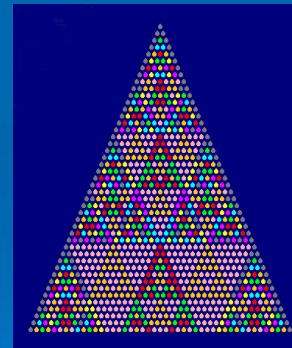
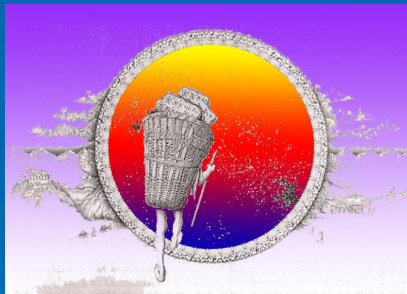
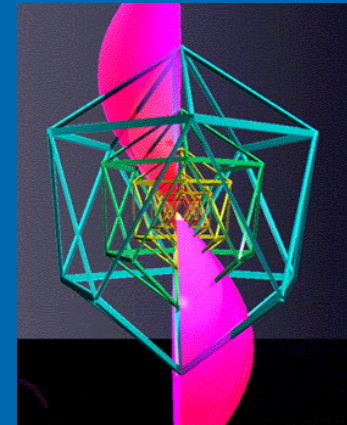
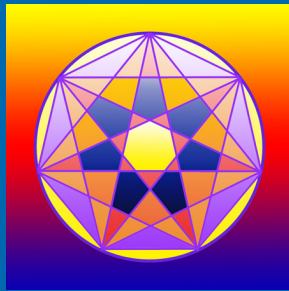


SG202.Ia The Power of Archetypal Numbers

Online Module SG 202 / Intern II



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SG202.Ib The Power of Archetypal Numbers - Contents

Introduction

1. Numbers in Ancient Traditions

- 1.1 Modulations on Unity
- 1.2 The Qualities of Numbers (1-2)
- 1.3 Historical Quotes (1-2)
- 1.4 Origins of Numbers (1-6)
- 1.5 Base-60 Sumer (1-3)
- 1.6 Vedic Numbers (1-3)
- 1.7 Egypt: Harmonic Reciprocity
- 1.8 Ancient Harmonic Reciprocity
- 1.9 Pythagorean Legacy (1-4)
- 1.10 History of Perfect Numbers
- 1.11 Greek Gematria (1-3)
- 1.12 Early Gnosticism
- 1.13 The Church Fathers
- 1.14 Medieval Number Mysticism
- 1.15 Dante's Divine Comedy
- 1.16 Early Number Notations (1-3)

2. Modern History of Numbers

- 2.1 About Number Notation (1-2)
- 2.2 The Hindu-Arabic Numerals (1-2)
- 2.3 The New Numerals in Europe
- 2.4 Church Politics & New Numerals
- 2.5 Abacists versus Algorists
- 2.6 The Second Wave of New Numerals
- 2.7 The Garden of Cyrus
- 2.8 Renaissance Number Symbolism
- 2.9 Kabbalah Tradition
- 2.10 Modern Numerology
- 2.11 Dance Interlude

3. The Remarkable Zero

- 3.1 The Legend of Sessa
- 3.2 Zero as Shunya
- 3.3 Mystical Shunya
- 3.4 Zero and Infinity
- 3.5 The Family Tree of Zero
- 3.6 Zero as Naught
- 3.7 Zero as "Zero Point"
- 3.8 Zero as Doorway
- 3.9 Zero in Oriental Cultures
- 3.10 The "O" of Giotto
- 3.11 "O" as Shape & Sound
- 3.12 The Dance of Zero and One (1-2)

4. Archetypal Numbers 1-7

- 4.0 The Numbers 1-7
- 4.1 The Monad (1-4)
- 4.2. The Dyad (1-7)
- 4.3 The Triad (1-7)
- 4.4 The Tetrad (1-5)
- 4.5 The Pentad (1-5)
- 4.6 The Hexad (1-5)
- 4.7 The Heptad (1-4)
- 4.8 Summary Numbers 1-7

5. Archetypal Numbers 8-13

- 5.1 The Octad (1-5)
- 5.2 The Ennead (1-5)
- 5.3 The Decad (1-5)
- 5.4 The Endecad
- 5.5 The Dodecad (1-4)

5.6 The Tridecad (1-4)

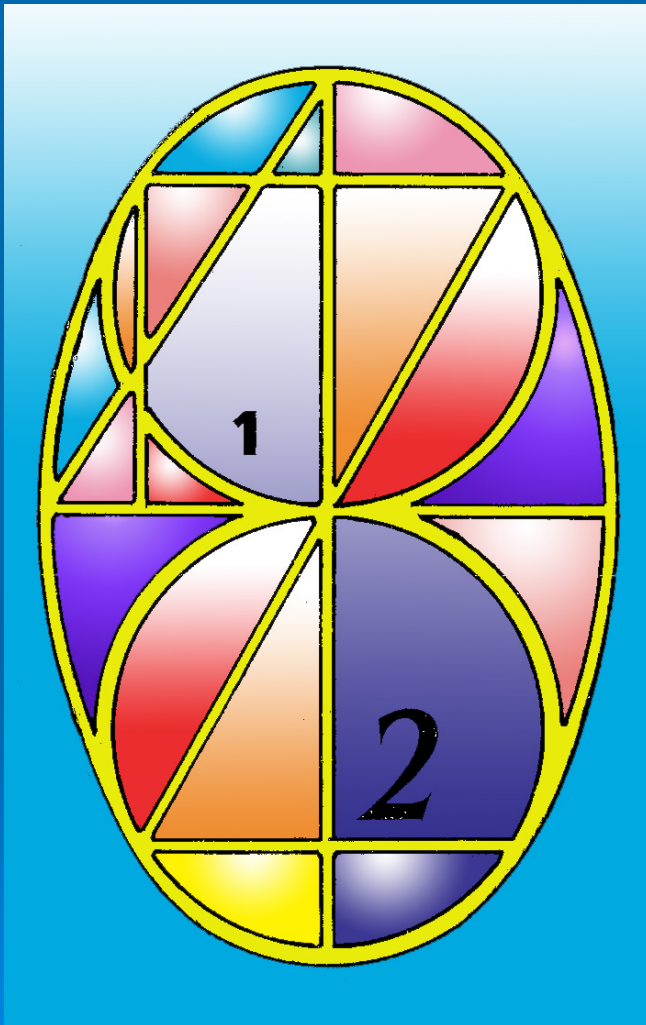
- 5.7 Summary Numbers 8-13
- 5.8 The sacred Circle

6. Canonic Numbers

- 6.1 An ancient Canon of Harmony (1-2)
- 6.2 The New Jerusalem Matrix (1-2)
- 6.3 The Hindu Time Cycles (1-2)
- 6.4 Master Numbers & Repdigits
- 6.5 Numbers in Magic Squares
- 6.6 The "World Soul" Numbers
- 6.7 Canonic Numbers as Music
- 6.8 The Pulse of 3-6-9
- 6.9 The "72" Tribe (1-2)
- 6.10 Number 108
- 6.11 Number 144 (1-2)
- 6.12 Number 432
- 6.13 Number 666
- 6.14 Number 1080
- 6.15 Number of Fusion 174
- 6.16 Number 3168
- 6.17 Number 5040
- 6.18 The Number Field

Conclusion

SG202.1c The Power of Archetypal Numbers



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SG202.Id The Power of Archetypal Numbers



Field Daisy: 21 petals



Shasta Daisy: 34 petals

Numbers are one of the many aspects of life we usually take for “granted”, as we routinely juggle with them everyday from time & calendar reckoning to telephone numbers to money accounting... to simply counting the petals on a daisy...

In the “Daisy Love Oracle”, a traditional way of counting the petals is a cycle of 5:

- 1 = I love you (or) he/she loves me.
- 2 = A little bit
- 3 = A lot
- 4 = Passionately
- 5 = To be crazy

The interesting part is that, if you know your Sacred Geometry and phyllotaxy (the arrangement of flowers, seeds & petals in plants), you can predict the outcome of the daisy oracle. Daisies, even though diversified in over 20,000 recognized species, are small sunflowers and, like their larger parents, tend to display the Fibonacci Numbers in their petal count. Field daisies usually show 21 petals, while Shasta daisies show 34 petals... So, make sure you pick the right daisy!!!

Yet, if you care to pay attention to the numbers popping up in your life, you will realize that NUMBERS have a profound meaning, pointing to deeper & larger realities through special relationships and resonant proportions within the Cosmic Matrix.

NUMBERS CARRY AN IMMENSE VIBRATIONAL POWER.

In this SG202 module, we are going to meet Numbers as friends, allies, teachers and spiritual, intelligent principles of the cosmos. We will rediscover how to navigate the Number Field as an ocean of primordial frequencies weaving Origin into manifold manifestation. The first 2 chapters are mostly historical, offering first the traditional, sacred geometric understanding of numbers as qualities and then the story of the Hindu-Arabic numerals with their efficient “zero” and attendant quantitative, reductionist mindset. The remaining chapters are a numerical & symbolical journey into numbers 0 - 13 and some excursions among special “canonic” numbers.

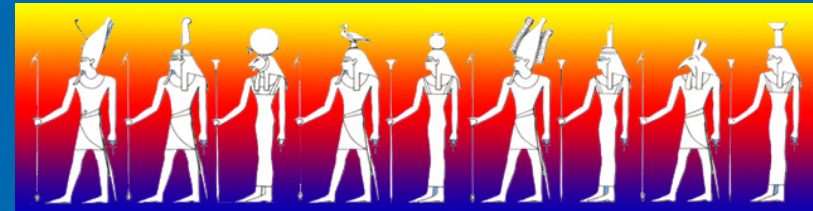
SG202.1 Chapter 1. Numbers in Ancient Traditions



SG202.1.1 Numbers: Modulations on Unity

In the ancient wisdom that originated Sacred Geometry, all numbers are modulations of Unity and therefore reflect and contain it, in a form of fractal holography applied to numbers. In other words, the potential seed-aspects of Unity are moving into manifestation through the play and display of numbers. The wave of Oneness vibrates through all numbers.

And, among the myriad numbers, the first NINE primary digits (the venerable Ennead) are the first Ring of Power, the first family, the famous “company of Gods and Goddesses” of the ancient cultures. Through this special kin family, Unity then actualizes the universe. All the other numbers can be retraced to these nine original parents: they can actually be synthesized back to them by a traditional “sacred process” called Digit Reduction [◆SG202.1.11].

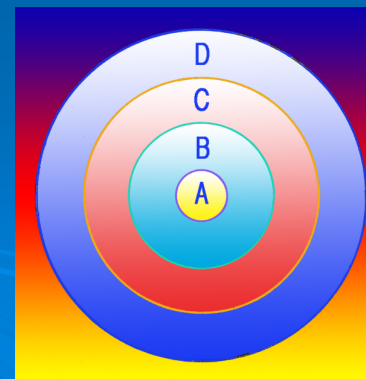
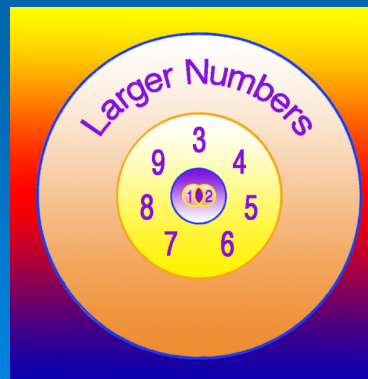
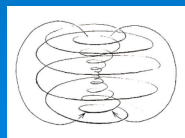


↑ The Heliopolitan Ennead from Egypt.

In current terms, counting numbers are called “natural numbers” or “positive integers”. They are no longer perceived as being more than mere accounting units and there is not much distinction between them: they blend in a fuzzy pool and are being juggled on calculators without much sense of pattern recognition or symbolic resonance. The historical process of flattening synthetic cosmologies and focusing human perception to utilitarian goals has brought the inner-dimensional vortexing of numbers into a meaningless anonymity.

In view of this situation, the time-honored process of “Digit Reduction” could be an essential key in revivifying our relationship to Numbers and perceiving them again as living forces of the Cosmos.

The ancient view →
of numbers is centripetal:
3 - 9 are generated by the
“cosmic parents” 1 and 2.
It is a vortex back to center
as Origin-Unity.



← The modern view of numbers
is centrifugal: it expands towards
the periphery, losing reference to
Unity.

- A. Natural numbers
- B. Rational numbers
- C. Irrational numbers
- D. Imaginary numbers...

SG202.1.2.1 The Qualities of Numbers (1)

In traditional sacred societies, NUMBERS, first and foremost, expressed qualities and powers - even before pointing to quantities. They were primordial symbols of the archetypal energies at play in the Cosmos.

In the traditional cosmologies of a unified, harmonious and living universe, numbers and their relationships are actual “codes of creation”. The number of things or actions are not just pure “happenstance” but possess great meaning bearing on all aspects of human behavior. Keen reckoning of numbers appearing in life and nature allows for a direct understanding of the laws and causations underlying existence.

In Creation myths, the Maker of the World first sets up a matrix of numbers & geometries from which all creation proceeded. He/she who knows the original matrix attains cosmic wisdom.

Number tallying (Arithmetic) and its extension Numerology may well be the oldest art-science. Plato, reporting on Egyptian temple wisdom, called Numbers “*the highest dimension of knowledge*”. From the I Ching to Mayan calendrics to the many systems of gematria and geomancy, numbers have always been recognized as the framework, the architecture of the universe, i.e. ideal principles “*co-eternal with Truth*” and pointing to the Source of All as Unity.

All ancient traditions hold that Numbers should be handled with conscious care as they contain an inner and hidden POWER OF CREATION.

1	2	3	4	5	6	7	8	9	0
𐤀	𐤁	𐤂	𐤃	𐤄	𐤅	𐤆	𐤇	𐤈	𐤉

In the traditional view, ONE (Unity) and TWO (Duality) were not considered as numbers per se but rather as the “progenitors” of numbers, the Yin and the Yang engendering the number family. The manifested universe (and its multiple numbers) starts with Three.

Some languages make a clear distinction between Numbers-as-Qualities and Numerals-as-Quantities.

For example:
In German - “Zahl”
and “Ziffer”
In French - “Nombre”
and “Chiffre”.



SG202.1.2.2 The Qualities of Numbers (2)

In the traditional language of number symbolism, numbers have an eminent spiritual NOBILITY. They are not to be confused with the profane numbers of “commercial calculations”. The study of Number, for the ancient philosophers, took precedence over all the other sciences because they saw Number as being at the origin of creation and at the root of all knowledge. Each number was embodied in a “god” or dynamic principle of nature.

Plato said that arithmetic is to be studied “*for the sake of pure knowledge*”. Plato insisted upon Number as the first study for the rulers of his ideal city-state because of the ability of Number to raise the mind to the level of archetypal thought (“*that which always is and never becomes*”) as opposed to the phenomenal world of appearances (“*that which is always becoming and never is*”).

For the ancient wisdom, there was, within the number field itself, certain groups & harmonic series of universal numbers functioning as creative hubs or nodes for weaving the manifested fabric of life and nature. This was called the sacred “Canon”, an advanced tool for investigating the universe. [◆SG202.6.1]. Numbers were providing prime cosmological insights into the architectonics of the universe and the “unified field”. Egyptian Pharaonic mathematics, for instance, were based on fractional reciprocity within an overall harmonic number field.

Numbers were seen and known as being ALIVE. One could speak of a sociology and a psychology of numbers. They were perceived as engaged in a web of relationships, using and combining their individual properties to optimize small and large projects of co-creation. The division of numbers into odd and even reflected the cosmic YIN-YANG, the universal sexual polarities. This “gender” was further divided into *evenly-even* (examples: 2, 4, 8, 16, 32, 64...), *evenly-odd* (examples: $6 = 3 + 3$, $10 = 5 + 5$, $18 = 9 + 9$... composed of 2 odd-number halves), and the *unevenly-even* (examples: 24 & 28... they can be divided into even-number halves but eventually resolve themselves into odd numbers).

The Pythagorean and Neo-Platonician writers of antiquity describe many other “qualities” of numbers: primes & composites, square, triangular, oblong, equally-equal, unequally-equal, circular... In the words of John Michell: “*These names commonly refer to the shapes formed by numbers as they are displayed with pebbles or patterns of dots. We still speak of ‘square numbers’... though we are no longer inclined to visualize them literally as square in form. The old method of teaching arithmetic, by showing the relationship of numbers to shapes, was designed to illustrate basic principles...*” [◆SG102.2.6]

Numbers were also defined by their factors or component parts (anciently called the “*aliquot parts*” or “*proper quotient*”). So we have “*perfect*” numbers (example: $6 = 1 \times 6 = 2 \times 3 = 1 + 2 + 3$ i.e. they equal the sum of their factors or $S(f) = n$), “*abundant*” numbers (example: $12 = 1 \times 12 = 2 \times 6 = 3 \times 4 = 6 \times 2 = 1 + 2 + 3 + 4 + 6 = 16$ i.e. they are exceeded by the sum of their factors or $S(f) > n$), or “*deficient*” numbers (example: $21 = 1 \times 21 = 3 \times 7 = 7 \times 3 = 1 + 3 + 7 = 11$ i.e. they are more than the sum of their factors or $S(f) < n$). Any two numbers with the sums of their factors adding up to each other were called “amicable”: such a friendship exists between 220 and 284.

The attributes of numbers were made clear first within the Decad, the sacred primordial family. For more specific applications & manifestations, larger numbers were required, generated from harmonic ratios & proportions within the Decad in order to provide an overall fractal scale hinting at the universal music.

“God is in all things as Unity is in all numbers”. Angelus Silesius (1624 -1677). German mystic and poet.

“ALL IS NUMBER!”
***“Numbers alone
allow us to grasp the true
nature of the universe”.***

Pythagoras, quoted by Iamblichus.

On Pythagoras [◆SG102 Chapter 2]



Pythagoras by Raphael

SG202.1.3.1 Numbers: Historical Quotes (1)

***“All things have
a number, and it
is this fact which
enables them to
be known”***

Philolaus
(c. 470-385 BCE)



↑ Plato by
Raphael

On Plato
[◆SG102.3.3]

***“The first and foremost science is
the science of Number in itself...
This science explains how numbers
are created from even and odd, what
are their qualities and how they
communicate their nature to all
things.”***

***“Some numbers are not comparable
with each other but linking them to
geometric surfaces shows their
profound similitude. The one who
understand this marvelous wisdom
realizes that it cannot have been
invented by man but proceeds from
A higher inspiration”.*** Plato.

