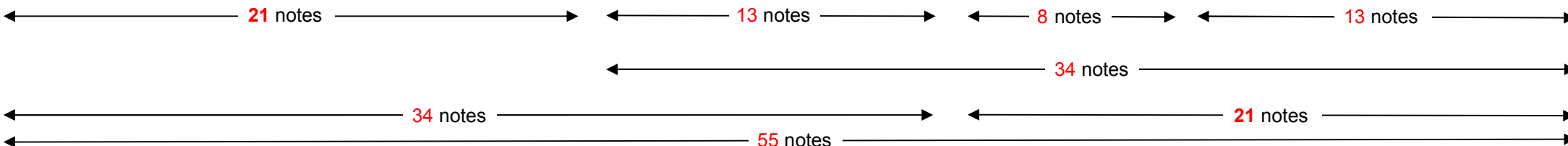
| C <sub>1</sub> | D <sub>1</sub> | E <sub>1</sub> | F <sub>1</sub> | G <sub>1</sub> | A <sub>1</sub> | B <sub>1</sub> | C <sub>2</sub> | D <sub>2</sub> | E <sub>2</sub> | F <sub>2</sub> | G <sub>2</sub> | A <sub>2</sub> | B <sub>2</sub> | C <sub>3</sub> | D <sub>3</sub> | E <sub>3</sub> | F <sub>3</sub> | G <sub>3</sub> | A <sub>3</sub> | B <sub>3</sub> | C <sub>4</sub> | D <sub>4</sub> | E <sub>4</sub> | F <sub>4</sub> | G <sub>4</sub> | A <sub>4</sub> | B <sub>4</sub> | C <sub>5</sub> | D <sub>5</sub> | E <sub>5</sub> | F <sub>5</sub> | G <sub>5</sub> | A <sub>5</sub> | B <sub>5</sub> | C <sub>6</sub> | D <sub>6</sub> | E <sub>6</sub> | F <sub>6</sub> | G <sub>6</sub> | A <sub>6</sub> | B <sub>6</sub> | C <sub>7</sub> | D <sub>7</sub> | E <sub>7</sub> | F <sub>7</sub> | G <sub>7</sub> | A <sub>7</sub> | B <sub>7</sub> | C <sub>8</sub> | D <sub>8</sub> | E <sub>8</sub> | F <sub>8</sub> | G <sub>8</sub> | A <sub>8</sub> | B <sub>8</sub> |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1              | 9/8            | 81/64          | 4/3            | 3/2            | 27/16          | 243/128        | 2              | 9/4            | 81/32          | 8/3            | 3              | 27/8           | 243/64         | 4              | 9/2            | 81/16          | 16/3           | 6              | 27/4           | 243/32         | 8              | 9              | 81/8           | 32/3           | 12             | 27/2           | 243/16         | 16             | 18             | 81/4           | 64/3           | 24             | 27             | 243/8          | 32             | 36             | 81/2           | 128/3          | 48             | 54             | 243/4          | 64             | 72             | 81             | 256/3          | 96             | 108            | 243/2          | 128            | 144            | 162            | 512/3          | 192            | 216            | 243            |
| 0              | 1              | 2              | 3              | 4              | 5              | 6              | 7              | 8              | 9              | 10             | 11             | 12             | 13             | 14             | 15             | 16             | 17             | 18             | 19             | 20             | 21             | 22             | 23             | 24             | 25             | 26             | 27             | 28             | 29             | 30             | 31             | 32             | 33             | 34             | 35             | 36             | 37             | 38             | 39             | 40             | 41             | 42             | 43             | 44             | 45             | 46             | 47             | 48             | 49             | 50             | 51             | 52             | 53             | 54             | 55             |
|                |                |                |                |                |                | 1              |                |                |                |                | 2              |                |                | 3              |                |                |                | 4              |                |                | 5              | 6              |                |                | 7              |                |                | 8              | 9              |                |                | 10             | 11             |                | 12             | 13             |                |                | 14             | 15             |                | 16             | 17             | 18             |                | 19             | 20             |                | 21             | 22             | 23             |                | 24             | 25             | 26             |

יָהוָה = 5 overtones  
H = ה

6 overtones  
V = ו

5 overtones  
H = ה

10 overtones  
Y = י

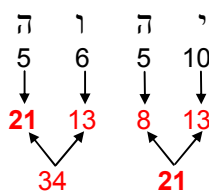


The first seven octaves of the Pythagorean scale ending in the note C<sub>8</sub> with tone ratio  $2^7 = 128$  comprise 50 notes, of which 21 notes are overtones and 29 are partials. ELOHIM, the Godname of Binah with number value 50, and EHEYH, the Godname of Kether with number value 21, prescribe the first seven octaves. They comprise the tonic C<sub>1</sub>, the last note C<sub>8</sub> and the 48 notes between them. The latter consist of the six octaves C<sub>2</sub>–C<sub>7</sub> and 42 notes made of 14 overtones and 28 partials. The first 55 notes above the tonic ending with note B<sub>8</sub> comprise 26 overtones and 29 partials. YAHWEH (Hebrew: YHVH), the Godname of Chokmah with number value 26, prescribes this set of 55 notes. It consists of the seven octaves C<sub>2</sub>–C<sub>8</sub> and 48 notes made up of 19 overtones and 29 partials.