***“Every diagram and system of number, every
combination of harmony and the agreement of the
revolution of the stars must be made manifest as
one in all
to those who learn in the proper way.***

***It will be made manifest if a person learns
by keeping their focus on unity.
For it will be manifest to us as we reflect, that
there is one natural bond
linking all things.”***

Plato

SG202.1.3.2 Numbers: Historical Quotes (2)



↑ St. Augustine.
Fresco from
the 6th century.



↑ St. Augustine.
By Philippe de Champaigne.
17th century.

“Numbers are the Universal language offered by the deity to humans as confirmation of the truth.”

St. Augustine of Hippo (354-430 CE)



↑ Isidore of Seville

	1		1
	1 2		3
	1 2 3 4		6
	1 2 3 4 5		10
	1 2 3 4 5 6		15
	1 2 3 4 5 6 7		21
	1 2 3 4 5 6 7 8		28
	1 2 3 4 5 6 7 8 9		36
	1 2 3 4 5 6 7 8 9 10		45
	1 2 3 4 5 6 7 8 9 10 11		55
	1 2 3 4 5 6 7 8 9 10 11 12		66
	1 2 3 4 5 6 7 8 9 10 11 12 13		78
	1 2 3 4 5 6 7 8 9 10 11 12 13 14		91
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15		105
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		120
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17		136
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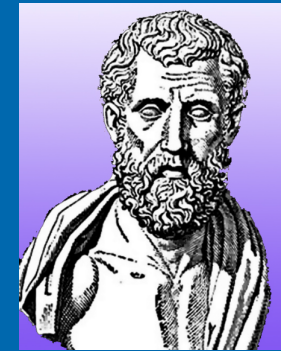
↑ Classical “Ennead”.

*“Tolle numerum omnibus rebus et omnia pereunt”
(Take from all things their numbers, and all shall perish.)*

Isidore of Seville, the ‘last scholar of the ancient world’. (560-636 CE)

“Numbers are the sources of form and energy in the world. They are dynamic and active even among themselves.... Almost human in their capacity for mutual influence.”

Theon of Smyrna.



↑ Theon of Smyrna

↑ Theon of Smyrna (c. 70-135 CE) was a Greek philosopher and mathematician, strongly influenced by the Pythagorean School. His only extant book *On Mathematics Useful for the Understanding of Plato* treats of numbers, music and astronomy. [◆SG102.3.8.1]

“Numbers exist before the objects described by them. The variety of sense objects merely recalls to the soul the notion of number”.

Plotinus (204-270 CE)

[Plotinus is considered to be the founder of Neo-Platonism.]

[◆SG102.3.9]



↑ Plotinus 10

SG202.1.4.1 Origins of Numbers (1): One, Two and Many

From extensive ethnological and psychological studies, it seems that, with no cultural training at all, humans only have a direct and immediate perception of numbers 1 to 4. For as much as it seems strange to us, to recognize 5 or 6 at first glance in a group of bananas or people actually requires training and practice. Beyond 3 or 4, skills and techniques have to be developed: language tools to designate a number series, number-manipulating concepts & strategies, and number-writing & recording techniques.

In fact, various present-day populations in Oceania, America, Africa and Asia have languages which contain only the words for *one*, *two* and *many*.

In his *Universal History of Numbers* (1981), Georges Ifrah explains: “Some indigenous people seem unable to grasp number as an abstract concept. Among these populations, number is ‘felt’ and ‘registered’, but it is perceived as a quality, rather as we perceive smell, color or sounds... These peoples are affected only by changes in their visual field, in a direct subject-object relationship... The plurality of things is measured by them in a qualitative way, without differentiating individual items.”

Parity

Indigenous people using the number system of *one-two-many* possess nonetheless a rule allowing them to manipulate numbers in excess of four.

This is called the Principle of Parity. It is only using the concepts of *one* and *pair*.

In this kind of “parity numbering”:

$$\begin{aligned}5 &= 2-2-1, \\6 &= 2-2-2, \\7 &= 2-2-2-1 \\&\text{etc...}\end{aligned}$$

Ethnologists have recorded the following examples:

- The *Botocudos* (Brazil) had only two terms for numbers: one for *one* and the other for *a pair*. Three was *one and two*, and four was *two and two*. For larger numbers they would just point to their hair.
- The Aranda (Australia) had two terms: *ninta* for one, and *tara* for two. Three and four were expressed as *tara-mi-ninta* (one and two), and *tara-ma-tara* (two and two). For larger quantities, they used the term “*a lot*”.
- The *Murray islanders* used the term *netat* and *neis* for one and two and the expressions *neis-netat* for three and *neis-neis* for four. Beyond, they speak of “*a crowd*”.

Note: The prevalence of One and Two in the traditional mindset may be at the origin of the classical view of the genealogy of numbers in Egypt and the Greek Pythagorean School: One and Two are the primordial “parent numbers” giving rise to the larger family of multiple numbers.

Similarly, 2 years old children perceive quantities as *one-two-many*. Like indigenous people, children seem to function with a nested, fractal perception rooted in a wholistic Oneness.

SG202.1.4.2 Origins (2): The Magpie and the Squire



There is a famous story about a country squire wanting to get rid of a magpie that had made a nest in the castle's watchtower.

Each time the squire got near the nest, the magpie would fly off and wait on a nearby tree for the man to give up and go down.

One day the squire thought of a trick. He got two of his men to go to the tower, instructing one of them to come down after a few minutes, while the other would stay up there. But the magpie would not be fooled and waited for the second man to come down before flying to the nest again.

Then they tried the trick with three men in the tower, two of them going down. But the third man could wait as long as he wanted, the magpie knew that he was still there. The ploy only worked when five or six men went up, showing that the magpie could not really discriminate between numbers greater than 3 or 4.

Georges Ifrah comments:

"Some animals have a rudimentary perception of equivalence and non-equivalence between sets, but only with respect to numerically small sets..."

Goldfinches seem to have a perception of intensity, halfway between a sense of quantity and a sense of quality...

Crows can recognize equivalence and non-equivalence, they have considerable powers of memory, and they can perceive the relative magnitudes of two sets of the same kind separated in time and space.

(The Universal History of Numbers)



About Crows

- Crows & ravens top the Avian IQ scale.
- Crows have also been known to imitate the human voice, just like parrots.
- Crows have been shown to have the ability to visually recognize individual humans by facial features.
- Crows are skilled at manufacturing and using their own tools in the day-to-day search for food.

In the fable *The Crow and the Pitcher* by Aesop (620-560 BC), a thirsty crow comes upon a pitcher with water at the bottom, beyond the reach of its beak. After failing to push over the pitcher, the crow devises a clever plan: it drops in pebbles, one by one, until the water rises to the top of the pitcher, allowing the crow to drink. (PS: This feat has been recently documented.)

SG202.1.4.3 Origins (3): The Limit of Four

For as much as traditional & indigenous peoples, in their ability to count and conceptualize, have been condescendingly labeled “primitive”, we are only doing “better” at perceiving quantities because of accumulated, acquired cultural techniques such as actual counting with an elaborate number system. In actuality, we can see, at first glance, sets of one, two, three and four objects. That is about the limit of the natural human ability. This is called the “Limit of Four”. Beyond four, our eyes alone cannot tell how many objects there are: we have to count to find out!

“It would be a grave error to think that we would do better than a Torres Strait islander at recognizing number if all we had to use were our natural faculties of perception... There really can be no debate about it now:

Natural human ability to perceive number, by innate aptitude alone, does not exceed four!”

(Georges Ifrah. The Universal History of Numbers.)

Georges Ifrah gives the following examples of linguistic & cultural traces of the “Limit of Four”:

- Several oceanic languages distinguish between nouns in the singular, the dual, the triple, the quadruple... and the plural.
- In Latin, the names of the first four numbers (*unus, duo, tres, quattuor*) decline at least in part like other nouns and adjectives, but from five (*quinque*) on, Latin numerals are invariable.
- Romans gave individual names to their first four sons but the fifth and subsequent sons were named only by a numeral (i.e. Quintus, Sixtus etc...).
- Another confirmation of the basic perceptual “limit of four” is the almost universal “five-barred” counting used by inn-keepers, card-players etc...
- Most number-notations the world has known start with 1, 2, 3, 4 strokes but then have a different sign for *five* instead of five strokes, in order to cope with the unavoidable fact that beyond *four* nobody can intuitively read a sequence of 5 strokes or more. Below are two among many examples.

1	I	6	⚡ I
2	II	7	⚡ II
3	III	8	⚡ III
4	IIII	9	⚡ IIII
5	⚡	10	⚡ ⚡

↑ The “Five-barred Gate” system of keeping scores.

ARAMAIC (Mesopotamia)
Khatra script: First decades of CE

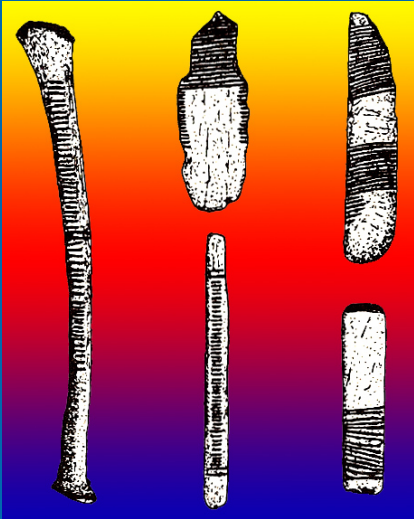
				>	>	>	>	>
1	2	3	4	5	6	7	8	9

MAYAN CIVILISATION
Pre-Columbian Central America, 3rd to 14th centuries CE

•	••	•••	••••	—	•	••	•••	••••
1	2	3	4	5	6	7	8	9

SG202.1.4.4 Origins (4): Tallies

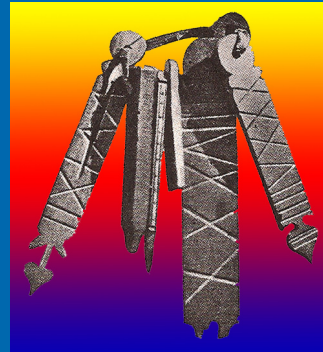
To assess large groupings of things, the traditional way was to create tallies made by notches on bone or wooden sticks. British Exchequer tallies were only discontinued in 1826. And Swiss shepherds still used tallies in the 20th century. Another way is to make lines or piles of pebbles, shells, knucklebones etc... and compare the tallies to exchange goods or verify possessions. All these traditional ways of “counting” rely on a direct visual perception and even whole-body interaction. The “numbers” are linked to objects and shapes embodying qualities as well as rough quantities.



Tally sticks.
Upper Paleolithic era.



↑ Pebble counting



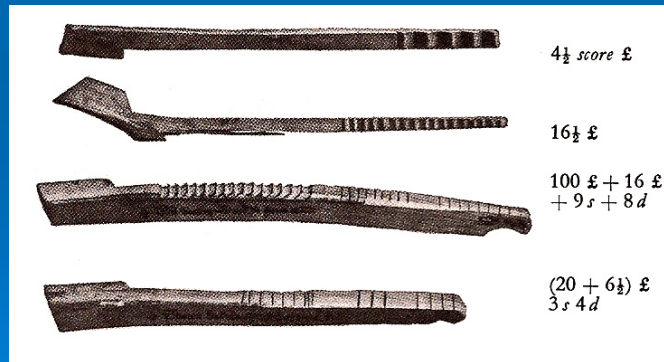
Swiss shepherd tallies



↑ Aboriginal tally sticks.
Australia.



Money cowries



↑ British Exchequer tallies from the 13th century.
On these sticks, the treasury officials carved the amounts of tax owed and paid. These tallies were in use until 1826.
(Karl Menninger. *A Cultural History of Numbers*. 1958, 1969)

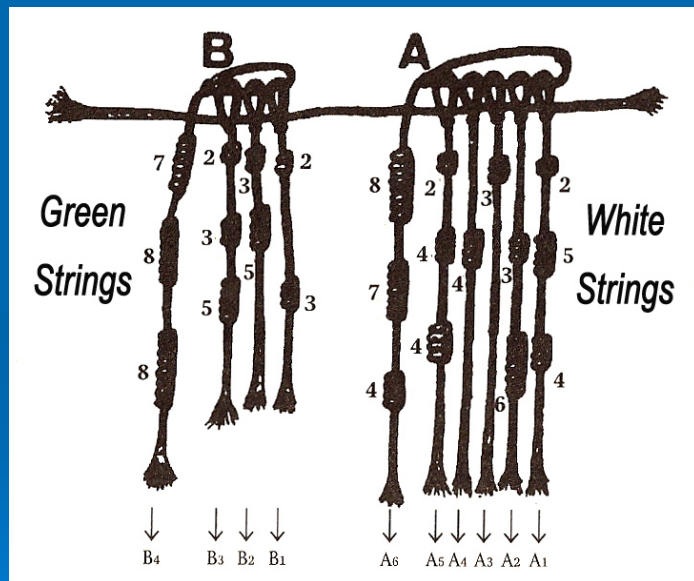
SG202.1.4.5 Origins (5): Knotted Strings

Knotted string as a counting & record-keeping device has been used by various cultures around the world: Arabs, Pacific islanders, Africans, Native Americans...

But the most elaborate system of knotted string was developed by the Incas. The device, known as *Quipu* (Inca = “*knot*”) provided a means for representing liturgical, chronological, financial, commercial and statistical records. *Quipus* used a base ten positional system.

Officers of the Inca Emperor (the *Quipucamayocs* or “*Keepers of the Knots*”) were appointed to each community of the empire with the responsibility for making and reading *quipus* as needed. They were also in charge of supplying the central administration with all necessary inventories.

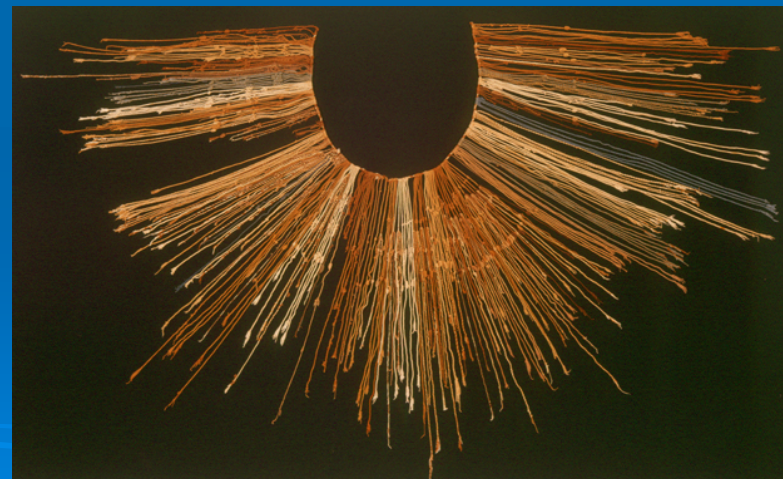
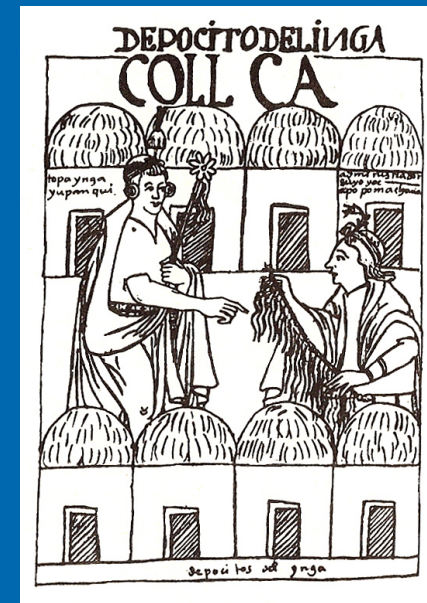
Quipus are so simple and efficient that they continued to be used for many centuries in Peru, Bolivia and Ecuador.



↑ A livestock inventory on a 19th c. *quipu* from the Peru Altiplano. On bunch A (white strings), small livestock: 254 sheep, 36 lambs, 300 goats, 40 kids, 244 ewes = 874. On bunch B (green strings), cattle: 203 bulls, 350 dairy cows, 235 sterile cows = 788.

An Inca Keeper of Quipu → delivering his accounts to an imperial official. (16th c. Peruvian Codex)

(Images from Georges Ifrah. *The Universal History of Numbers.*)



Inca *quipu* or “*talking knots*”. (Wikipedia).

The original 'hand-held computer' was... the human hand. The two hands (counting to 10) and the phalanges (counting to 28) have been - and still are - the most widely used 'handy' tools for calculation. Beyond basics, 'digital accounting' has been developed to an amazing degree in some cultures.

SG202.1.4.6 Origins (6): Hands & Fingers

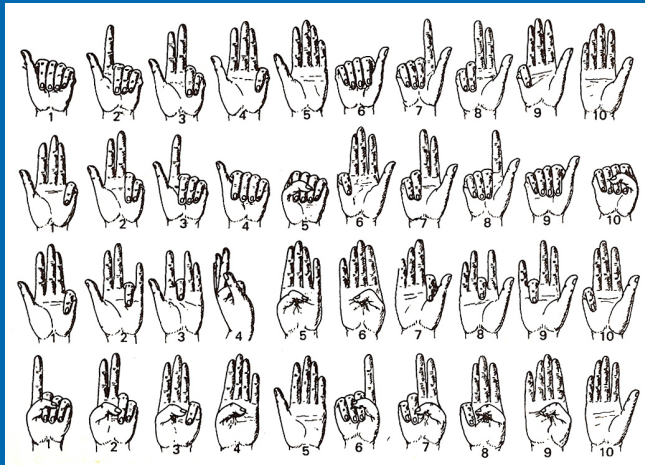
The Game of Morra

Played by the ancient Egyptians, "Morra" grew out of finger counting. In ancient Rome, Morra was called *micatio*, and playing it was referred to as "*micare digitis*" ("to flash with the fingers"). As time passed, the name became *Morra*, a corruption of the verb "*micare*".

The game was so common in ancient Rome that there was a proverb used to denote an honest person which made reference to it: "*dignus est quicum in tenebris mices*" ("he is a worthy man with whom you could play *micatio* in the dark").