That this is not just a coincidence is indicated by the fact that the letter values of YHVH denote the numbers of overtones in groups of notes whose numbers are Fibonacci numbers. H = 5 (he) denotes the five overtones in the first 21 notes, V = 6 (vav) denotes the six overtones in the next 13 of the first 34 notes, H = 5 denotes the 5 overtones in the next 8 notes and Y = 10 (yod) denotes the ten overtones in the last 13 notes. The letter values of YAHWEH divide up the 55 notes above the tonic into sets whose numbers are always members of the Fibonacci series! YAH (Hebrew: YH), the partial version of the full Godname with number value 15 specifies the 15 overtones in the last 21 notes, the two letters Y and H denoting the subsets with, respectively, 13 notes and 8 notes. This division in the Godname occurs at C<sub>6</sub>, the 5th octave with tone ratio 32. The first 5 overtones span 3 octaves, as do the next 11 overtones and the last 15 overtones. The 55 notes from D<sub>1</sub> with tone ratio 9/8 to B<sub>8</sub> with tone ratio 243 span an interval of 216. This is the number value of Geburah. The interval between B<sub>8</sub> and the next note C<sub>9</sub> is 256/243, which is the Pythagorean leimma. The ratio of the tone ratios of the 55th and 21st notes is 243/8, which is that of the 34th note!

The 21:34 division in the Fibonacci number 55 creates a 3:5 division of the 8 octaves spanned by the 55 notes. The numbers 3, 5 & 8 are themselves consecutive Fibonacci numbers! Counting from the 55th note, the 21:34 division generates the same 3:5 division. The first 32 notes have ten overtones. As 32 is

not a Fibonacci number, we see that only counting backwards from the **55**th note generates the gematria numbers of the letters of YAHWEH in the order in which they are written in Hebrew:



This is remarkable because it demonstrates that the pattern of overtones is prescribed by this Godname not in the left-to-right way it is written in English but in the right-to-left way it is written in Hebrew.

## 2. Fibonacci numbers in the Tree of Life & 1-tree

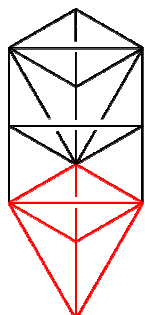
The geometrical compositions of the Tree of Life and 1-tree are shown below:

|               | Points | Lines | Triangles | Total     |
|---------------|--------|-------|-----------|-----------|
| Tree of Life: | 10     | 22    | 16        | <b>48</b> |
| 1-tree:       | 11     | 25    | 19        | <b>55</b> |

The **48** geometrical elements comprising the Tree of Life correspond to the **48** corners of the seven separate polygons and to the **48** notes up to B<sub>8</sub> other than octaves. The extra seven geometrical elements (one point, **3** lines & **3** triangles) needed to convert the Tree of Life into the 1-tree correspond in the inner Tree of Life to the centres of its seven regular polygons and in the Pythagorean scale to the seven octaves up to the note B<sub>8</sub>.

### Outer Tree of Life

As discussed in more detail in Article 50 (2), the Lower Face of the Tree of Life is the red kite-shape in Figure 1 whose corners are Tiphareth, Netzach, Hod, Yesod and Malkuth. It comprises **21** geometrical elements, where **21** is the eighth Fibonacci number. This is the number of elements in the similarly-



|             | Points | Lines | Triangles | Total     |
|-------------|--------|-------|-----------|-----------|
| Lower Face: | 5      | 9     | 7         | <b>21</b> |
| Remainder:  | 6      | 16    | 12        | <b>34</b> |

Figure 1. The **55** geometrical elements of the 1-tree comprise the **21** elements of its Lower Face (red) and the **34** elements in its remainder (black).

shaped Upper Face of the 1-tree whose corners are Kether, Chokmah, Binah, Chesed, Geburah and Tiphareth. As the two Faces share a corner, 20 of the elements in the Upper Face are part of the **34** geometrical elements that make up the 1-tree other than its Lower Face, leaving (**34**–**20**=**14**) elements outside both Faces. The **21**:**34** division of the **55** elements in the 1-tree has its counterpart in the tetractys array of the first ten integers adding to **55** (notice that 55 is also the *tenth* Fibonacci number):

$$55 = \begin{array}{c} 10 \\ 8 \ 9 \\ 5 \ 6 \ 7 \\ 1 \ 2 \ 3 \ 4 \end{array} = \begin{array}{c} 10 \\ \triangle \\ 6 \\ 1 \quad 4 \end{array} + \begin{array}{c} 8-9 \\ 5 \quad 7 \\ 2-3 \end{array} = 21 + 34.$$

The sum of the integers at the corners and centre of the array is **21**, and the sum of the integers at the corners of the hexagon is **34**. **21** is the sum of the first six integers 1–6 and **34** is the sum of the last four.

### Inner Tree of Life

The **48** sectors of the seven separate regular polygons have **55** corners (Fig. 2). They comprise the seven centres of the polygons and their **48** corners. Their musical counterparts in the first seven octaves are the seven octaves C<sub>2</sub>–C<sub>8</sub> and the **48** notes comprising 19 overtones and 29 partials. The extra seven

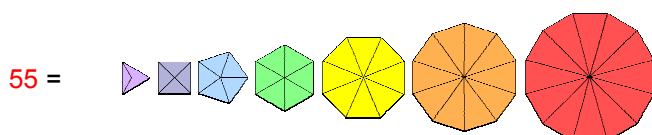


Figure 2. The tenth Fibonacci number **55** is the number of corners of the **48** sectors of the seven regular polygons making up the inner form of the Tree of Life.

elements needed to convert the Tree of Life with **48** elements into the 1-tree are their counterpart.

If we add together corners of sectors of polygons, there are only two possible combinations of polygons with **21** corners of their sectors:

$$4 + 6 + 11 = \mathbf{21}, \text{ leaving } 5 + 7 + 9 + 13 = \mathbf{34}$$

and

$$5 + 7 + 9 = \mathbf{21}, \text{ leaving } 4 + 6 + 11 + 13 = \mathbf{34}.$$

But neither case allows the Fibonacci number **21** to split into the Fibonacci numbers **8** and **13**. Hence, combinations of corners of sectors do not form Fibonacci numbers that are the sum of the two previous Fibonacci numbers. Either the centres of a subset of the seven polygons are counted with the corners of other polygons (this case was analysed in Article 50 (3)) or all seven centres are added to the corners of a subset of the seven polygons. In view of the correspondences between the **55** corners of the sectors of these polygons and the **55** geometrical elements of the 1-tree and between the seven centres and the seven elements added to the Upper Face when the Tree of Life with **48** elements becomes the 1-tree, it follows that the seven centres should belong to the **34** corners of sectors, for this number is the number of elements in the Upper Face containing the seven extra elements. The possible combinations are:

$$\begin{aligned} 3 + 6 + 12 &= \mathbf{21} \text{ and } (4 + 5 + 8 + 10) + 7 = \mathbf{34}, \\ 4 + 5 + 12 &= \mathbf{21} \text{ and } (3 + 6 + 8 + 10) + 7 = \mathbf{34}, \\ 5 + 6 + 10 &= \mathbf{21} \text{ and } (3 + 4 + 8 + 12) + 7 = \mathbf{34}, \\ 3 + 8 + 10 &= \mathbf{21} \text{ and } (4 + 5 + 6 + 12) + 7 = \mathbf{34}, \end{aligned}$$

and

$$3 + 4 + 6 + 8 = \mathbf{21} \text{ and } (5 + 10 + 12) + 7 = \mathbf{34}.$$

('7' denotes the seven centres). Only the last two combinations shown above allow the split **21** = **8** + **13**. This leaves the two possible compositions for the remaining **34** corners of sectors:

$$(5 + 10 + 12) + 7 = \mathbf{34},$$

and

$$(4 + 5 + 6 + 12) + 7 = \mathbf{34}.$$

Only the last one is consistent with the division **34** = **21** + **13** (**13** = **7** + **6** & **21** = **4** + **5** + **12**). Hence, this division is between the **21** corners of the triangle, octagon & dodecagon and the **34** corners of sectors that are either centres of the seven polygons or corners of the square, pentagon, hexagon & dodecagon.

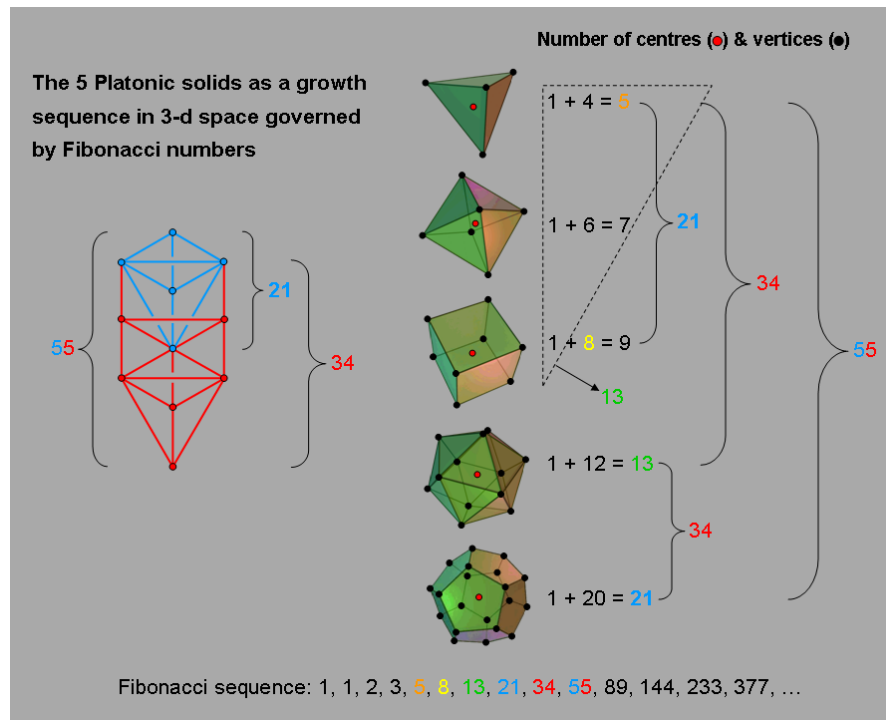


Figure 3. The corners and centres of the five Platonic solids form consecutive Fibonacci numbers.