↑ Morra game.
Tomb of Beni Hassan (Egypt).



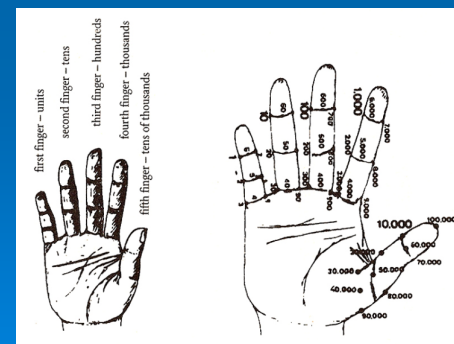
↑ Four different ways to count 1-10.
(Georges Ifrah. *The Universal History of Numbers*)

In the most popular version of *Morra*, both players throw out a single hand, each showing zero to five fingers, and call out loud their guess at what the sum of all fingers shown will be. If one player guesses the sum, that player earns one point. The first player to reach three points wins the game. Popular around the world ("*morra*" in Italy & Spain, "*la moure*" in France, "*mukharaja*" in Islamic countries, "*hua quan*" in China...), the game often serves in settling disputes or priorities.

Hand counting into billions

Mentioned in a Chinese arithmetical textbook of the 16th c., and still in use, here is a highly evolved method for large numbers. Georges Ifrah describes it as follows:
"Each knuckle is divided into 3 parts: left, middle and right knuckle. There being 3 knuckles to a finger, there is a place for each of the 9 digits from 1 -9. Those on the little finger on the right hand correspond to the units, those on the fourth finger to the tens, on the middle finger to the hundreds, the forefinger to the thousands, and finally the right thumb corresponds to the tens of thousands. Similarly on the left hand, the left thumb corresponds to the hundreds of thousands, the forefinger to the millions, the middle finger to the tens of millions, and so on; finally, therefore, on the little finger of the left hand we count by steps of thousands of millions = billions."

This savvy method makes it possible to count up to 99,999 on one hand, and to 9,999,999,999 with both hands!



↑ Right hand counting
in the Chinese method

SG202.1.5.1 Base-60 (1) Sumerian Numbers

Of all ancient world cultures, the Sumerians were unique in their use of a numerical base of 60 (sexagesimal system). They were counting things by 60, powers of 60 and fractions thereof. 10 was introduced as a stepping-stone.

1 - 10 - 60 - 600 - 3,600 (or 60^2) - 216,000 (or $3,600 \times 60$)

60 was understood as a larger “1” and had the same name as the unit 1: *ges*. 60 squared or 3,600 was represented by a circle.

This base-60 system was picked up by the Babylonian astronomers & mathematicians and passed on to the Greeks who in turn transmitted it to the Arabs. This is how we came to carry its vestiges in our time reckoning (hours, minutes & seconds) and our circular measurement in degrees, minutes & seconds.

It is now recognized that much of Greek mathematics should be credited to Babylon, including the “Pythagorean” theorem, the irrationality of $\sqrt{2}$ and the knowledge of string-length ratios. [◆SG102.1.4.1]

Why was the base-60 given such a preeminence in the Sumerian culture? There is lack of consensus among historians. But we can point out several aspects:

1. Mathematically, 60 is a perfect numerical switchboard, a geometric mean between any number and its reciprocal.

It is the lowest common multiple of 10 and 12: the decimal & duodecimal systems can be harmonized within the sexagesimal system. 60 is also the lowest numbers of which all the 6 integers (1 - 6) are divisors, thus allowing easy manipulation of fractions. Indeed, the reciprocal values of the divisors provide convenient factors of progression.

$$60/2 = 1/2 = 30, 60/3 = 1/3 = 20, 60/4 = 1/4 = 15, 60/5 = 1/5 = 12, 60/6 = 1/6 = 10 \text{ and also } 2/3 = 40, 3/4 = 45, 3/5 = 36, 5/6 = 50 \dots$$

2. The base-60 system was directly linked to a well developed arithmological cosmology or number symbolism. For the Sumerians, besides their scientific and economical functions, numbers were primarily describing the structure of the cosmos: they were a mythographic language. For instance, the deified Sumerian numbers, later also used by Babylon, are: 10 - 12 - 15 - 20 - 30 - 40 - and 50, all fractional parts of the “Father” *Anu/An* = 60, the original head of the Sumerian pantheon. (See “*Sumerian Gods*” next page).

3. The Sumerian gods as numbers and their reciprocals are pointing to a ‘wave physics’ of cosmic forces and also to a multi-dimensional harmonic understanding of both mathematical patterns of creation and powers of consciousness.

The sexagesimal system can be read as a tonal system, a musical/harmonic cosmology. (See the “*Harmonics of Base-60*” table).

	1	10	60	600	3,600	36,000	216,000
ARCHAIC NUMBERS (3200 BCE)	Vertical Arrangement						
	Horizontal Arrangement						
Cuneiform Numbers (2700 BCE)							

SG202.1.5.2 Base-60 (2) Sumerian Gods

In his pioneering book *The Myth of Invariance* (1977), Ernest G. McClain applied musical harmonic analysis to ancient cosmologies, showing the correspondences between numerological quantities and tonal qualities. In his study of the fractions and tonal reciprocals of the Sumerian/Babylonian sexagesimal system, McClain uncovered fascinating correlations.

In McClain's words: "*The entire system seems perfectly engineered to fit specific needs of mathematical harmonics... The sexagesimal system is probably the most convenient language for acoustical arithmetic the world ever knew until the system of logarithmic cents was introduced late in the 19th century.*"

"The deified Sumerian numbers, taken over by Babylon, are: 10, 12, 15, 20, 30, 40, and 50, all fractional parts of "father" Anu/An = 60, head of the pantheon.

Their fractional values and god names are indicated here with a brief description of their mythological functions.

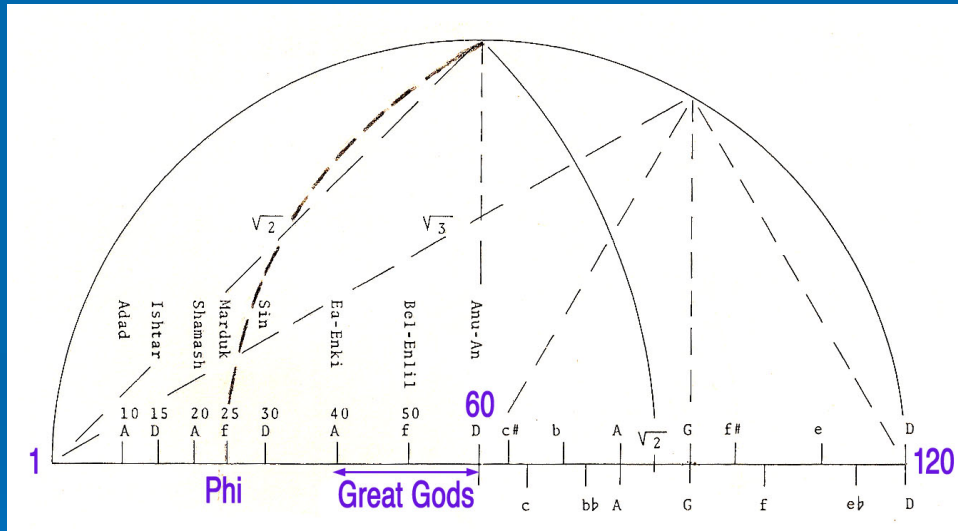
- Anu/An, 60, written as a large 1, "*father of the gods*" and earliest head of the pantheon, is any reference unit. He is equivalent in our notation to $60/60 = 1$, where he functions, according to modern concepts, as "geometric mean in the field of rational numbers."
- Enlil, 50 (5/6), "*god on the mountain*" possessing fifty names, is mankind's special guardian and was promoted to head the pantheon circa 2500 B.C. Enlil deifies in base 60 what the Greeks knew as the human prime number, 5, in their base-10 harmonics. Enlil is generating major thirds of 4:5 and minor thirds of 5:6
- Ea/Enki, 40 (2/3), "*god of the sweet waters*" and perhaps the busiest deity in Sumer, "organizes the earth", including the musical scale. He deifies the divine prime number, 3, in the ratio of the musical fifth 2:3, the most powerful chord in music after the octave.
- Notice that the trio of highest gods (40, 50, 60) generates the whole tonal universe by defining the basic musical triad of 4:5:6 (do, mi, sol, *rising*, and mi, do, la, *falling*). The ratio 4:5 defines a major third and the ratio 5:6 defines a minor third, taken either upward or downward.
- Sin, 30 (1/2), the Moon, establishes the basic Sumerian octave matrix as 1:2 30:60.
- Shamash, 20 (1/3), the Sun, judges the gods.
- Ishtar, 15 (1/4), is the epitome of the feminine as virgin, wife, and everybody's mistress.
- Nergal, 12 (1/5), is god of the underworld.
- Bel/Marduk, 10 (1/6), the biblical Baal, originally was a minor deity but eventually became head of the Babylonian pantheon in the second millennium B.C. He inherited all the powers of the other gods, including Enlil's fifty names, in a giant step toward a "Pythagorized" monotheism built on the first ten numbers." [Note: McClain also correlates Marduk with 25.]

(Ernest G. McClain. *The Myth of Invariance*.)

SG202.1.5.3 Base-60 (3) Harmonics of Base-60

In this table, Ernest G. McClain shows the correspondences between the number 1 to 60, their reciprocals in base-60 and the tonal equivalents. →

- Commas indicate 'places', each 'place' having a base of 60.
- The significance of a number lies only in its RATIO with other numbers.
- String length versus frequency is viewed from the perspective of $60 = 1 = D$ (Re).
- Numbers 1 - 60 are shown with their base-60 reciprocals transcribed so that, for instance, the reciprocal of $40/60 = 2/3 = 1,30$, also meaning $90/60 = 3/2$.
- The most important fractions of 60 are deified: $1/6$, $1/5$, $1/4$, $1/3$, $1/2$, $2/3$ and $5/6$.
- The tone names are nearest equivalents in modern notation.



↑ Sumerian/Babylonian Pantheon on Ptolemy's Monochord

"The sexagesimal system and its reciprocal diatonic scales can be thought of as generated by the first 6 integers ($1:2:3:4:5:6 =$ "days of creation"), or by the Great Gods ($40:50:60 = 4:5:6$), or by the prime numbers 2, 3, and 5.

Since $60 = 1'$, unit radius of the circle, the diameter $= 2 = 120$. Sexagesimal fractions of 'minutes' and 'seconds' are equivalent in decimal arithmetic to a multiplication $120 \times 60^2 = 432,000$, least common denominator if fractions are avoided".

(E. G. McClain. Myth of Invariance)

GODS	Sexagesimal Reciprocals	Tonal Reciprocals		
	2	30	c#	eb
	3	20	f#	bb
	4	15	c#	eb
	5	12	A	G
	6	10	f#	bb
	8	7,30	c#	eb
	9	6,40	b	f
Marduk	10	6	A	G
Nergal	12	5	f#	bb
Ishtar	15	4	D	D
	16	3,45	c#	eb
Shamash	18	3,20	b	f
	20	3	A	G
[Marduk]	24	2,30	f#	bb
	25	2,24	f	b
Sin	27	2,13,20	e	c
	30	2	D	D
	32	1,52,30	c#	eb
Ea-Enki	36	1,40	b	f
	40	1,30	A	G
	45	1,20	G	A
Bel-Enlil	48	1,15	f#	bb
	50	1,12	(f)	(b)
	54	1,6,40	e	c
Anu-An	1	1	D	D

↑
Diatonic/chromatic octave
↓

SG202.1.6.1 Vedic Indian Number System

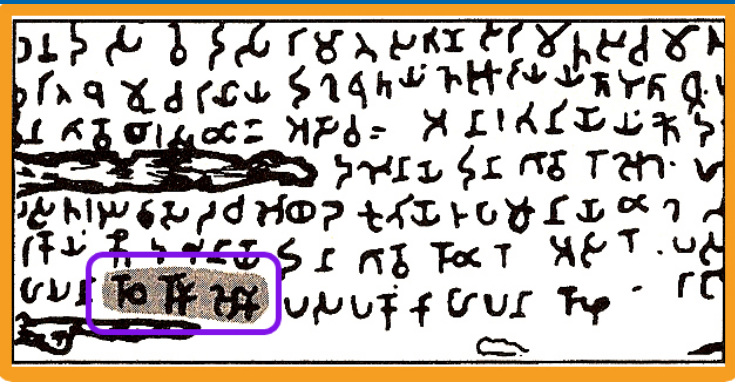
Indian mathematical sciences go back to the Indus Valley civilization (3rd millennium BCE) and the Vedic culture (2nd millennium) [◆SG102.1.2]. Vedic Mathematics and Geometry were working with patterns and sets, linking arithmetic, geometry and music into a coherent science of consciousness. As early as 800 BCE, the *Sulba Sutra* gives a geometric proof of the “Pythagorean Theorem” [◆SG102.2.1]. Also, the Sanskrit language is extremely elaborate, capable of describing mystically perceived multi-dimensions as well as many levels of physical, intellectual and spiritual processes: in fact, Sanskrit has been described as a highly logical language, most suitable for artificial intelligence applications [◆SG303].

In his encyclopedic work *The Universal History of Numbers* (1994; English edition 1998), Georges Ifrah traced (throughout India, South-East and Central Asia) the rich family tree of numerical notations which evolved from the *Brahmi* numerals 1-9. The question of the origins of the Brahmi numerals themselves remains an open discussion among scholars. The earlier Brahmi notation was decimal but was lacking the place-value concept (the “zero”): it relied on “enciphering” (giving a special name and symbol) every ten, hundred, thousand and ten thousand units. For instance the number 24,400 would be represented by the juxtaposition of 20,000 + 4,000 + 400, as below:

𑀓𑀸	𑀓𑀺	𑀓𑀻
20,000	4,000	400

—	=	≡	𑀓	𑀔	𑀕	𑀖	𑀗	𑀘
1	2	3	4	5	6	7	8	9
𑀙	𑀚	𑀛	𑀜	𑀝	𑀞	𑀟	𑀠	𑀡
10	20	30	40	50	60	70	80	90
𑀢	𑀣	𑀤	𑀥	𑀦	𑀧	𑀨	𑀩	𑀪
100	200	500	1,000	4,000	70,000			

↑ One of the various notations for Brahmi numerals



↑ In the blue box is the Brahmi number “24,000”. Nana Ghat, 2nd c. BCE

Using a juxtaposition (additive principle) of enciphered number signs, the Brahmi notation was very limited.

However, historians give the Brahmi numerals as the ancestors of the fully developed system in use today. The two innovations that we have evidence of, starting in the 6th century CE are:

- First: the invention of a positional or place-value system in which each column represented incremental powers of the base (units, tens, hundreds...) i.e. the basic figures have a value depending on the position they occupy in the representation of a number.
- Second: the adoption of a symbol for a fully operational zero that can fill in the empty spaces of missing units and also have the meaning of a null number.

[See ◆SG202.2.2]

SG202.1.6.2 Vedic Mathematical Poetry

In a web article (www.vedicsciences.net), Swami B. B. Visnu describes the use of Indian “gematria” (applying numerical values to the Sanskrit alphabet) for mathematical education. Based on the work of the late the late Bharati Krishna Tirtha Maharaja, author of *Vedic Mathematics* [◆SG102.1.2], a new generation of Vedic scholars is rediscovering the sophistication of Vedic math.

Drawing inspiration from the *Atharva-veda*, Tirtha Maharaja points to many sutras (codes) or aphorisms which appear to apply to every branch of mathematics: arithmetic, algebra, geometry (plane and solid), trigonometry (plane and spherical), conics (geometrical and analytical), astronomy, calculus (differential and integral), etc. Utilizing the techniques derived from these sutras, calculations can be done with incredible ease and simplicity in one's head in a fraction of the time required by modern means.

Mathematical formulas and laws were often taught within the context of spiritual expression (mantra). Thus while learning spiritual lessons, one could also learn mathematical rules. Vedic mathematicians used the *devanagari* letters of the Sanskrit language to represent the various numbers.

Vowels make no difference and it is left to the author to select a particular consonant or vowel at each step. This great latitude allows one to bring about additional meanings of his own choice. For example *kapa*, *tapa*, *papa*, and *yapa* all mean 11. By a particular choice of consonants and vowels one can compose a poetic hymn with double or triple meanings.

Here is an actual sutra of spiritual content, as well as secular mathematical significance: *gopi bhagya madhuvrata srngiso dadhi sandhiga khala jivita khatava gala hala rasandara*.

While this verse is a type of petition to Krishna, when learning it one can also learn the value of $\pi/10$ (i.e. the ratio of the circumference of a circle to its diameter divided by 10) to 32 decimal places. It has a self-contained master-key for extending the evaluation to any number of decimal places.

The translation reads: “O Lord anointed with the yogurt of the milkmaids' worship (Krishna), O savior of the fallen, O master of Shiva, please protect me.” At the same time, by application of the gematria code, this verse directly yields the decimal equivalent of π divided by 10: $\pi/10 = 0.31415926535897932384626433832792$.

Swami Visnu concludes: “Thus, while offering mantric praise to the Godhead in devotion, by this method one can also add to memory significant secular truths. This is the real gist of the Vedic world view: while cultivating transcendental knowledge, one can also come to understand the intricacies of the phenomenal world.”

ka, ta, pa, and ya = 1
kha, tha, pha, and ra = 2
ga, da, ba, and la = 3
Gha, dha, bha, and va = 4
gna, na, ma, and sa = 5
ca, ta, and sa = 6
cha, tha, and sa = 7
ja, da, and ha = 8
jha and dha = 9
ka = zero.

↑ The Sanskrit Number Code

Sanskrit Mantra:
gopi bhagya madhuvrata
srngiso dadhi sandhiga
khala jivita khatava
gala hala rasandara

Translation:
“O Lord anointed
With the yogurt
Of the milkmaids' worship
(Krishna),
O savior of the fallen,
O master of Shiva,
Please protect me.”

Mathematical code:
0.314159265358979
32384626433832792
= $\pi / 10$



Buddha's Large Numbers

The *Lalitavistara Sutra* is a Mahayana Buddhist text (early centuries CE) describing the life of the Buddha along with many vistas into the social & cultural conditions of the times.

In his entertaining book "*The Nothing That Is, A Natural History of Zero*", Robert Kaplan tells of a story found in the *Lalitavistara*.