### 3. Fibonacci numbers in the Platonic solids

As discussed in Article 50 (4), the five Platonic solids have **55** vertices & centres (Fig. 3). They comprise the **21** vertices & centres of the tetrahedron, octahedron & cube and the **34** vertices & centres of the icosahedron & dodecahedron. Notice that this **21:34** division splits the complete set of **5** regular polyhedra into two subsets: one of **2** solids and one of **3** solids, and that the numbers **2**, **3** & **5** are consecutive Fibonacci numbers. The **55** vertices & centres correspond to the **55** corners, edges & triangles making up the 1-tree. The **21** vertices & centres of the first **3** Platonic solids correspond to the traditional Upper Face of the Tree of Life rather than to its Lower Face because, intuitively speaking, it is natural to associate the simplest solids with the upper part of the Tree of Life, whose downward progression represents the development of more complex forms from simpler ones. Indeed, its trunk (Fig. 4) consists of the sequence of the first four regular simplexes\*: point→line segment→triangle→tetrahedron. They are composed of **26** geometrical elements (5). YAHWEH (YHVH or יהוה) prescribes the trunk, the value 10 of the first letter yod (Y or י) denoting the 10 vertices, the value 5 of the first letter he (H or ה) denoting the five edges & triangles in the line segment and triangle, the value 6 of vav (V or ו) denoting the six edges of the tetrahedron and the value 5 of the second he (H or ה) denoting the number of triangles & tetrahedra in the tetrahedron.

Figure 4. Geometrical composition of the trunk of the Tree of Life.

|                                            | vertices | edges | triangles | tetrahedra |
|--------------------------------------------|----------|-------|-----------|------------|
| point                                      | 1        | 0     | 0         | 0          |
| line segment                               | Y 2      | H 1   | 0         | 0          |
| triangle                                   | 3        | 3     | 1         | 0          |
| tetrahedron                                | 4        | 6 V   | 4         | 1 H        |
| Total = 10 + 10 + 5 + 1 = <b>26</b> = YHVH |          |       |           |            |

The 1-tree contains two tetrahedra (see Fig. 1) and **55** vertices, lines & triangles. These 57 geometrical elements correspond to the 57 points that are either corners of sectors of the seven separate regular polygons of the inner Tree of Life or the endpoints of the root edge that becomes their shared edge when they become enfolded in one another. Their musical counterparts are the 57 notes in the first eight octaves. The 1-tree consists of the **26** elements of its trunk prescribed by YAHWEH, the Godname of Chokmah, and the **31** elements of its 'branches' prescribed by EL, which is the Godname of Chesed, the Sephirah below Chokmah on the Pillar of Mercy of the Tree of Life. One of these elements is the eleventh vertex located at Daath and another is the tetrahedron in the Upper Face. The two elements correspond to the tonic and to the eighth octave — the 57th note. This leaves 29 geometrical elements (**15** edges, 14 triangles) in its branches that correspond to the 29 partials in the first **55** notes of the Pythagorean scale above the tonic. The **26** elements in the trunk correspond to the **26** notes that are overtones. This means that the **55** vertices, lines & triangles making up the 1-tree do *not* correspond to these **55** notes, for they do not include the tetrahedron that corresponds to one of the **26** overtones. The two endpoints of the root edge correspond to the vertex located at Daath and to the tetrahedron in the Upper Face. The **55** corners of sectors correspond to the remaining **55** vertices, lines, triangles & tetrahedra in the 1-tree. The **48** corners of sectors correspond to the **48** vertices, edges & triangles of the Tree of Life, whilst the seven centres correspond to the **3** edges, **3** triangles & one tetrahedron added when the Tree of Life becomes the 1-tree.

Figure 3 indicates that the numbers of points, lines & triangles in the sets of **21** and **34** are:

$$\begin{aligned} 21 &= 5_t + 16_b \\ 34 &= 20_t + 14_b, \end{aligned}$$

where the suffixes 't' and 'b' refer to the trunk and to the branches of the 1-tree. The tetrahedron has **5** vertices & centres and the octahedron & cube has 16 vertices & centres. The icosahedron has **13** vertices & centres and the dodecahedron has **21** vertices & centres. Hence, the regular polyhedral counterparts of the 5 triangles and 20 vertices & edges of the trunk of the Tree of Life is the **5** vertices & centre of the tetrahedron and the 20 vertices of the dodecahedron. Their musical counterparts are the 25 overtones above the first octave in the first **55** notes. The polyhedral counterparts of the branches of the 1-tree composed of 16 vertices & edges and 14 triangles are the 16 points that are either vertices of the icosahedron or centres of the octahedron, cube, icosahedron & dodecahedron and the 14 vertices of the

\* A regular n-simplex is the n-dimensional analogue of an equilateral triangle. The 0-simplex is the point, the 1-simplex is the line segment (or straight line), the 2-simplex is the triangle and the 3-simplex is the tetrahedron.

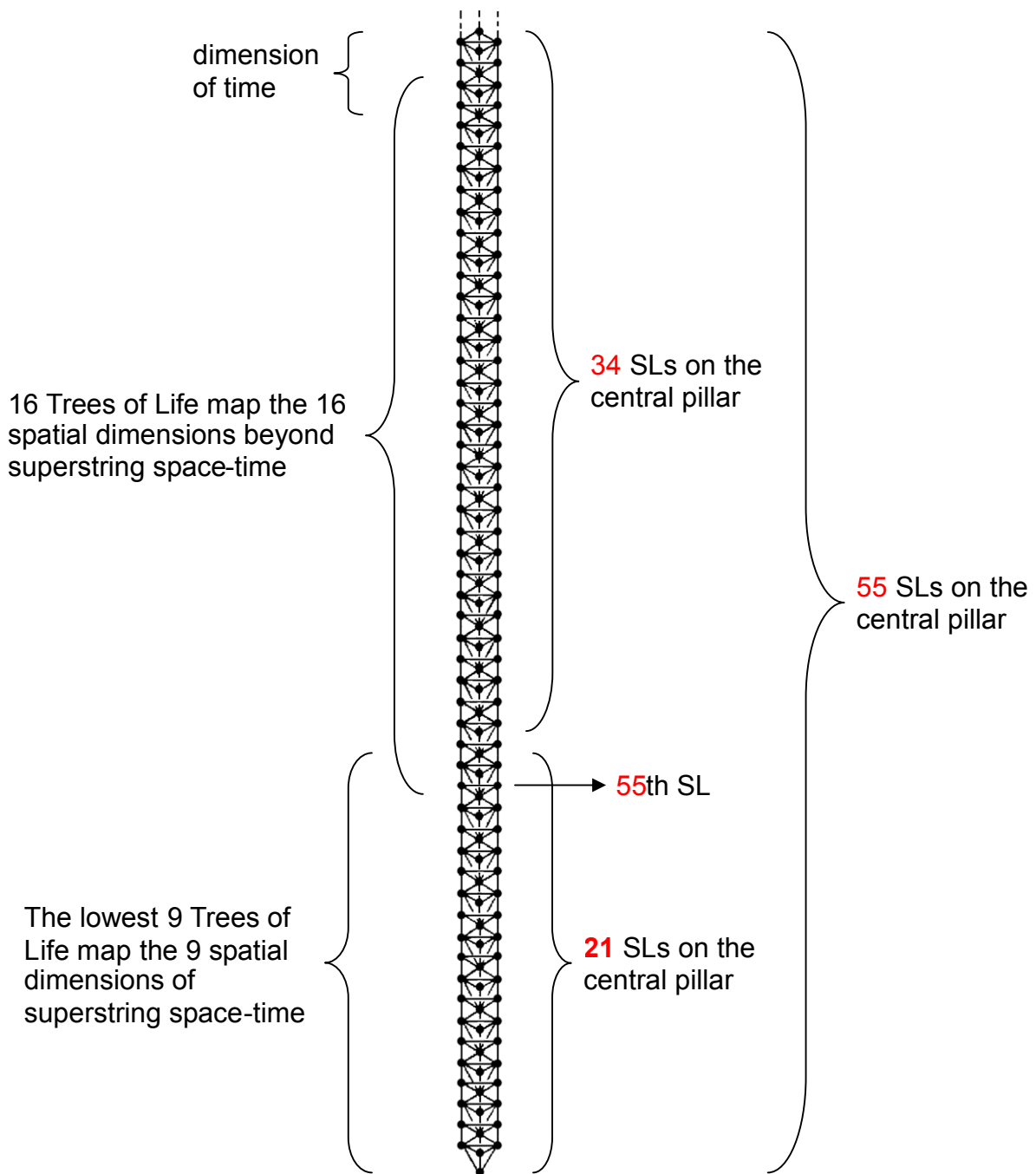


Figure 5. The lowest **26** Trees of Life map **26**-dimensional space-time. **21** SLs lie on the central pillar of the lowest 9 Trees mapping the 9 spatial dimensions of superstrings. **34** SLs lie on the central pillar of the next higher 16 Trees mapping the 16 higher spatial dimensions. The **26**th Tree maps the dimension of time.

octahedron & cube.

#### 4. YAHWEH prescribes the seven musical scales

It is not by accident that the first 55 notes above the tonic of the Pythagorean scale should include **26** overtones. We have seen in previous articles (6, 7) that YAHWEH prescribes the seven types of musical scales because they constitute another holistic system. Table 3 lists the tone ratios of their notes:

Table 3. The tone ratios of the notes in the seven musical scales.  
(White cells denote Pythagorean notes between the tonic and octave in grey cells).

| Musical scale | Tone ratio |         |       |         |          |        |         |   |
|---------------|------------|---------|-------|---------|----------|--------|---------|---|
| B scale       | 1          | 256/243 | 32/27 | 4/3     | 1024/729 | 128/81 | 16/9    | 2 |
| A scale       | 1          | 9/8     | 32/27 | 4/3     | 3/2      | 128/81 | 16/9    | 2 |
| G scale       | 1          | 9/8     | 81/64 | 4/3     | 3/2      | 27/16  | 16/9    | 2 |
| F scale       | 1          | 9/8     | 81/64 | 729/512 | 3/2      | 27/16  | 243/128 | 2 |
| E scale       | 1          | 256/243 | 32/27 | 4/3     | 3/2      | 128/81 | 16/9    | 2 |
| D scale       | 1          | 9/8     | 32/27 | 4/3     | 3/2      | 27/16  | 16/9    | 2 |
| C scale       | 1          | 9/8     | 81/64 | 4/3     | 3/2      | 27/16  | 243/128 | 2 |