The story shows the Buddha competing with rivals for the hand of Gopa and easily defeating them in many sports and skills. When time comes for the examination in mathematics, the candidate must name all the numerical ranks beyond a *koti* (ten million = 10^7), each rank being a hundred times greater than the last.

Here is the answer
from Gautama the Buddha:

*Ayuta, Niyuta, Kankara,
Vivara, Achobya, Vivaha,
Utsanga, Bahula, Nagabala,
Titilambha,
Vyavaithanaprajnapti* (10^{31}),
... *Samaptalambha* (10^{37})
... *Visandjnagati* (10^{47})
... *Tallakshana* (10^{53})

A second level of numbering takes the Buddha to 10^{99}
and a final (ninth) level, takes him to 10^{421}



↑ Buddha statue. Sarnath, 4 c. CE

Commenting on this story of the Buddha's computing skills, Robert Kaplan explains:

"Working your way to preposterously large numbers serves not only to extend imagination but as a vehicle for reverence - a way of saying: 'There were giants in those days on the earth'.
Reciting this litany of number-names puts you in touch with vast, invisible powers, conferring on your telling an incantatory, almost a magical, power..."

The names in their variety and euphony stir up a magic that digits (lack)."

SG202.1.6.3 India's Large Numbers

Early in Indian civilization, there was a sort of "passion" for high numbers, partly due to the Sanskrit language itself as most suited to express large numbers, and to the spirit of ordered structure characterizing Indian philosophy & scholarship. This passion contributed to the discovery of the place-value system and led to an understanding of the the concept of mathematical infinity itself.

Early on, each of the ascending powers of 10 up to 10^{18} (= 100 quintillion) was "personally" named, as attested by Al-Biruni in his account of journeying through India (10th c.). By way of comparison, the Greeks barely went past 10,000.

But, beyond mathematical calculations, much larger numbers are recorded:

- In the accounts of mythical times and ages of creation, at the scale of the universe itself: the Day and Life of Brahma, the 4 Yugas or ages of the world... [See ♦SG202.6.3]
A life of Brahma = 311.04 trillion years (*Bhagavad Gita*)
- In historical religious accounts: see, on the left, the "math lesson" of Buddha.
- In the extraordinary mathematical speculations of the Jaina. See below.

Jaina mega numbers

"There are many examples, in the *Anuyogadvara Sutra*, where the sum of the human beings in the creation is given as 2^{96} .
There are other, older Jaina texts, where numbers containing 80 or even 100 orders of units are described as "minuscule" in comparison with numbers as high or greater than 10^{250} (10 to the power of 250).
There is also a period of time called *Shirshaprahelika*, mentioned in Jaina cosmological texts, and expressed as the 'product of 84,000,000 multiplied by itself 28 times' = $(84,000,000)^{28} = 8^{196}$ ".
(Georges Ifrah)

By way of historical comparison, it is noted that the French had to wait until the 13th c. for the introduction of the word *million* in their vocabulary.

SG202.1.7 Egypt: Harmonic Reciprocity

As explained by R. A. Schwaller de Lubicz, the Egyptian mathematical wisdom posits One as the only number, an irrational and incommensurate number. All others numbers are quantities expressed as fractions of One (The Divine, the Totality). The Egyptian numerical progression begins with 1 (rather than zero) and uses natural and real numbers:

1/9, 1/8, 1/7, 1/6, 1/5, 1/4, 1/3, 1/2, **1**, 2, 3, 4, 5, 6, 7, 8, 9

The two “wings” of the notation naturally come out of the central term or source, according to the law of inversion or reciprocity (nowadays, this is called the *reciprocal* or *multiplicative inverse* = $1/x$). Egyptian mathematics was based on this simple, natural series which expressed the law of Harmony because it immediately provided the main musical ratios between the first numbers. These ratios were determined through the essential number manipulation of Egyptian (and Greek) mathematics: the science of mediation or “means”. As Robert Lawlor states: “*The progression of inverse (reciprocal) elements supplies a mental basis for the notion of perpetual interchange through reversal.*”

Inverse Fractions and Music

There are 3 means: **1. Arithmetic Mean:** $b = (a + c) / 2$. **2. Geometric Mean:** $b = \sqrt{ac}$. **3. Harmonic Mean:** $b = (2ac) / a + c$

These ‘means’ contain all basic mathematical operations. The Arithmetic Mean uses addition (and its inverse: subtraction) and expresses the relationships of the series of cardinal numbers: 1, 2, 3, 4, 5... The Geometric Mean uses multiplication (and its inverse: division) and expresses the relationships of geometric series: 2, 4, 8, 16... The Harmonic Mean is a combination of the other two.

The inverse of every Harmonic progression is an Arithmetic progression. For example, 2, 3, 4, 5 is an ascending Arithmetic progression whereas the inverse series 1/2, 1/3, 1/4, 1/5 is a descending Harmonic progression. In music, it is the insertion of the Harmonic and the Arithmetic means between the two extremes of an octave which creates the musical scale: 1, 4/3, 3/2, 2, in terms of vibrational frequency.

In terms of string length, there is an inversion of ratios and a crossing of positions, so we have: 1, 3/4, 3/2, 1/2. The ratio 3/2 corresponds to the tonal interval of the perfect 5th and the ratio 3/4 corresponds to the intervals of the perfect 4th.

Demonstration of Means:

The two extremes are:
1 (the fundamental) and 2 (the octave).

The Arithmetic Mean between 1 (called a)
and 2 (called c) is:

$$(a + c) / 2 = (1 + 2) / 2 = 3/2$$


The Harmonic Mean between 1 and 2 is:
 $(2ac) / a + c = (2 \times 2) / 1 + 2 = 4/3$

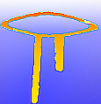
“Our intelligence of things exists only through the original fractioning and the comparison of fractions with one another - which is then an enumeration of the aspects of Unity.” Schwaller de Lubicz

Egyptian Fractions

Fractions are expressed using the glyph of the mouth (“emitting the Word”) as the numerator 1 and unit marks underneath for the denominator. The ‘mouth’ is also the glyph for Ra, the Sun, or Atum-Ra, the supreme being.

The exception is the mystical fraction 2/3, written with two unequal units as denominator and corresponding to the function Phi (Golden Ratio).


$$= 1/3$$


$$= 2/3$$

SG202.1.8 Ancient Harmonic Reciprocity

	NOTE	H M (FOURTH)	A M (FIFTH)	OCTAVE
VIBRATION	1	$\frac{4}{3}$	$\frac{3}{2}$	2
	6	8	9	12
STRING LEGNTH	12	9	8	6
	1	$\frac{3}{4}$	$\frac{2}{3}$	$\frac{1}{2}$
	NOTE	A M (FOURTH)	H M (FIFTH)	OCTAVE

← Simultaneous inversion and crossing of the arithmetic & harmonic means, in music. The ratio of frequency $\frac{3}{2}$ (5th) results from the division of the string by $\frac{2}{3}$ and the ratio of frequency $\frac{4}{3}$ (4th) results from the division of the string by $\frac{3}{4}$. Major and minor are reciprocal tonal patterns. [◆SG201.2]

The inverse function and harmonic reciprocity are found all over nature. In ancient cultures, besides Egypt, we find this understanding in India (allegory of Shiva's drum) and in Greece (the story of the World Soul by Plato). [◆SG202.6.6]

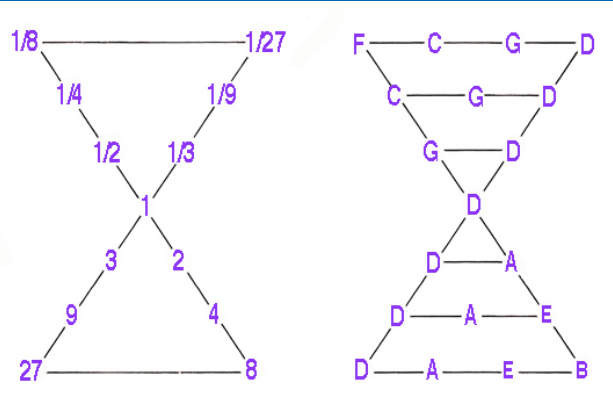


↑ Shiva, in his *Nataraj* (cosmic dancer) form, is depicted holding a drum (*damaru*) symbolizing the sound of creation (AUM.), while in his left hand, he is holding fire symbolizing destruction.

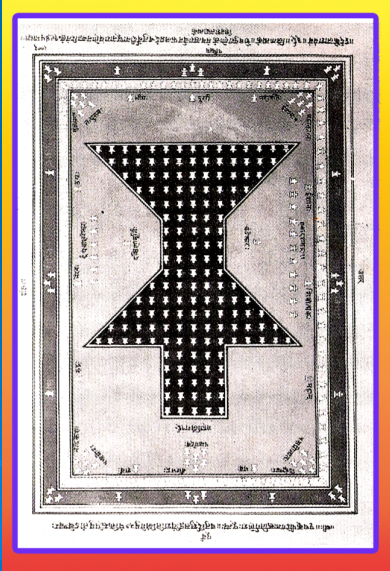
Hindu texts state that the drum beats out both the heartbeat of the smallest animal and the aeons of time between creation and destruction of the universe. The drum has the geometry of two equilateral triangles apex to apex (*Shatkona*), representing the male/female aspects of the Divine. In 3D, the shape is an hour-glass or double vortex.

The upward-pointing triangle represents Shiva (*Parashiva* or *Purusha*) and the downward-pointing triangle represents Skakti (*Parashakti* or *Prakriti*). When they overlap, the two triangles form the 6-pointed star at the center of the heart chakra (*Anahata*).

(Diagrams: Robert Lawlor. *Sacred Geometry*.)



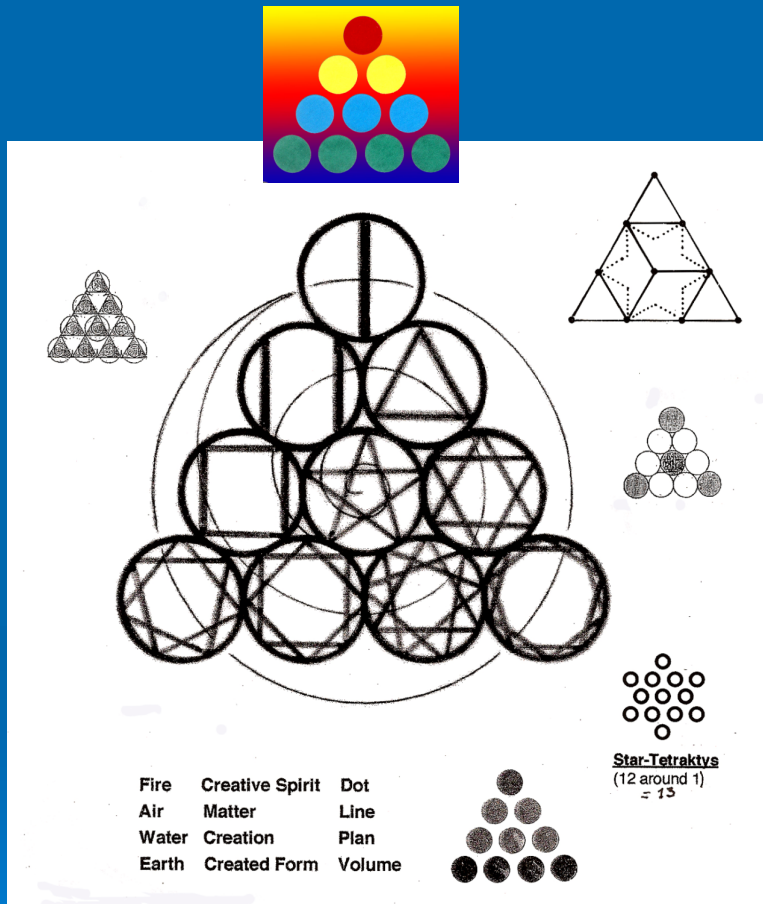
↑ The harmonic scale of the World Soul (Plato).



↑ Drum of Shiva

SG202.1.9.1 The Pythagorean Legacy (1) The Tetraktys

The Pythagorean approach to numbers is founded on two premises: the glorification of the *Decad* and the geometric shapes of numbers. The Decad, under the name of *Tetraktys*, is the archetypal pattern of the universe and the numbers 1-10 are the expression of cosmic/divine principles.



$$1 + 2 + 3 + 4 = 10 \text{ or Decad.}$$

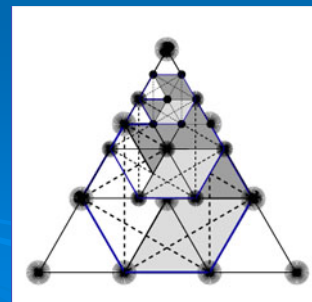
For the Pythagoreans, the *Tetraktys* symbolizes the Perfection of Number: Unity starting at One, proceeding through 4 levels of manifestation, and reuniting with Unity ($1 + 0 = 1$)

As Geometry, the *Tetraktys* represents the point (1), the line (2), the area or plane (3) and the volume (4).

As Music, the *Tetraktys* contains the mathematical harmonic ratios of the musical scale: octave (1:2 or Diapason), perfect fifth (2:3 or diapente), perfect fourth (3:4 or diatessaron) and double octave (4:1).

As a Triangle Number, the *Tetraktys* shows the dynamic quality of triangular growth. It incorporates both the Odd (un-limitedness) and the Even (limitedness), whereas Square Numbers are exclusively composed of odd integers, and Oblong Numbers of even integers. Since the universe is a sacred dance of Limited & Unlimited, the *Tetraktys* was called 'Kosmos' (world order or adornment), 'Ouranos' (Heaven), 'Pan' (the All) and 'Pure Harmony'.

As a Cosmogram, the *Tetraktys* came to be an inclusive paradigm and diagram of the universal 4-level pattern of cosmic manifestation: 4 elements, 4 dimensions...



↑ Cascading Tetraktys
www.organelle.org



↑ Tetraktys with pebbles.

SG202.1.9.2 Pythagorean Legacy (2) Shapes of Numbers

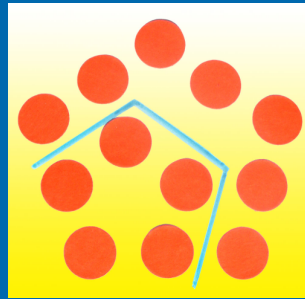
In Greek mathematics, numbers were studied in their different families or kinds. There are even numbers, odd numbers, and irrational numbers (all of which we are familiar with), but the Greeks also classified numbers by SHAPE: triangular numbers, square numbers, pentagonal numbers etc...

For the Pythagorean School, Numbers were living entities with personalities, family identities and an intimate world of relationships, likes & dislikes.

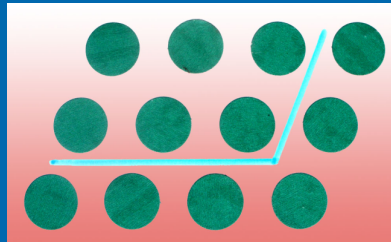
Triangular Numbers can be portrayed as a triangle of evenly placed dots or pebbles. Each Triangular Number is half an Oblong Number.

Every Square Number is the sum of two successive Triangular Numbers. Thus 49 is made up of 21 (6th Triangular) and 28 (7th Triangular).

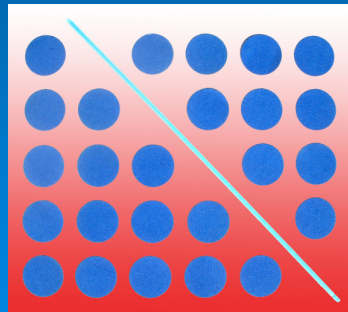
Oblong Numbers are formed by the addition of successive even natural numbers.



↑ Pentagonal Number 12
(5 + 7)



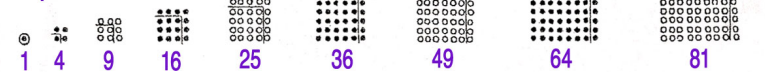
↑ Oblong Number 12 (6 + 6)
[Note that '12' belongs to two families: pentagonal & oblong.]



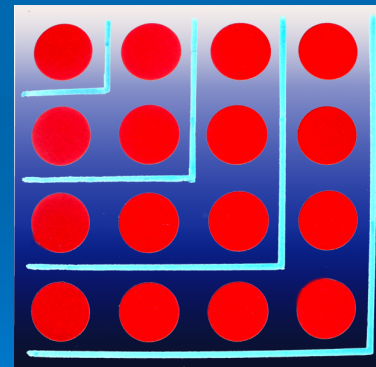
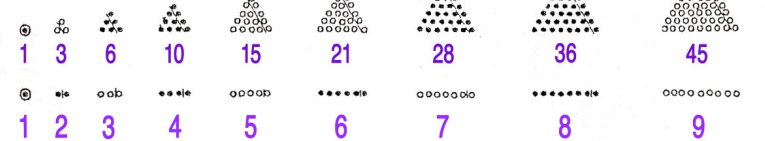
Pentagonal Numbers



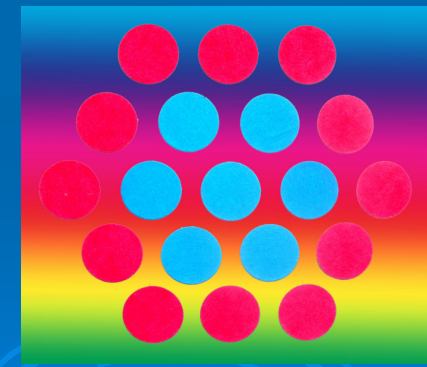
Square Numbers



Triangular Numbers



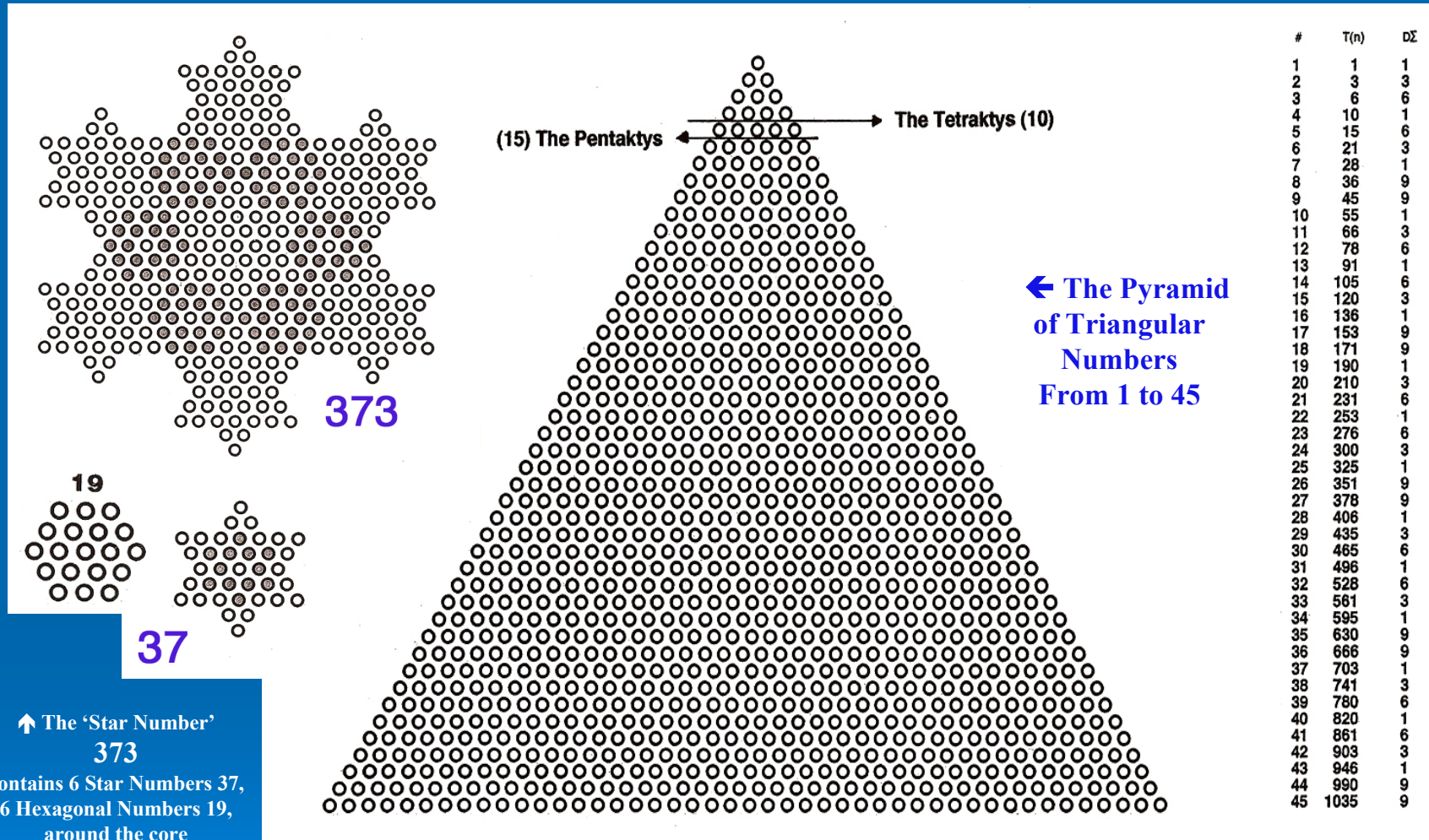
↑ Square number 16
(1 + 3 + 5 + 7)



↑ Hexagonal Number 19
(12 + 7)

← Square Numbers are made of Triangular Numbers.
Here Square Number 25 is made of Triangular Numbers 10 + 15.

SG202.1.9.3 Pythagorean Legacy (3) Triangular Numbers



↑ The 'Star Number'
373
 contains 6 Star Numbers 37,
 6 Hexagonal Numbers 19,
 around the core
 of a seventh Hexagonal
 Number 37.

↑ The top 10 numbers are the *Tetraktys*. The top 15 numbers are the *Pentaktys*.
 The formula to find any Triangular Number is: $[n(n+1) / 2]$. Example: Triangular Number 9 is $T9 = (9 \times 10) / 2 = 45$
 Notice the pulse-9 frequency of the Digit Sum: 1-3-6-1-6-3-1-9-9

SG202.1.9.4 Pythagoras (4) The Social Life of Numbers

Just like Babylonian or Mayan astronomers would scan the night sky and look for patterns & affinities among the stars, the Greek Pythagoreans looked at the Number Field and searched for “stars” and “constellations” i.e. patterns of affinity, relationships, friendship & love, and, generally speaking, the presence/absence of Harmony.

Among the most significant numbers were the PERFECT numbers (they equal the sum of their divisors), revered for their perfect harmony or, shall we say, their self-integration, self-resonance or self-realization. Less harmonious were the “abundant” (larger than the sum of their divisors) and “deficient” numbers (smaller than the sum of their divisors). Another social group was the club of AMICABLE numbers (the sums of their divisors is equal for both).

Perfect Numbers: 6 - 28 - 496 - 8128...

Definition: a perfect number is a positive integer that is the sum of its positive divisors, excluding the number itself.

The Greeks knew 4 Perfect numbers: 6, 28, 496 and 8128. They named a Perfect number “*Arithmos Teleios*” or “number accomplished in itself”.

The first Perfect number is **6**
because its divisors are 1, 2, 3 and $1 + 2 + 3 = 6$.

6 is also said to be “doubly perfect” since it is also equal to the multiplication of its divisors: $1 \times 2 \times 3 = 6$. Note that there is another special link between 6 and its divisors:

$$1^3 + 2^3 + 3^3 = 6^2 = 36 \quad \text{and} \quad 1^2 \times 2^2 \times 3^2 = 6^2 = 36$$

The Pythagorean triplet forming the Pythagorean Triangle 3-4-5 has an essential connection with Perfect number 6. Note that $216 = 432 / 2$. 432 is a “canonic Number” [◆SG202.6.1].

$$3^3 + 4^3 + 5^3 = 6^3 = 216 \\ 1^3 \times 2^3 \times 3^3 = 6^3 = 216$$

The next Perfect number is **28** as $1 + 2 + 4 + 7 + 14 = 28$. 28 has many “cyclic” properties. It is, of course, the number of days in a lunar cycle [◆SG202.5.6]. 28 is also: the 7th Triangular number, the atomic number of nickel, the fourth magic number in physics, the number of dominoes in a double-six set, the number of letters in the first verse of Genesis...

The next two Perfect numbers known to the Pythagorean Greeks are:
 $496 = 1 + 2 + 4 + 8 + 16 + 31 + 62 + 124 + 248 = 16 \times 31 = 2^4 (2^5 - 1)$
 $8128 = 2^6 (2^7 - 1)$

Amicable Numbers

Definition: Amicable numbers are such that the sum of the proper divisors of one number is equal to the the sum of the proper divisors of the other number other.

Amicable numbers are close relatives of the Perfect numbers: they are “Perfection” as a couple. **220 and 284** are the first Amicable pair:

$$\text{Sum divisors } 220 = 1 + 2 + 4 + 5 + 10 + 11 + 20 + 22 + 44 + 55 + 110 = 284$$

$$\text{Sum divisors } 284 = 1 + 2 + 4 + 71 + 142 = 220$$

220 and 284 have entered history as symbols of friendship:

- The Bible speaks of Jacob’s friendly gift to Esau consisting of a herd of 220 heads. In his *Mystères des Chiffres* (2004), Marc-Alain Ouaknin explains that, in Hebrew, 220 means “tender” and 284 means “prepare a love bed”.
- In the Middle Ages, these two numbers were inscribed on talismans to propitiate love.
- An Arab numerologist describes the custom to write 220 on one fruit and 284 on another and to eat the fruits with a Beloved as a mathematical aphrodisiac.

The first few amicable pairs are:
(220, 284), (1184, 1210), (2620, 2924), (5020, 5564), (6232, 6368) ...

Modern number theory has developed many more categories of “divisibility-based sets of integers”: semi-, quasi- and hyper-perfect numbers, super-abundant and colossally abundant numbers, solitary, untouchable & social numbers etc...

SG202.1.10 A Little History of Perfect Numbers

The first recorded mathematical result concerning perfect numbers which is known occurs in Euclid's Elements written around 300 BCE. [SG102.3.5]. The Elements are not just a geometry book: they also contain significant number theory results. Proposition 36 of Book IX of the Elements states:

“If as many numbers as we please beginning from a unit be set out continuously in double proportion, until the sum of all becomes a prime, and if the sum multiplied into the last make some number, the product will be perfect.” [Note: Following Euclid, the algorithm for perfect numbers is: $2^{p-1}(2^p - 1)$]

$$1 + 2 = \underline{3}$$

$$1 + 2 + 4 = \underline{7}$$

$$1 + 2 + 4 + 8 = 15$$

$$1 + 2 + 4 + 8 + 16 = \underline{31}$$



The sums 3, 7 and 31 are Primes. So we multiply each by their last term:

$$\underline{3} \times 2 = 6$$

$$\underline{7} \times 4 = 28$$

$$\underline{31} \times 16 = 496$$

Nicomachus of Gerasa (c. 60 – c. 120), besides his *Manual of Harmonics* [◆SG102.3.8], also wrote his famous *Introductio Arithmetica* which gives a classification of numbers based on the concept of perfect numbers.

“Among simple even numbers, some are superabundant, others are deficient: these two classes are as two extremes opposed to one another; as for those that occupy the middle position between the two, they are said to be perfect. And those which are said to be opposite to each other, the superabundant and the deficient, are divided in their condition, which is inequality, into the too much and the too little.”

Nicomachus goes on to attribute moral qualities to these groups:

“In the case of the too much, is produced excess, superfluity, exaggerations and abuse; in the case of too little, is produced wanting, defaults, privations and insufficiencies. And in the case of those that are found between the too much and the too little, that is in equality, is produced virtue, just measure, propriety, beauty and things of that sort - of which the most exemplary form is that type of number which is called perfect.”

The history of the search for, the qualities and the mathematical properties of perfect numbers is very rich indeed. Nicomachus was proven right on some of his mathematical assertions about perfect numbers and proven wrong on others. The field of perfect numbers, although greatly expanded, still offers open questions.

Among the many Arab mathematicians to take up the Greek investigation of perfect numbers with great enthusiasm was Thabit ibn Qurra (836 - 901) who wrote the *Treatise on Amicable Numbers* and Ismail ibn Ibrahim ibn Fallus (1194-1239) who wrote a treatise based on the Introduction to Arithmetic by Nicomachus.

With the advent of Number Theory in Europe, in the 16th-17th centuries, many mathematicians were keenly interested in perfect numbers and made great contributions to the theory. Among them: Descartes, Mersenne, Fermat... But Perfection, in numbers, proves to be rare & elusive... And the question remains: what really is the function of “perfect” numbers in the grander scheme of cosmic harmony?

Today 46 perfect numbers are known, $2^{88}(2^{89} - 1)$ being the last to be discovered by hand calculations in 1911 (although not the largest found by hand calculations), all others being found using a computer. In fact computers have led to a revival of interest in the discovery of Mersenne primes, and therefore of perfect numbers. At the moment the largest known Mersenne prime is $2^{43112609} - 1$ (which is also the largest known prime) and the corresponding largest known perfect number is $2^{43112608}(2^{43112609} - 1)$. It was discovered in August 2008 and this, the 45th such prime to be discovered, contains more than 10 million digits...

The Pythagoreans, in contrast, kept number wisdom simple by constantly referring back to Unity and the first whole integers...

SG202.1.11.1 Greek Gematria

Digital Reduction is part of an older, larger system of knowledge called GEMATRIA.

In *Gematria*, the letters of the alphabet also serve as numbers by carrying a numerological value. This makes it possible to find the ‘number signature’ or ‘frequency’ of any word or sentence simply by adding the values of the letters or words composing it. This art-science of Gematria was related to music, as words are read aloud and are expressing a power of invocation, and also to Sacred Sites architecture, metrology and cosmology: the common link was the ancient ‘*universal canon*’ of measures.

In the East, the Sanskrit & Tibetan languages have powerful Gematrias. In the West, the first attested use of Gematria occurs in an inscription of Assyrian ruler Sargon II (727–707 BCE) stating that the king built the wall of Khorsabad 16,283 cubits long to correspond with the numerical value of his name. Carried over to the Greek and semitic languages (Hebrew and Arabic), and to Latin, Gematria made it to the English alphabet and other latin-alphabet based languages in various forms of *Numerology*.

Α	Β	Γ	Δ	Ε	Ϝ	Ζ	Η	Θ
Alpha	Beta	Gamma	Delta	Epsilon	Digamma	Zeta	Eta	Theta
1	2	3	4	5	6	7	8	9
Ι	Κ	Λ	Μ	Ν	Ξ	Ο	Π	Ϟ
Iota	Kappa	Lambda	Mu	Nu	Xi	Omicron	Pi	Koppa
10	20	30	40	50	60	70	80	90
Ρ	Σ	Τ	Υ	Φ	Χ	Ψ	Ω	Ϸ
Rho	Sigma	Tau	Upsilon	Phi	Chi	Psi	Omega	Sampi
100	200	300	400	500	600	700	800	900

↑ Greek Gematria

Note: 6 (*Digamma*), 90 (*Koppa*) and 900 (*Sampi*) are not part of the regular Greek alphabet and only used for their number value.

In Gematria, words of identical numerical value are said to have a similar ‘hidden meaning’, deeper than the surface ‘literal’ meaning. Various levels of reading the ancient texts are thus made possible. By convention of Gematria, one unit (the *colet*) may be added or subtracted from the value of any word without affecting its symbolic meaning. Double and triple numbers (like 33, 55, 111 or 777) are called ‘*master numbers*’ and are of particular significance. [We will encounter and study Gematria in much more details in [◆SG303](#)].

Pythagoras = ΠΥΘΑΓΟΡΑΣ = 80 + 400 + 9 + 1 + 3 + 70 + 100 + 1 + 200 = 864

Digital sum of 864 = 8 + 6 + 4 = 18 = 1 + 8 = 9

(Through the number 864, Pythagoras has strong associations with the sun (diameter of the sun), the measure of time (864 / 2 = 432), the square foundation of the Vedic altar (864 / 108 bricks = 8)... 864 / 2 = 432 (See 432 as Canonic Number. [◆SG202.6.12](#))

ΕΥΡΗΚΑ = 5 + 400 + 100 + 8 + 20 + 1 = 534. Digital sum = 5 + 3 + 4 = 12 = 1 + 2 = 3

“Eureka” (Greek = “*I have found it*”) is the exclamation of Pythagoras (later attributed to Archimedes) upon his discovery (re-discovery) of the properties of the right angle 5-3-4 triangle. Gematria of Eureka = 534.

Cosmos = ΚΟΣΜΟΣ = 20 + 70 + 200 + 40 + 70 + 200 = 600 = 6

6 is the archetypal number for the universe, the cosmos.

SG202.1.11.2 Digital Reduction: Examples

‘Digital Reduction’ is the more recent word for the traditional technique of ‘Gematria’: summing up the individual digits of a number. Digital Reduction is a mathematical process of reducing larger numbers to the first integers and a philosophical or consciousness process of going from multiplicity towards Oneness.

In practice, Digital Reduction consists of adding the component figures of a number until one of the nine primary single digits (1 - 9) is obtained.

$$\text{Examples: } 15 = 1 + 5 = 6 \text{ (6 is the digital sum of 15)}$$

$$45 = 4 + 5 = 9 \text{ (9 is the digital sum of 45)}$$

Now, what happens if the number is large? Simple: you just keep reducing:

$$\text{Examples: } 155 = 1 + 5 + 5 = 11 = 1 + 1 = 2 \text{ (2 is the digital sum of 155)}$$

$$52679 = 5 + 2 + 6 + 7 + 9 = 29 = 2 + 9 = 11 = 1 + 1 = 2 \text{ (2 is the digital sum of 52679)}$$

If you deal with very large numbers, there is even a shortcut traditionally called “Casting out the nines”, i.e. “Ignore the nines!”.

$$\text{Examples: } 9629499 = (\text{ignoring all 9}) 6 + 2 + 4 = 12 = 1 + 2 = 3 \text{ (3 is the digital sum of 9629499)}$$

$$3590929 = (\text{ignoring all 9}) 3 + 5 + 2 = 10 = 1 + 0 = 1 \text{ (1 is the digital sum of 3590929)}$$

You can even “cast out” any group of digits if they also add up to nine:

$$\text{Examples: } 574 = 7 \text{ (ignore 5 and 4 since they add up to 9)}$$

$$72381455 = 3 + 5 = 8 \text{ (ignore 7 + 2, 8 + 1, and 4 + 5)}$$

“The key numbers of Greek gematria are not arbitrary, but represent the codified values of the primary ratios which underlie different classes of phenomena and the genesis of form.”