There are **26** Pythagorean notes between the tonic and octave:

$$\begin{array}{lcl}
 \text{D scale} & 4 & \\
 \text{A scale} & 3 & \\
 \text{E scale} & 2 & \\
 \text{B scale} & 1 & \\
 \text{F scale} & 5 & H = \eta \\
 \text{C scale} & 6 & V = \nu \\
 \text{G scale} & 5 & H = \eta
 \end{array}
 \left. \begin{array}{l} \\ \\ \\ \\ \\ \\ \end{array} \right\} 10 = Y = \gamma
 \left. \begin{array}{l} \\ \\ \\ \\ \\ \\ \end{array} \right\} 15 = HY = \eta\gamma
 \left. \begin{array}{l} \\ \\ \\ \\ \\ \\ \end{array} \right\} HVHY = \eta\gamma\eta\eta = 26$$

YAHWEH (YHVH) prescribes the seven scales, its four letter values being the numbers of Pythagorean notes in four sets of scales. Alternatively, the letter values are the numbers of four sets of notes:

$$26 = 5 \times (9/8) + 6 \times (3/2) + 3 \times (81/64) + 2 \times (243/128) + 6 \times (4/3) + 4 \times (27/16)$$

$$\begin{array}{cccc}
 5 & 6 & 5 & 10 \\
 H & V & H & Y
 \end{array}$$

This property of a single octave of the Pythagorean scale is the counterpart of the **26** overtones in the first **55** notes after the tonic of eight octaves of this scale — another holistic set.

As they are both parameters of a holistic system, the numbers **26** and **55** are always found associated with each other in sacred geometrical representations of such systems. This, too, is the case, arithmetically speaking, because the sum of the first ten integers arranged in a tetractys is **55**, whilst **26** is the number of the combinations of the integers in each row:

$$\begin{array}{c}
 \text{Number of combinations} \\
 \begin{array}{ccccccc}
 & & 1 & & & & \\
 & 2 & 3 & & & & \\
 55 = & 4 & 5 & 6 & & & \\
 & 7 & 8 & 9 & 10 & & \\
 & & & & & & 1 \\
 & & & & & & 3 \\
 & & & & & & 7 \\
 & & & & & & 15 \\
 \hline
 & & & & & & \text{Total} = 26
 \end{array}
 \end{array}$$

Another example of this association is the fact that there are **55** SLs on the central Pillar of Equilibrium of the lowest **26** Trees of Life in CTOL (Fig. 5). The Malkuths of these Trees of Life can be regarded as corresponding to the **26** overtones and the remaining 29 SLs on this pillar can be thought of as corresponding to the 29 partials. The correspondence demonstrates that the notes of the Pythagorean scale conform to an underlying Tree of Life pattern. **21** SLs span the central pillar of the lowest nine Trees of Life. As a map of the **26**-dimensional space-time predicted by quantum mechanics for spinless strings, each Tree of Life in this context denotes a dimension. The 9-tree represents the nine spatial dimensions predicted by superstring theory. Hence, the **21:34** division of **55** found earlier for the first **3** of the **8** octaves spanned by **55** notes has its counterpart in string theory as the distinction between the nine superstring and 16 bosonic dimensions of space. Fibonacci numbers define the demarcation between the two types of dimensions! The Fibonacci number **5** determines the 1-tree with **5** SLs on its central pillar and the number **13** determines the 5-tree with **13** SLs on its central pillar. The counterpart of the **21:34** division of SLs on the central pillar of the **26**-tree is the transition from the Upper Face of the 1-tree with **34** geometrical elements to its Lower Face with **21** elements. Its counterpart in the five Platonic solids is the transition from the first four solids with **34** vertices & centres to the final solid — the dodecahedron — with **21** vertices & centre (see Fig. 3). In Article 50 (Part 1), it was pointed out that the faces of the five

Platonic solids have 550 (=55×10) corners, edges and sectors. The faces of the first four Platonic solids have 210 (=21×10) *polyhedral* corners, edges & sectors, leaving 340 (=34×10) corners, edges & sectors (8). Once again, the 21:34 division differentiates the dodecahedron from the first four regular polyhedra. The ancient Greeks believed that the latter were the shapes of the particles of the Elements of Earth, Water, Air and Fire making up the physical universe. Through the shared Fibonacci number 21, they are associated with superstring space-time with nine spatial dimensions, whilst the fifth Platonic solid representing the fifth Element Aether is associated through the Fibonacci number 34 with the purely bosonic string dimensions of space-time.

The tenth Fibonacci number 55 determines the nine superstring dimensions in another way. The 55th SL from the bottom of CTOL is Chesed of the ninth Tree of Life mapping the ninth of the spatial dimensions of superstrings. This SL is the 496th SL from its top. The tetractys representation of the 550 SLs of CTOL:

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

implies that the central number 55, which occupies the position of the point symbolizing Malkuth in the tetractys counterpart of the Tree of Life, characterizes the physical universe in a fundamental way. Remarkably, the gematria number value of Malkuth is 496 (see Table 1). Even more remarkably, this is the number of spin-1 gauge bosons that mediate the unified interactions between superstrings with nine spatial dimensions mapped by the nine lowest Trees in CTOL. We saw earlier that the 21:34 division of SLs on the central pillar of CTOL demarcates the nine superstring dimensions from the 16 bosonic string dimensions. The 21:34 division of *all* SLs up to the first Sephirah of Construction of the ninth Tree of Life distinguishes the 3 large-scale dimensions of space from the 6 compactified dimensions of superstrings because, counting from the bottom of CTOL, there are 21 SLs up to Binah of the third Tree of Life mapping the third spatial dimension and 34 SLs in the next 6 Trees of Life above it up to Chesed of the ninth Tree of Life. Below are listed analogous examples of the fundamental bifurcation of holistic systems created by these Fibonacci numbers:

| 21                                    | 34                                                     |
|---------------------------------------|--------------------------------------------------------|
| 1st 3 octaves                         | 1st 5 octaves                                          |
| last 15 overtones                     | 1st 11 overtones                                       |
| Lower Face                            | Upper Face                                             |
| 1st 3 Platonic solids or dodecahedron | icosahedron & dodecahedron or 1st four Platonic solids |
| 9 superstring dimensions              | 16 bosonic string dimensions                           |
| 3 large-scale dimensions              | 6 compactified dimensions                              |