(David Fideler. *Jesus Christ, Sun of God*. 1993)

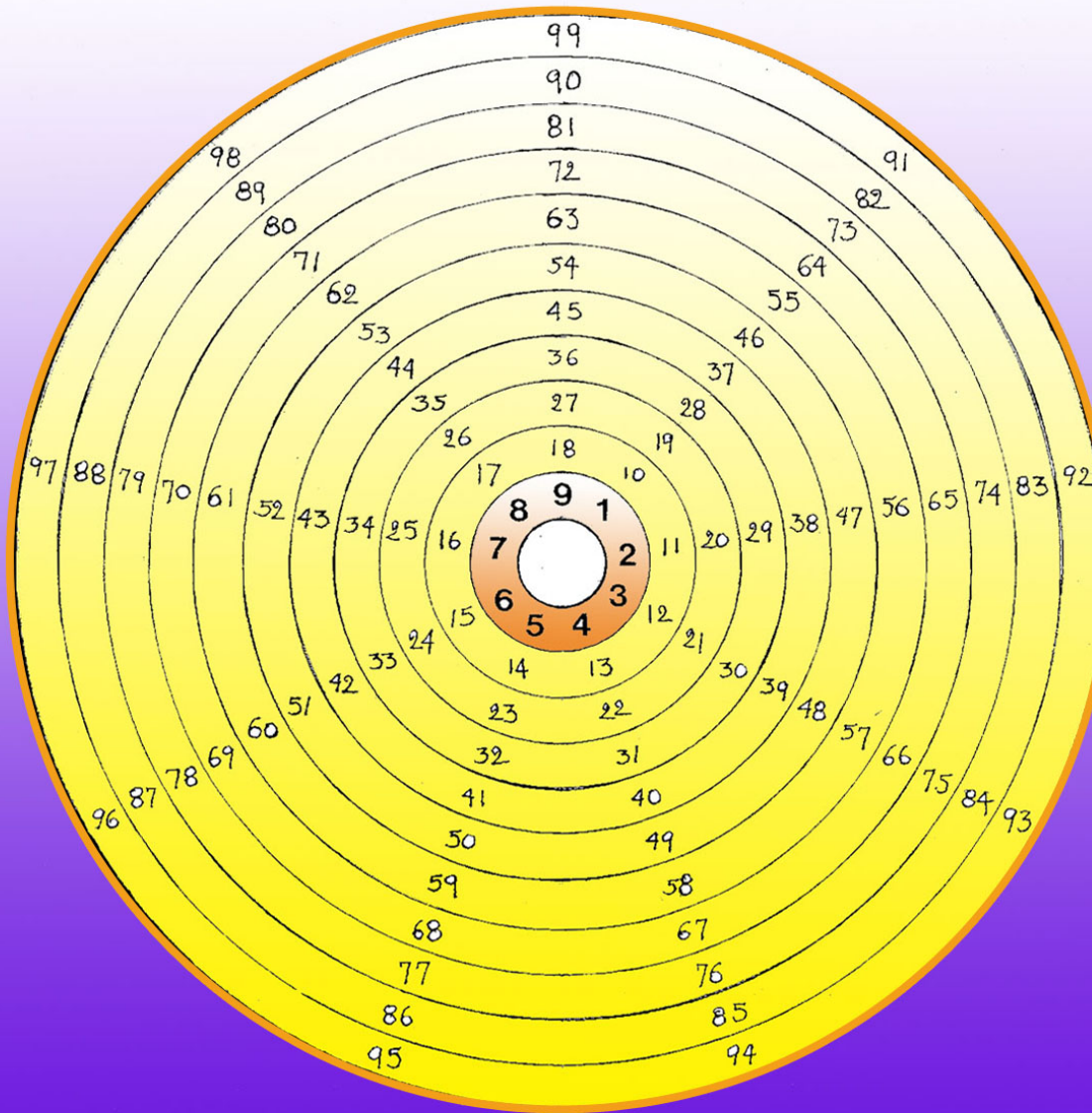
Digital Reduction, far from being looked upon as “esoteric mysticism”, is nowadays squarely integrated in mainstream and investigative mathematics & science. For instance, the work of Marko Rodin [[◆SG203](#)] is based on “Decimal Parity” (= Digital Reduction) whereby multiple digit numbers are added together to reveal the foundation digit.

Marko Rodin explains: *“The justification of this is that it reveals the harmonic resonance or the numeric ratios within... Of importance are the harmonics and the patterns. To recognize the patterns is to see the connections, to see the order. It is not the size of the number that is important but the harmonic resonance it has to the whole.”*

SG202.1.11.3 Digital Reduction: Wheel of Digital Sums

← Mandala of the numbers
1 - 99,
in terms of their digital sum.

Note that all intervals = 9.
It is like a table of multiplication of 9
but starting with each integer.



SG202.1.12 Early Gnosticism

The Gnostic (Greek *gnosis* = knowledge) stream that flourished in cosmopolitan Alexandria was at the confluence of Neo-Pythagoreanism, Neo-Platonism, the Babylonian/Chaldean astrology, Judaism, Greek mysteries, Hermetic and Egyptian wisdom. Gnosticism was a syncretistic locus of knowledge where many ancient traditions were meeting and enriching each other, based on the remembrance of the ancient union between science & religion. Early numerology as a system of 'divination' took root in this environment.

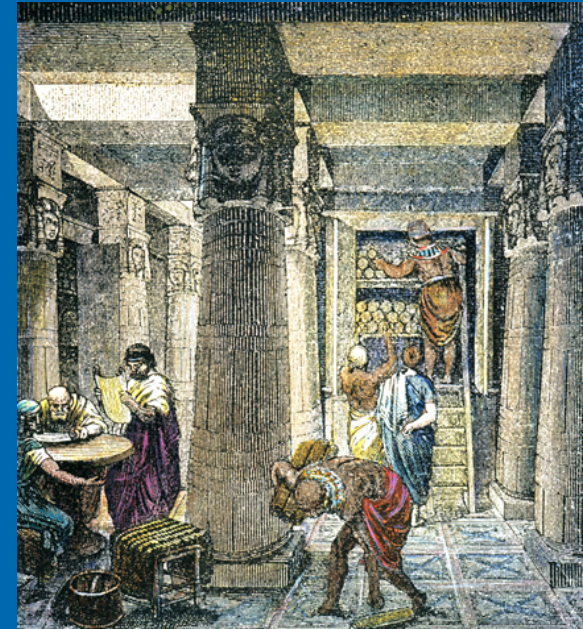
The number wisdom and mysticism of Gnosticism was founded on the following set of connected principles:

- The universe as 'Cosmos' displays an all-embracing Harmony, Beauty and Love.
- This universal Harmony is encoded in and can be understood through measures and numbers.
- The 'invisible', archetypal part of the universe (the Above or Inside) is in direct commensurability or resonant similitude with the visible/material part (the Below and Outside). As Above, so Below.
- Everything and every being has a unique number 'name', a unique feeling of 'harmonic music', a sound of birth and harmonious sustenance. Knowing that number-sound & speaking it is being attuned, entering a 'unison' communion.
- Certain numbers and their relationships or proportions contain specific keys for solving the mysteries of nature, i.e. special "sacred" numbers can be used as a golden rainbow bridge between the invisible/divine realms and the material world.
- When one performs operations with numbers, this also works upon all the things carrying the same numbers, by attractive 'sympathy' and 'correspondence'. By using 'sacred' ratios and numbers, that have been time-proven beneficial, and applying them in all aspects of the personal and cultural life, one is acting as a co-creator, together with the universal intelligence of Cosmos.

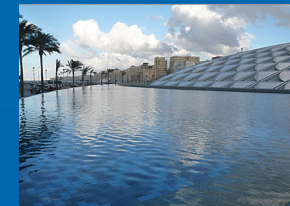
Upon this common foundation, which really was the legacy of the ancient to the nascent modern world, all sorts of personal, cultural and political agendas were readily grafted to build systems of power and control, rather than deepening the original knowledge.

The ancient understanding of a vibrational universe functioning with scale-invariant and holographic laws of resonant harmonics became progressively lost for almost two millennia.

Now, we are ready to uncover more of this ancient wisdom and reapply it to the co-creation of a global civilization focusing upon the higher-dimensional evolution of human consciousness and rejoicing in the Celebration of Life.



↑ A rendering of the old Alexandria Library.



← ↑
The new
Library at
Alexandria.

SG202.1.13 The Church Fathers

In the Roman times, with the rise of Christianity, the Church Fathers (Irenaeus, St. Ambrose, St. Augustine of Hippo...) wrote extensive commentaries on numerology. They condemned the 'magical' use of numbers which had descended from Babylonian sources to the Pythagoreans and Alexandrian Gnostics. But, concurrently, they almost unanimously regarded the numbers in the Bible as ripe with mystical symbolism and made these numerological interpretations an important branch of scriptural exegesis.

Even though the Church Fathers re-interpreted number wisdom to support their own theological purpose (1 is no longer the Primal Cause, but specifically the Lord), they were clearly fascinated by the properties of numbers.

According to Vincent F. Hopper in his *Medieval Number Symbolism* (1938), "*many of them (Church Fathers) exhibit a manifest pride in their numerical learning, as well as a never-failing delight in discovering new instances of the numerical harmony of all things. It is not unusual in their writings to come upon extended commentaries on number science, out of context. It is a commonplace for them to launch into an encomium on a given number, digressing from the theme to point out as many as possible of the meanings of the number in question.*" Here are some examples:

- St. Augustine is one of the most comprehensive sources for direct information about Gnostic & Neo-Pythagorean number symbolism, and he oftentimes jumps at the opportunity to expound on special numbers (like 7 or 12) or use them in a symbolic sense.
- The addition of 3 and 4, spiritual and temporal, creates '7', a number of totality: the Lord's Prayer was found to contain 7 petitions, the Beatitudes were found to be 7 (balanced out by the 7 deadly sins), the 3 theological virtues were added to the 4 cardinal virtues to compose 7 again... etc...
- Augustine classifies the opinions of Vincentius under 11 heads of error since '11', going beyond or transgressing the '10' of the Law, was known to be the 'number of sin'.
- Augustine is lost in admiration at the symbolic division of the 41 books of Varro, explaining in detail why.
- '5' was made the negative symbol of the 'flesh', by reference to the 5 senses, completely neglecting all earlier symbolism of the Pentad and Pentagon.
- Augustine's master work *The City of God* is carefully organized in 22 books, 2 groups of 5 devoted to refutation (an expression of the tenfold "Thou shall not..."), and 3 groups of 4 devoted to positive argument (corresponding to both the 12 apostles and the Trinity proclaimed in the gospels: $3 \times 4 = 12$).

"Concerning now the Science of number, it is clear to the dullest apprehension that this was not created by man, but was discovered by investigation... It is not in any man's power to determine at his pleasure that 3×3 are not 9, or do not make a square or are not a triple of 3."

St. Augustine. *On Christian Doctrine*.

SG202.1.14 Medieval Number Mysticism

In the medieval times the fundamental conception of number as the pattern of the cosmos was couched in theological terms, according to the Bible's quote: 'All things are ordered in measure, and number and weight'. "*The vision of the medieval mystic... was a revelation of order, and the depth of his penetration was in direct proportion to his comprehension of the precise coordination of all things in Universal Harmony*". (Vincent F. Hopper).

The ecclesiastical learned developed elaborate systems of theological numerologies, while the common man was content living a life ordered by the Christian calendar of holy celebrations, lunar cycles and zodiacal associations, and by the use of talismanic charms.

The medieval approach to number symbolism was mostly a continuation of the numerology of the Church Fathers, derived from the Augustinian principles. However, Vincent F. Hopper sees a couple new factors:

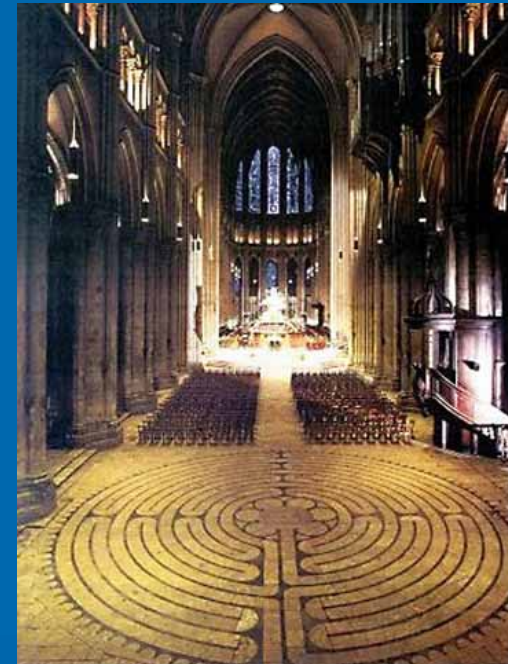
- The reintroduction of Aristotle giving added authority to fixed numerical groups such as the 4 causes, the 4 elements or the 10 categories.
- The renewal of astrology and its spread through all branches of learning. The principles of astrology, which have been traced to the roots of number science the world over, have remained substantially the same throughout the cultures: the essential basis is the Babylonian science of ordering all things, from human life & behavior to corresponding aspects of nature (herbs, stones, metals...), according to the patterns in the stars. The numbers 3 (triplicities of the 4 elements), 4 (quadruplicities: cardinal, fixed, mutable), 7 (planets), 12 (zodiacal signs) were the prominent numerological references governing daily life.

Each of these numbers was woven into an encompassing theological calendar for the illiterate and an elaborate arithmology for the learned. The overall effect was to establish, in minute details, the essential archetypal pattern: the mirror relationship between microcosm and macrocosm. For "*as the world is the Image of God, so man is the image of the world*".

Among the early authorities of medieval arithmology were:

- Capella (Martianus Minneus Felix), a pagan writer (5th c.), one of the earliest developers of the system of the "seven liberal arts" that structured Early medieval education.
- Isidore, archbishop of Seville (c. 530 - 636). He wrote *Liber Numerorum*, a mystical treatise on the allegorical meaning of numbers.
- Rabanus (Maurus Magnetius), archbishop of Mainz, Germany (c. 780 - 856). He wrote *De Numero*, extending the list of theologically significant numbers to 144,000.

Number being the most exact representation of the Divine, the medieval mystic seeks evidence of significant numbers throughout the universe, sometimes eagerly overdoing himself. Hugo de St. Victor (c. 1078 - 1141) finds instances of the Trinity everywhere and, in his *De Quinque Septenis*, multiplies examples of the 7-fold pattern. Joachim of Flora (c. 1135-1202), the founder of a monastic order who was later condemned as "heretic", expounded on a vast range of numbers, some of them pertaining to the timing of the universe itself.



↑ The "frozen music" and eloquence of medieval cathedral architecture is the musical eloquence of number: the geometries used in the floor plan and elevation, the number of doorways, pillars, windows, the octagonal shape of the baptismal font, the 3 steps of the altar, the labyrinth etc... all elements of the cathedral, as a temple of the cosmos, are ordained after number symbolism.

[◆SG207]

↑ Above: Chartres cathedral, with the labyrinth in the foreground. [◆SG304]

SG202.1.15 Dante's Divine Comedy

The *Divine Comedy* (*La Divina Commedia*), written in the “vulgar” Italian tongue, by Dante Alighieri between 1308 and his death in 1321, is widely considered the central poem of Italian literature, and is seen as one of the greatest works of world literature. The poem's imaginative and allegorical vision of the Christian afterlife is a culmination of the medieval world-view. The *Divine Comedy* is also making a precise and profound use of significant numbers and is thus a full demonstration of the numerical symbolism of the times.

As a scientist, philosopher, theologian, mystic and poet, Dante belonged to the small medieval elite of those who were able to juggle with multi-level number symbolism. In a personal letter (Epistle X), Dante specifically stated that his work is a complex network of meanings and its explanation must be based on the “four-fold” understanding of the scriptures. Twice in the *Comedy*, Dante points to truths hidden below the surface of the verses. In medieval times, explains Victor F. Hopper in *Medieval Number Symbolism*, “to discover these inner meanings was the keenest pleasure, for as Augustine said, *the most hidden meanings are the sweetest*”. Below are some examples of the *Divine Comedy*'s numerical undercurrents.

- **NINE.** Beatrice, Dante's spiritual Beloved, is epitomized as “9” (3 x 3) which is the angelic number. “This number was her very self”, says Dante. Beatrice as the “9” of Completion is a terrestrial mirror of Unity, the First Cause and Beatrice's essence is on par with the angels and their 9 angelic orders.

In the *Comedy*, Paradise is comprised of the Divine Trinity (First Principle) and 3 humanities, each divided into 3 orders that altogether form the 9 spheres.

Also, in astrology, 9 is connected with the 9th house, the house of Jupiter and the zodiacal sign Sagittarius, representing philosophy and spiritual wisdom.

- **THREE.** The number 3 is prominent in the *Comedy*. There are 14,000 lines of verse divided into 3 canticas (Inferno, Purgatorio and Paradiso) of 33 cantos each = 99 cantos (+ the introductory canto = 100). The verse scheme used, *terza rima*, has lines composing tercets according to the rhyme scheme aba, bcb, cdc, ded, The *Comedy* is a direct expression of “3 in 1” or Divine Unity comprising the Divine Trinity: 1 poem with 3 canticles.

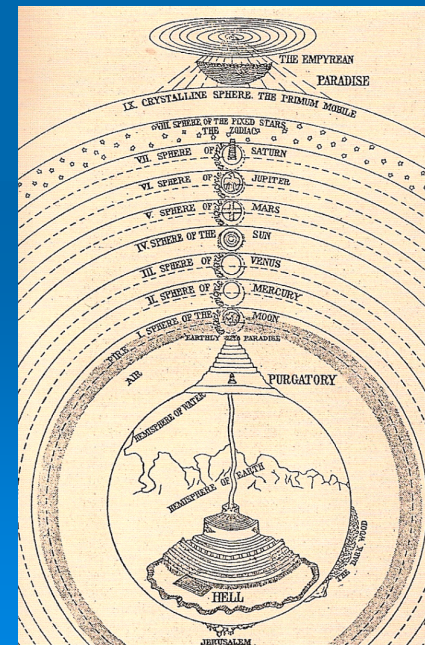
Inferno or Hell is the antitype of Heaven, and displays the same number “3” in its subterranean vaults but as perverted images or parodies of the triplicities of Paradise.

Thus, Lucifer is a tri-cephalic anti-trinity with 6 wings...

- **SEVEN.** Purgatorio (Purgatory) is the realm of transit reflecting the temporal imperfection of life on earth: 7 days of the week, 7 planets, 7 sins. In the medieval view, man falls through 7 but also rises through 7 and eventually reaches 8, the number of regeneration and “baptism”.



↑ Portrait of Dante in Michelino's fresco. In the background, the 7 terraces of Purgatorio. Above: the 9 spheres of heaven. On the left, the entrance to hell.



← Diagram of the *Divine Comedy*'s “cosmology”.

Michelangelo Catani. 1855. (in Alexander Roob. *Alchemy & Mysticism*.)

Egyptian

	HIERO-GLYPHS	HIERATIC	DEMOTIC
1	I	I	I
2	II	II	4
3	III	III	6
4	IIII	4	7:10
5	IIII	5	7
6	IIII	6	8
7	IIII	7	9
8	IIII	8	10
9	IIII	9	11
10	n	^	^
11	ni	1^	1^
15	n III	1^	1^
20	nn	^	5
30	nnn	^	7
40	nnnn	^	8
50	nnnnn	^	9
60	nnnnn	^	10
70	nnnnn	^	11
80	nnnnn	^	12
90	nnnnn	^	13
100	9	^	^
200	99	^	^
400	9999	^	^
500	999	^	^
1000	9	^	^

ASSYRIAN-BABYLONIAN	PHOENICIAN	SYRIAN	PALMYRIAN	GREEK-HERODIANIC	ROMAN
1	I	I	I	I	I
2	II	P	II	II	II
3	III	P	III	III	III
4	IIII	PP	IIII	IIII	IV
5	IIII	1	Y	Γ	V
6	IIII	1	'Y	ΓI	VI
7	IIII	1	"Y	ΓII	VII
8	IIII	1	"Y	ΓIII	VIII
9	IIII	1	"Y	ΓIIII	IX
10	<	7	7	Δ	X
11	<	7	7	ΔI	XI
15	<<<	7	7	ΔΓ	XV
20	<<<	H	0	ΔΔ	XX
30	<<<	-H	70	ΔΔΔ	XXX
40	<<<	HH	00	ΔΔΔΔ	XL
50	<<<	-HH	700	ΔΔΔΔ	L
60	<<	HHH	000	ΔΔΔ	LX
70	<<	-HHH	7000	ΔΔΔΔ	LXX
80	<<<	HHHH	0000	ΔΔΔΔ	LXXX
90	<<<	-HHHH	70000	ΔΔΔΔΔ	XC
100	<>	P1	71	Δ	C
200	<>>	P11	711	ΔΔ	CC
400	<>>>		7111	ΔΔΔΔ	CD
500	<>>>		711	Δ	D
1000	<>		777	Δ	M

SG202.1.16.1 Early Number Notations (1) Western Cultures

Throughout history and cultures, systems of number notation have been many, a tribute to human inventiveness.

Before we focus on the notation of numbers as we know them (the 9 integers 1-9 plus "zero"), let's take a journey through some ancient number notations and appreciate both the challenge to invent a number language and the creativity to come up with innovative solutions as well as some beautiful scripts.

1	I	I
10	U	U
100	W	W
1,000	W	W
10,000	W	W
100,000	W	W
1,000,000	W	W

↑ Higher figures in Egyptian numerals.

Note: the signs change orientation according to the direction of reading: left or right. The tadpole (100,000) and the man with raised arms always face the start of the line. (Georges Ifrah. *The Universal History of Numbers*.)



Mayan Signs

1	1	1	1	1	1	1	1	1
2	11	11	11	11	11	11	11	11
3	111	111	111	111	111	111	111	111
4	1111	1111	1111	1111	1111	1111	1111	1111
5	11111	11111	11111	11111	11111	11111	11111	11111
6	111111	111111	111111	111111	111111	111111	111111	111111
7	1111111	1111111	1111111	1111111	1111111	1111111	1111111	1111111
8	11111111	11111111	11111111	11111111	11111111	11111111	11111111	11111111
9	111111111	111111111	111111111	111111111	111111111	111111111	111111111	111111111

↑ Aramaic numerals. 1st c. CE.

1	•	••	•••	••••	•••••	••••••	•••••••	••••••••	•••••••••
2	••	•••	••••	•••••	••••••	•••••••	••••••••	•••••••••	••••••••••
3	•••	••••	•••••	••••••	•••••••	••••••••	•••••••••	••••••••••	•••••••••••
4	••••	•••••	••••••	•••••••	••••••••	•••••••••	••••••••••	••••••~	••••••~
5	•••••	••••••	••••~	••••~	••••~	••••~	••••~	••••~	••••~
6	••••~	••••~	••••~	••••~	••••~	••••~	••••~	••••~	••••~
7	••••~	••••~	••••~	••••~	••••~	••••~	••••~	••••~	••••~
8	••••~	••••~	••••~	••••~	••••~	••••~	••••~	••••~	••••~
9	••••~	••••~	••••~	••••~	••••~	••••~	••••~	••••~	••••~

↑ Greek numerals (Epidaurus & Argos). 2nd-5th c. BCE.

SG202.1.16.2 Early Number Notations (2)

Oriental Cultures

Most of these numerical notations are still currently used. Look at them carefully: they convey some of the organic, mysterious, almost secret meanings of the “numbers”... Look at the patterns, the waveforms and the dance motions of these glyphs... These signs also give a sense of how beautifully diversified human perception can be.

1	2	3	4	5	6	7	8	9	0
১	২	৩	৪	৫	৬	৭	৮	৯	০
১	২	৩	৪	৫	৬	৭	৮	৯	০
১	২	৩	৪	৫	৬	৭	৮	৯	০
	৬	৫	৬				৮	৯	০

↑ Modern Bengali

1	2	3	4	5	6	7	8	9	0
၁	၂	၃	၄	၅	၆	၇	၈	၉	၀
၁	၂	၃	၄	၅	၆	၇	၈	၉	၀
၁	၂	၃	၄	၅	၆	၇	၈	၉	၀
၁	၂	၃	၄	၅	၆	၇	၈	၉	၀

↑ Modern Burmese

0	೦	೦
9	೯	೯
8	೮	೮
7	೭	೭
6	೬	೬
5	೫	೫
4	೪	೪
3	೩	೩
2	೨	೨
1	೧	೧

↑ Modern Karnata

1	2	3	4	5	6	7	8	9	10	100	1,000	10,000
一	二	三	四	五	六	七	八	九	十	百	千	萬
一	二	三	四	五	六	七	八	九	十	百	千	萬
一	二	三	四	五	六	七	八	九	十	百	千	萬
一	二	三	四	五	六	七	八	九	十	百	千	萬

↑ Archaic Chinese (5th - 2nd c. BCE)

1	2	3	4	5	6	7	8	9	0
١	٢	٣	٤	٥	٦	٧	٨	٩	٠
				٤	٥				

↑ Current Eastern Arabic

1	2	3	4	5	6	7	8	9	0
ꦠ	ꦡ	ꦢ	ꦣ	ꦥ	ꦧ	ꦣ	ꦥ	ꦣ	ꦠ

↑ Modern Balinese

(Figures in this page and next page: Georges Ifrah. *The Universal History of Numbers*).

SG202.1.16.3 Early Number Notations (3)

1	2	3	4	5	6	7	8	9
௭	௨	௩	௪	௫	௬	௭	௮	௮
௭	௨	௩	௪	௫	௬	௭	௮	௮
௭	௨	௩	௪	௫	௬	௭	௮	௮

↑ Current Sinhalese

1	2	3	4	5	6	7	8	9	0
௧	௨	௩	௪	௫	௬	௭	௮	௮	௮
௧	௨	௩	௪	௫	௬	௭	௮	௮	௮
௧	௨	௩	௪	௫	௬	௭	௮	௮	௮

↑ Current Tamil

1	2	3	4	5	6	7	8	9	0
१	२	३	४	५	६	७	८	९	०
१	२	३	४	५	६	७	८	९	०
१	२	३	४	५	६	७	८	९	०

↑ Modern Nagari (Devanagari)

1	2	3	4	5	6	7	8	9	0
၁	၂	၃	၄	၅	၆	၇	၈	၉	၀
၁	၂	၃	၄	၅	၆	၇	၈	၉	၀
၁	၂	၃	၄	၅	၆	၇	၈	၉	၀
၁	၂	၃	၄	၅	၆	၇	၈	၉	၀
၁	၂	၃	၄	၅	၆	၇	၈	၉	၀

↑ Modern Thai-Khmer (Siamese)

How Many

Did you say?

1	2	3	4	5	6	7	8	9	0
൧	൨	൩	൪	൫	൬	൭	൮	൯	൦
൧	൨	൩	൪	൫	൬	൭	൮	൯	൦
൧	൨	൩	൪	൫	൬	൭	൮	൯	൦

↑ Current Malayalam

1	2	3	4	5	6	7	8	9	0
༡	༢	༣	༤	༥	༦	༧	༨	༩	༠
༡	༢	༣	༤	༥	༦	༧	༨	༩	༠
༡	༢	༣	༤	༥	༦	༧	༨	༩	༠

↑ Tibetan numerals

SG202.2.1.1 About Number Notation (1)

Early methods of recording numbers, if imaginative, were actually impractical and very lengthy. The early ones rested on the *additive principle*: the overall figure was obtained by adding the individual values of all the numbers.

Efficiency in number notation improved greatly when it was realized that specific symbols could be used for series of intermediate numbers. For instance, in Egyptian hieroglyphic number notation, a special sign was assigned to each power of 10. [◆SG202.1.16] The compact recording of significantly larger numbers became possible, although still cumbersome.

A further development was the introduction of a simple positional system. This came about by letting go of the old additive system and adopting a *hybrid* system involving both addition and multiplication where, instead of representing all tens or hundreds with special signs, they placed the sign of the number of units (integers) before the sign for 10 or 100.

Example: 7,659. This was written with 7 signs: $7 \times 1000 + 6 \times 100 + 5 \times 10 + 9$

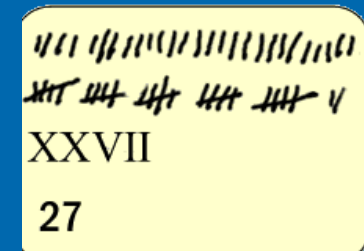
Yet, with many of these early number systems, operations which should have been simple (such as addition and multiplication) were unnecessarily difficult and involved tedious repetitions of identical signs. The difficulties stemmed from the fact that they did not have a true positional system: the notation and its organization had no intrinsic logic or resonant scale structure. Nor did they have a symbol for a null quantity, the zero. So even the simplest of patterns among numbers remained largely hidden by an inconsistent numerical notation. Even the invention of the abacus to speed up operations could not transcend the intrinsic limitations of the system.

The next decisive development was the invention of the *principle of position*: the value of a figure varies according to the position in which it occurs, in the representation of a number. Thus, a “3” has value 3 units, 3 tens or 3 hundreds depending on whether it is in the first, second or third position.

Example: 7,659 (only 4 signs are required)

“Nowadays, the principle of position seems to us to have such an obvious simplicity that we forget how the human race has stammered, hesitated and groped through thousands of years before discovering it, and that civilizations as advanced as the Greek and the Egyptian completely failed to notice it”.

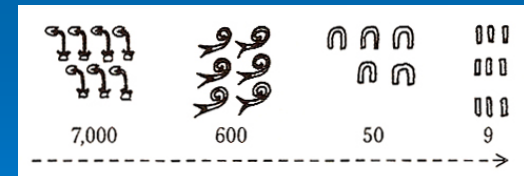
Georges Ifrah



↑ Increasing efficiency of number notation

www.principlesofnature.net

Wayne Roberts



↑ Example of additive number system: Egyptian hieroglyphic notation

SG202.2.1.2 About Number Notation (2)

The final discovery of an efficient method for writing numbers was the critical development in the history of mathematics and the world cultures. It was a synthesis, the combined innovations of:

- First: unique symbols for the integral divisions of a base (for example, in base 10, nine numerals were necessary).
- Second: a consistent place-value or positional system in which each column represented incremental powers of the base (units, tens, hundreds...) i.e. the basic figures have a value depending on the position they occupy in the representation of a number.
- Third: the adoption of a symbol for a fully operational zero that can fill in the empty spaces of missing units and also have the meaning of a null number.

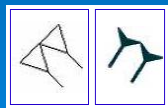
These innovations were first harmoniously and fully combined within a system of numerical notation in sub-continental India. This system easily supplanted every other competitor it met and is just about the system of notation we used today.

According to historians, some of these 3 innovations appeared independently in the history of human civilizations:

- The positional system, was discovered by 3 cultures: the Babylonians (2,000 years BCE), the Chinese mathematicians (just before CE), and the Mayan astronomer-priests (4th - 9th c.). But they didn't take advantage of this innovation because of the limitations of the respective limitations of their signs for units and the lack of a zero as null number (the other two innovations).
- The discovery of zero appeared in the Babylonian (the first zero of all times) and Mayan cultures. But it was an incomplete concept in that it was the zero of "empty space", marking the absence of units of a certain order in the representation of the numbers. The Babylonian astronomers even used their zero as a mathematical operator (added at the end of a number, the number's value is multiplied by the base). But neither culture raised to the full concept of zero as a symbol representing "zero value" or "nought"- which is at the root of all algebra and today's mathematics.



↔ Various forms of the Maya "Zero".
The most common form is the stylized "shell" ↓



$$\begin{array}{c} \uparrow \quad \uparrow \quad \uparrow \quad \uparrow \\ [1 \ ; \ 0 \ ; \ 45] \\ \hline (= 1 \times 60^2 + 0 \times 60 + 45 = 3645) \end{array}$$

↑ The Babylonian "Zero"

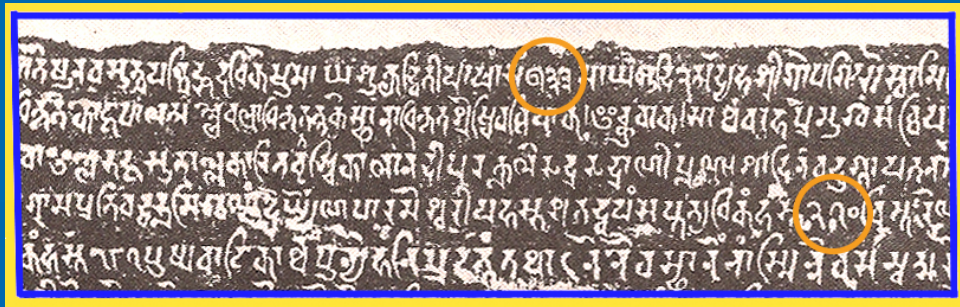
So, even though some cultures succeeded, earlier than the Indian, in discovering one or two of the 3 innovations, it remained for the Indian mathematicians to bring together into a full and complete system all 3 of these prerequisite conditions for the number system we now have.

SG202.2.2.1 The Hindu-Arabic Numerals (1)

ORIGINS

In order to comparatively appreciate the breakthrough discovery of Indian mathematicians, let us recall that Archimedes (287 - 212 BCE), in his mind-boggling *Sand-Reckoner* (a list of number-names computing “the number of grains of sand that would fill up the entire universe” and some more), was using names of numbers (tiered in many “orders”) rather than digits and was ignorant of the place-value function of zero. In order to deliver his result of one followed by (short scale) eighty quadrillion (80·10¹⁵) zeroes, Archimedes had to invent a positional numeral system, prove the law of exponents and estimate the size of the universe! All of this *without the zero!*

Following the investigative journey of Georges Ifrah, we note that, around the 5th-6th century CE, all 3 innovations making a full number notation possible were in evidence in Indian Sanskrit mathematical literature. And the first known and clear epigraphic evidence are inscriptions on stone bearing witness to the use of zero and the decimal place-value system dating back to the 9th century: these are the famous *Gwalior inscriptions* giving an account of offerings to Vishnu.



↑ Epigraphic evidence of the place-value concept and “zero”.

The two orange boxes show: top = number 933 and, bottom = number 270.
Second inscription of Gwalior, 9th c. CE.

Thus, from around the 5th-6th century, Indian mathematicians transformed their traditional methods of calculation by suppressing the columns of their old *abacus* and using the first nine numerals from the *Brahmi* notation completed by a sign in the form of a little circle or dot for “zero”. This liberation from the old-paradigm abacus marked the birth of our modern mathematics.

Indian Numerical Symbols

As early as the 5th century CE, a very unique way of recording numbers was used by mathematics and astronomy scholars, in India. As noted by Georges Ifrah, this method uses the full positional/place-value system as well as the zero.

This is simply a series of Sanskrit word-symbols used in place of “numbers” i. e., rather than using the ordinary Sanskrit names for numbers 1 - 9 (*eka, dvi, tri...*), Indian scholars expressed them by names which had symbolic meaning.

For instance, instead of “*dvi*” (two), they used words expressing ideas, things or people coming in pairs etc... Instead of “*sapta*” (seven), they used word-symbols, from their mythology, for the seven “mountains / sages / oceans or island-continent”...

In this system, numerical symbols have a variable value depending on their position when numbers are written down. The system also possesses different special terms which symbolize zero and which thus mark the absence of units in any given decimal order in this positional notation. [◆SG202.3.2]

Example:

agni shunya ashvi vasu

Literally: “Fire” = 3, “Void” = 0, Horsemen” = 2, and “Divinities” = 8. When put together, this verse corresponds to the numbers (read from right to left):
 $3 + 0 (x 10) + 2 (x 100) + 8 (x 1000) = 8,203$

This remarkably creative & multi-level interface between language, number notation, science, poetry, symbolism and gematria is fully studied in ◆SG306.

SG202.2.2.2 The Hindu-Arabic Numerals (2)

WESTERN MIGRATION

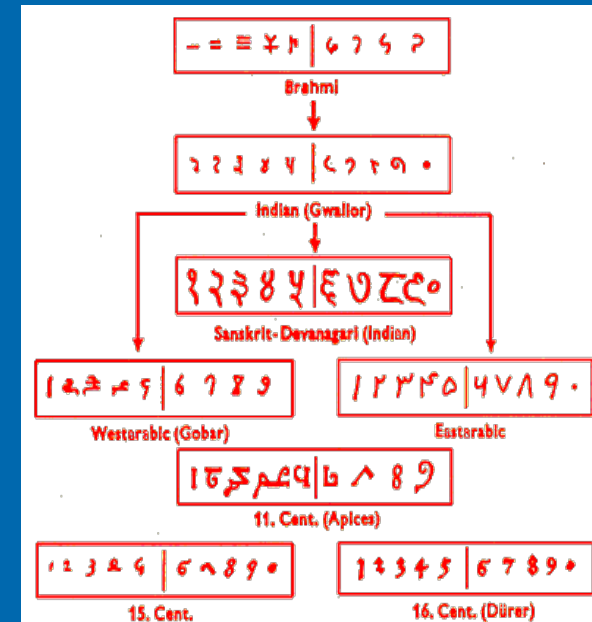
It is not until the 10th century that the 9 basic Indian numerals + zero and their full positional calculation methods appeared in Europe. For these Indian inventions to be transmitted to the West, it took the essential role of the Arab-Muslim scholars who acted as vehicles of Indian science and were the intermediaries between the two worlds.

Let us recall that, in the 8th century, the Islamic empire stretched from the Pyrenees (France) to the borders of China and that, after meeting with successful resistance East and West, the advance came to a halt. The Abbasid caliphs (750 - 1258) made Baghdad their capital and reigned over the Islamic empire for the next 500 years. This was an era of cultural expansion, highly fertile in academic, scientific and artistic developments: the “Islamic Golden Age”. [◆ SG102.4.2]

In the 6th-7th centuries, Persia constituted an international crossroads for the meeting of Greek, Syrian, Indian, Zoroastrian, Manichean and Christian cultures. There took place the first translation projects into Persian, Syrian and Arabic from both Greek classics and Sanskrit works. When the center of power shifted to Baghdad in 772 with the Abbasid Caliphate, Baghdad was elevated to the status of political capital of the Arabic empire and, under the influence of enlightened caliphs such as al-Mansur, Harun al-Rashid and al-Ma'mun, Baghdad became also a thriving intellectual capital, most famous for its “House of Wisdom” (*Bayt al-Hikma*), a new incarnation of the Alexandria Library. Soon, universities & libraries sprang up all over the Islamic world, planting seeds for the coming “Renaissance” in Europe.