A musical chord is a set of 3 or more notes that sound simultaneously. There are some combinations of 3 notes that, when played together, produce a sensation of *harmony, rest and stability*. They are the so-called 'consonant chords' and there are only two types of them: major and minor chords. The rest of the chords are dissonant. An example of a consonant chord well-known to musicians is the C major chord composed of the notes C, E & G. They are the first, third & fifth notes of the eight-note Pythagorean scale. The numbers 1, 3, 5 & 8 are all Fibonacci numbers. The following consideration indicates that this is not coincidence but indicative of how the human ear is tuned to a harmony determined by the Fibonacci numbers, just as the connection of the latter to the Golden Ratio has been recognised by artists and architects as creating forms with proportions that please the eye: the first 21 notes after the tonic span 3 octaves, the next 34 notes span 5 octaves and 55 notes are between the tonic and 8th octave. The same Fibonacci numbers re-appear! Just as the octave is a musical whole of 8 notes, so these 55 notes solely belonging to 8 octaves constitute another *analogous* whole in which each note is replaced by an octave. Just as there are 27 intervals less than an octave between the 8 notes of a musical scale, so there are 27 harmonics (notes with integer tone ratios) below the eighth octave. The 21:34 division separates the first 3 octaves from the last 5. Its counterpart in the single octave is E, the major second, and its inversion (the interval between it and the first octave). The 34:21 division separates the first 5 octaves from the last 3 octaves. Its counterpart is G, the perfect fifth. In terms of the letter values of YHVH, the division is set by that between VH and YH. The perfect fifth represents the fundamental division of the octave interval. It is set by this ancient division of Tetragrammaton, the sacred Name of God, because YAH (Hebrew: YH) was the form used particularly by the prophet Jacob and his people (9).

## 5. The 21:34 division in the 2-dimensional Sri Yantra

Revered by Hindus as the most powerful and sacred of the Yantras, or meditative images, the Sri Yantra (Fig. 6) consists of nine interlocking triangles. Five triangles point downwards and four triangles point upwards. This generates 42 triangles arranged in four sets of 8, 10, 10 & 14. They surround a downward

pointing triangle at the centre of which is a point, or bindu. Article 35 (10) analysed the 2-dimensional Sri Yantra, showing its equivalence to the Tree of Life because the former consists of 70 points and the 43 triangles of the latter comprise 70 points when its 16 triangles are tetractyses (Fig. 7). Two of them — the central point called the “bindu” and the lowest corner of the central, downward-pointing triangle — are unshared with the 42 surrounding triangles. Hence, 68 corners of the latter surround the central triangle,

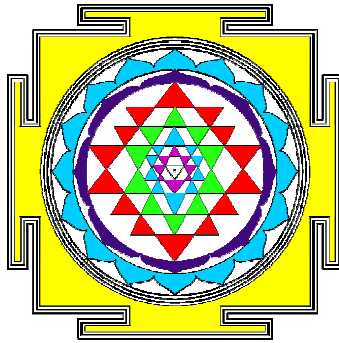
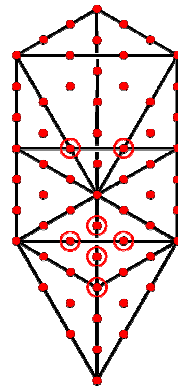


Figure 6. The Sri Yantra.



= 70 =

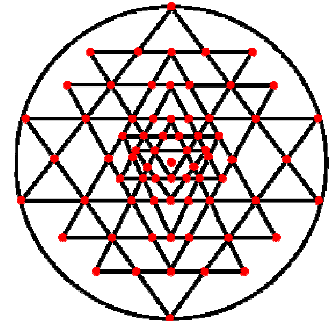


Figure 7. The equivalence of the Tree of Life and the Sri Yantra

34 corners per set of 21 triangles in each half of the Sri Yantra. There are (34+21=55) corners & centres of these 21 triangles (Fig. 8). The primary 21:34 division found in other sacred geometries differentiates between the corners and centres of the triangles in each half of this ancient symbol of divine creation. It also differentiates between the fourth set of 14 triangles, which have 21 corners & centres, and the first

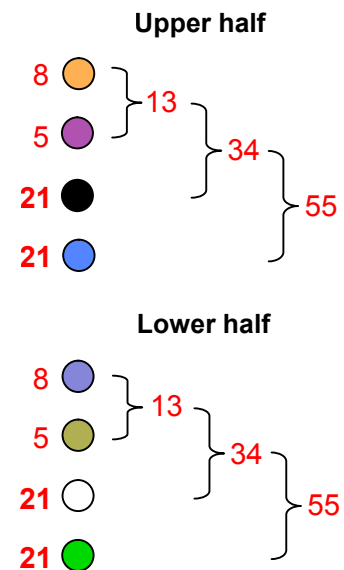
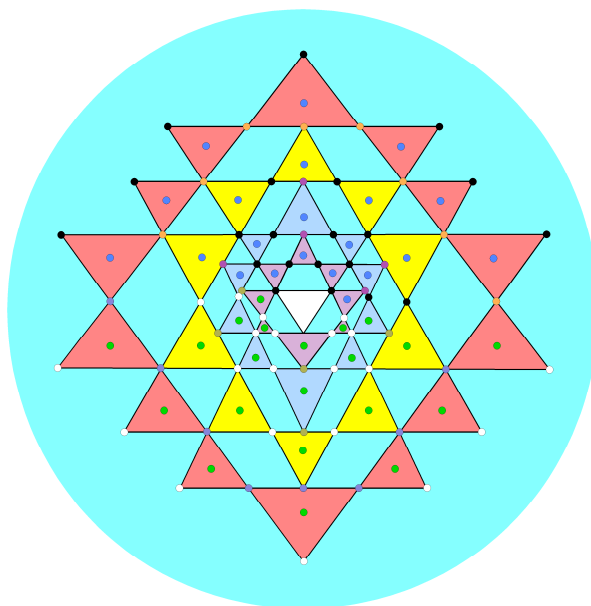


Figure 8. The Fibonacci number pattern in each half of the 2-dimensional Sri Yantra.

three sets of 28 triangles, which have 34 corners & centres. Below are listed the Fibonacci numbers in the 21 triangles in each half of the Sri Yantra:

|         |                                                                                     | Corners | Total | Centres | Total |
|---------|-------------------------------------------------------------------------------------|---------|-------|---------|-------|
| 4th     |  | 7 + 7   | 14    | 7       | 21    |
| 3rd     |  | 1 + 5   | 6     | 5       | 11    |
| 2nd     |  | 3 + 5   | 8     | 5       | 13    |
| 1st     |  | 2 + 4   | 6     | 4       | 10    |
| Total = |                                                                                     | 13 21   | 34    | 21      | 55    |

34 = 13 + 21

The 34 corners & centres of the first three sets comprise 13 corners & centres of the second set and  $(11+10=21)$  corners & centres of the first and third sets. The 13 corners & centres of the second set comprise 5 centres and  $(3+5=8)$  corners, 3 of which touch sides of triangles. The 21 corners & centres of the first and third sets comprise groups of 8  $((1+2)+5=3+5)$  and 13  $(5+4+4=5+8)$ . Of the 34 corners, 13 corners either touch sides of triangles  $(1+2+3)$  or are the seven outer corners of the fourth set of triangles, leaving 21 other corners  $(7+5+5+4)$ .

Comparing the 55 corners & centres of each half of the Sri Yantra with the 55 corners, edges & triangles of the 1-tree, the 21 centres of triangles in each half correspond to the 21 geometrical elements in the Lower Face and the 34 other corners & centres in each half correspond to 34 geometrical elements in the remainder of the 1-tree.

Finally, an example of how the 21:34 division manifests in flowers is the 21 anticlockwise spirals and 34 clockwise spirals of florets in some sunflowers (Fig. 9), although they manifest other pairs of successive Fibonacci numbers as well. Such numbers optimise the packing of florets so that they occupy equal space, maximising the amount of sunlight to which they can be exposed. On many plants, the number of

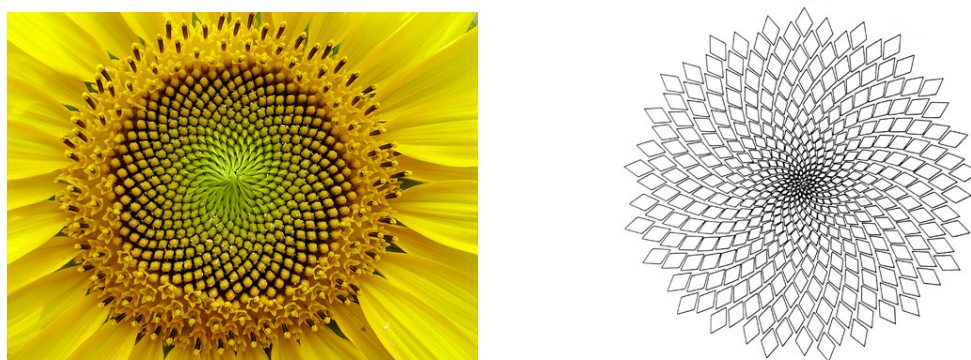


Figure 9. This sunflower has 55 spirals of florets arranged in 34 clockwise spirals and 21 anticlockwise spirals.

petals is a Fibonacci number. The aster, black-eyed susan and chicory have 21 petals; plantain and pyrethrum both have 34 petals (11). The Lucas numbers, which are related to Fibonacci numbers (12), also appear sometimes in flowers. We now see that the distinction between 21 and 34 is one that manifests not only in the world of plants but also in the notes of the Pythagorean musical scale and in the dimensions of the space-time of the infinitesimally small superstrings, demarcating the Lower Face of the Tree of Life blueprint from its Upper Face, i.e., the personal and transpersonal levels of consciousness, as well as the centres of the triangles in each half of the Sri Yantra and their corners. Such universality is aptly embodied in the hermetic principle “As above, so below.”

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