Historians say that one of the most outstanding periods in the history of science took place in Islam between the 8th and 13th century (the “House of Wisdom” was destroyed by the Mongol invasion in 1258). “*The House was an unrivalled center for the study of humanities and for sciences, including mathematics, astronomy, medicine, chemistry, zoology and geography. Drawing on Persian, Indian and Greek texts — including those of Pythagoras, Plato, Aristotle, Hippocrates, Euclid, Plotinus, Galen, Sushruta, Charaka, Aryabhata, Socrates and Brahmagupta — the scholars accumulated a great collection of world knowledge, and built on it through their own discoveries.*” (Wikipedia).

In this cultural context, Indian science and number notation were readily assimilated into Arabic science. Around 773 - 776, a delegation of Hindu Brahmins and scholars arrived in Baghdad and, according to Ibn Khaldun in his *Muqaddimah* (“*Universal History*” or *Prolegomena*), gave to the Arabs advanced astronomical science as well their numerals and calculation methods.



Simplified evolution from Brahmi numerals to Dürer's number notation in the 16th century. (Karl Menninger. *A Cultural History of Numbers.*)

Historians point that the Indian books offered to al-Mansur by the Indian scientific delegation - and immediately ordered into Arabic translation by the Caliph - were the works of *Brahmagupta*, the most famous Indian mathematician of the times.

Brahmagupta's works (*Brahmasphutasiddhanta* or *The opening of the Universe* [628] and *Khandakhadyaka* [664]) contained the latest *siddhant* (astronomy) calculations and also the system of decimal place-value, the knowledge of zero, as well as the basics of Indian algebra.

This sudden infusion of mathematical science was received with enthusiasm by Arabic scholars like al-Khwarizmi, the future “father” of algebra, and many others would could appreciate the superiority of Indian mathematical methods and set out to apply them in their own scientific explorations.

SG202.2.4 Church Politics & New Numerals

In the words of Georges Ifrah: “*We might have expected Pope Sylvester II to have opened the millennium onto a new era of progress in the West, thanks to the numerals and operational techniques he had brought back from the Arab-Islamic world. But such expectations would be in vain: the ignorance and conservatism of the Christian world blocked the way.*”

The *Abacists* saw the use of the new Hindu-Arabic numerals as the work of the Devil - and also a threat to their control of the people by keeping them uneducated. Even Leonardo Fibonacci who launched the ‘second wave’ of the Hindu-Arabic numerals, was afraid to be too vocal and used the word “*abacus*” in the title of his book advocating these numerals, calling his book *Liber Abaci* (The Book of the Abacus, 1202): he needed to protect himself against the wrath of the “*abacists*” and the established lobby of official accountants and clerics backed by the Church. Abacists, as a corporation, saw the new “*algorism*” as a threat to their livelihood and their privileged status.

Georges Ifrah points to a more ideological reason for the European resistance to Hindu-Arabic numerals:

“The Church maintained a climate of dogmatism and submission to the holy scriptures through doctrines of sin, hell and salvation... Science and philosophy were under ecclesiastical control and obliged to remain in accordance with religious dogma... Some ecclesiastical authorities thus put it about that arithmetic in the Arabic manner, precisely because it was so easy and ingenious, reeked of magic and of the diabolical: it must have come from Satan himself...”

The Church-Abacus lobby issued a veto against the new numerals because it was facilitating the democratization of arithmetical calculation: that would loosen the ecclesiastical hold on education and weaken the church power.

Algorists plied their trade in hiding, as if using a secret conspiracy code. The knowledge of Zero (the place-holder “circle”) was dangerous: the Inquisition sent quite a few “*algorists*” to the stake, along with *heretics* and *witches*. This is partly why one of the derivative names for Zero *cifra* (tzyphra, chifre or chiffre and cipher) came to also mean a “secret”, a “code”. It goes back to the times when the knowledge of “zero” was a dangerous secret.

The “quarrel” between Abacists and Algorists lasted for many centuries. As Robert Kaplan says: “*We laugh at those who can’t count, but in the 13th century they laughed at those who could count: “cipher” and the “zero of algorism” (were) terms of derision.*” Until the 18th century, many European city councils requested from their clerks abstinence from “digits”. Until the beginning of the 20th century, the British Treasury still used the abacus to calculate taxes and the British Finance minister is still called the Chancellor of the Exchequer (name of the reckoning abacus-board).

Here, we need to understand that the introduction of “zero” in the western traditional paradigm (a very hierarchical and allegorical world-view) was a quantum jump type of challenge, a complete re-ordering of the socio-political and ideological space. Space itself was to be re-calibrated and put in “perspective” through the device of the “vanishing point”, a visual equivalent of zero. The West didn’t have much of the long mystical tradition & practice of understanding reality as “*shunya*”, as India had: zero was a mistrusted “alien”. Let us remember how hard it is for us now, still grappling with the old paradigm of duality, to fully accept the new quantum jump and step into the global oneness of life and consciousness.



↑ Pope Sylvester II and the devil. 1430.

Due to his efforts to root out simony (cashing in on spiritual goods) and other types of corruption within the Church, and his connection with the science of the Arab world and the Hindu-Arabic numerals, there were many rumors and legends of Sylvester II being in league with the devil.

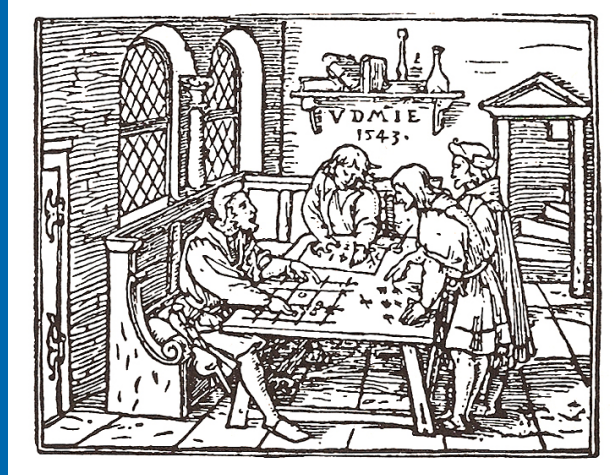
It was rumored that he was an alchemist and a sorcerer and that he must have sold his soul to Lucifer when he went to study with the “Saracens”.

The accusation continued to be spread for centuries until, in 1648, papal authorities reopened the tomb of Silvester II to make sure it was not still infested by the Devil!

SG202.2.5 Abacists versus Algorithmists



↑ “Algorithmists” using the Hindu-Arabic numerals. Engraving, 16th c.



↑ “Abacist” (left) and “algorithmicists” (right and in back) argue about their methods. On the wall, VDMIE = “Verbum Domini Manet In Eternum” (God’s word remains forever).



↑ A father apprenticing his son to an abacist.
Hans Weiditz. Woodcut, 1535.
(Karl Menninger. *A Cultural History of Numbers.*)

“Abacists” using the old abacus. →



↑ Lady Arithmetic SMILES on the algorithmist working with the Hindu-Arabic numerals and zero. Gregorius Reisch. *Margarita Philosophica*, 1503.

Historical Note:
Molière (1622 -1673), the French playwright, had his *Malade Imaginaire* (The Imaginary Invalid) check his apothecary’s bill “*ayant une table devant lui comptant avec des jetons*” (“counting with counters”), this was not a joke but still part of daily reality. That was in mid 17th century.

SG202.2.6 The Second wave of New Numerals

The dawn of the new age in Europe was ushered by the crusades (1095 - 1291): armies of European nobility and their attendants tried to impose their religions and customs to the “infidels” of the Middle East. But what happened is just about the opposite: those who came back brought back with them the cultural riches, the arts & architecture, the academic scholarship, the sciences, the knowledge of antiquity classics... all valuable treasures of intellectual enquiry, wisdom, open-mindedness and hunger for new learning that had been long lost in Europe.

To add to this cosmopolitan re-education of Europe, there were also contacts with the Islamic world on the other side of the Mediterranean, through Spain and North Africa. Cultural centers in Spain, such as Cordoba and Toledo, saw massive translation projects soon bringing into Latin language works written in Arabic, and also Greek and Sanskrit texts already translated into Arabic. It is by these translations from Arabic that the West became aware of the works of Euclid, Archimedes, Ptolemy, al-Khwarizmi, al-Biruni etc...

The written numerals and arithmetical methods of the Hindu-Arabic school became more and more familiar and progressively proved themselves to be much faster and more elegant than the old methods. They eventually came to be called “*algorisms*”, after al-Khwarizmi, the first Islamic scholar who had generalized their use.

The other prominent scholar who was very influential in spreading the new numerals in their complete form (including the zero) was Leonardo da Pisa, the man we now know as Fibonacci (1170-1250). We have already met Leonardo [◆SG102.4.4]. Widely traveled around the Mediterranean, he learned from Arabic teachers the new mathematics and set out to explain and promote it in his *Liber Abaci* (1202). On the right is an excerpt from *Liber Abaci* specifically talking about the “*nine figures... and zero*”.

Thus Fibonacci, interestingly enough, greatly assisted the spread in Western Europe of the Hindu-Arabic numerals that, many centuries later, would be combined in the mathematical progression called the “Fibonacci Series” directly generating the Golden Ratio. [◆SG104]

From the 13th century on, manuals on calculation (adding, multiplying, extracting roots, etc.) started to appear in Europe. The most popular one was written by *Johannes de Sacrobosco* (about 1235) and was one of the earliest scientific books to be printed in 1488.

In the late 15th century, Hindu-Arabic numerals seem to have predominated among mathematicians, while merchants still preferred to use the Roman numerals. In the 16th century, the “new” numerals became progressively used throughout Europe. It had been a long “re-education”.

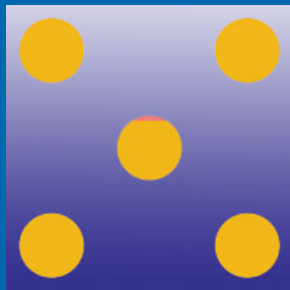
“After my father's appointment by his homeland as state official in the customs house of Bugia for the Pisan merchants who thronged to it, he took charge; and in view of its future usefulness and convenience, had me in my boyhood come to him and there wanted me to devote myself to and be instructed in the study of calculation for some days. There, following my introduction, as a consequence of marvelous instruction in the art, to the nine digits of the Hindus, the knowledge of the art very much appealed to me before all others, and for it I realized that all its aspects were studied in Egypt, Syria, Greece, Sicily, and Provence, with their varying methods; and at these places thereafter, while on business. I pursued my study in depth and learned the give-and-take of disputation. But all this even, and the algorism, as well as the art of Pythagoras, I considered as almost a mistake in respect to the method of the Hindus (Modus Indorum). Therefore, embracing more stringently that method of the Hindus, and taking stricter pains in its study, while adding certain things from my own understanding and inserting also certain things from the niceties of Euclid's geometric art. I have striven to compose this book in its entirety as understandably as I could, dividing it into fifteen chapters. Almost everything which I have introduced I have displayed with exact proof, in order that those further seeking this knowledge, with its pre-eminent method, might be instructed, and further, in order that the Latin people might not be discovered to be without it, as they have been up to now. If I have perchance omitted anything more or less proper or necessary, I beg indulgence, since there is no one who is blameless and utterly provident in all things. The nine Indian figures are: 9 8 7 6 5 4 3 2 1. With these nine figures, and with the sign 0 ... any number may be written.”

SG202.2.7 The Garden of Cyrus

Here is an example of a 17th century work championing the PENTAD.

Sir Thomas Browne was a polymath, versed in all the sciences & philosophies of his day and a keen observer of the natural world.

The *Garden of Cyrus*, or, *The Quincunciall Lozenge, or Network Plantations of the Ancients, Artificially, Naturally, and Mystically Considered*, is a work whose subject is the *quincunx*, the arrangement of five units like the five-spot in dice, which Browne uses to demonstrate that the Platonic forms exist throughout Nature.



The *Garden of Cyrus* is Thomas Browne's mystical vision of the oneness and interconnectedness of art, nature and the Universe via the sacred archetype of the number FIVE, quincunx pattern, lozenge shape, figure X and reticulated network. In *five* chapters of compressed yet highly evocative examples of the presence of five in nature & culture, Browne elicit winning conviction by the sheer encyclopedic amount of imagery, symbolism and associative thought he lays upon the reader, thus showing evidence of his complete understanding of the fundamental quest of *Hermetic Philosophy*, i. e. proof of the wisdom of God as displayed in the harmony & beauty of the cosmos - which, of course, is also one of the quests of Sacred Geometry.

This near vertiginous procession of examples of how God geometrizes (via art objects, botanical observations, ancient history, optics, biblical scripture and the kabbalah...) places Thomas Browne at the same inter-disciplinary crossroads we are ourselves, 350 years later: glimpsing a unified field of cosmic supra-intelligence, based on a Phi matrix of cascading resonances.



↑ Sir Thomas Browne (1605 - 1682)

The last sentence of the *Garden Of Cyrus* is:

“But who can be drowsie at that howr which freed us from everlasting sleep? Or have slumbring thoughts at that time, when sleep it self must end, as some conjecture all shall awake again?”

SG202.2.8 Renaissance Number Symbolism

- 1489 - Pico della Mirandola's *Heptaphis* offers 7 interpretations of the 7 days of creation in 7 books with 7 chapters each. In his *Oratio*, he revived Pythagorean numerology. [◆SG102.5.1]
- 1493 - *Le Compost et Kalendrier des Bergiers (The Kalendar and Compost of Shepherds)*, the “first book printed for the people”, is a compendium of the relationship between microcosm and macrocosm. It brings together, in a comprehensive day-by-day almanac form, numerology, astrology, farming wisdom, folk medicine, Christian saint's days and various methods to manipulate numbers for achieving attunement with the cosmos and ultimately human salvation.
- 1509 - Luca Pacioli published his *De Divina Proportione*, illustrated by da Vinci and devoted to Phi. [◆SG102.5.2]
- 1525 - In Giorgio's *Harmonia Mundi*, numerology is described as a center science unifying all other branches of knowledge.
- 1533 - Agrippa von Nettesheim published his *De Occulta Philosophia Libri Tres*, an encyclopedia of numerology. Agrippa's famous quotes are: "Nothing is concealed from the wise and sensible, while the unbelieving and unworthy cannot learn the secrets." "All things which are similar and therefore connected, are drawn to each other's power." (The law of Resonance).
- 1583 (2nd ed. 1618) - In his *Mysticae Numerorum Significationis Liber*, Peter Bungus, canon of the cathedral of Bergamo, makes a survey of the use of numbers with many quotes from classical and medieval (including Arabic) sources. He introduced the concept of “evil” numbers and is famous for attributing (with some number twisting) “666” to Martin Luther.
- 1665 - Athanasius Kircher, the last “Renaissance Man”, was a German Jesuit scholar who was called “master of hundred arts”. His *Arithmologia, sive de abditis Numerorum Mysteria* is a comprehensive description of the ‘science of numbers’.



↑ Shepherd looking at the night sky.
Kalendrier. 1493



↑ The Wheel of the occupations of the month and the zodiac.
Kalendrier. 1493



↑ Pico della Mirandola
(1463-1494)



← Agrippa of Nettesheim
(1486-1535)



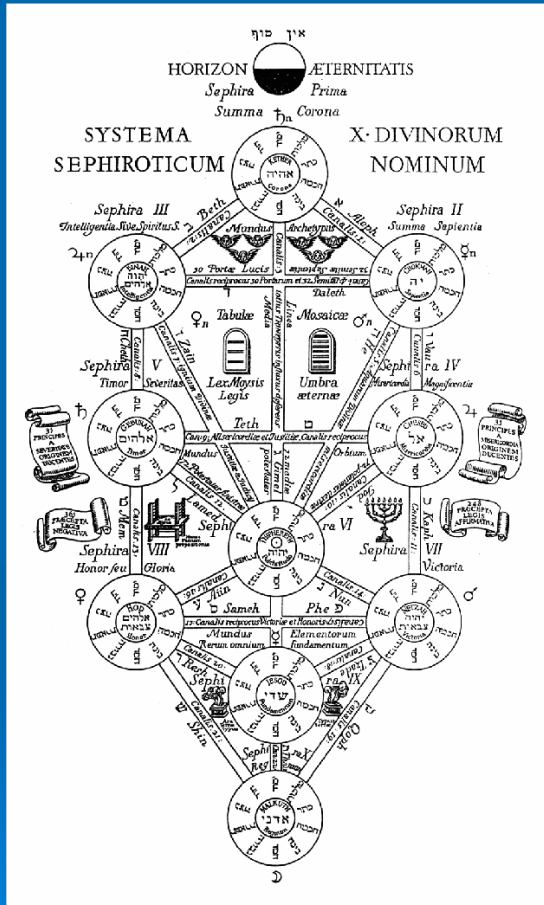
Athanasius → Kircher
(1602-1680)

P. ATHANASIVS KIRCHERVS FVLDENSVS
ē Societ. Iefu Anno aratis LIII.
Misisti et obsecraſte regi auſpice et R.D. C. Blomart Romae a. Maij. 8. 1665.

SG202.2.9 The Kabbalah Tradition

An important stream of number symbolism and numerology that developed during the Middle Ages and the Renaissance period was the Kabbalah tradition. The Kabbalists took many of the ancient Gnostic ideas & techniques of number symbolism and used them to dramatically reinterpret earlier Jewish sources accordingly, just like the Christian Church Christianized the traditional cosmology & philosophy of numbers. [SG302]

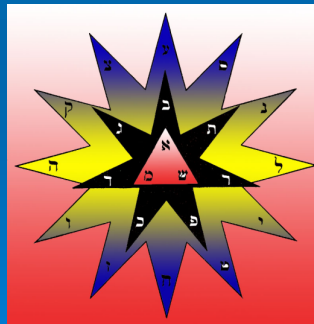
In the Kabbalah tradition, the series of numbers (as Sephiroth) is preceded by a non-manifested source: the *Ain Soph* or Uncreated Origin.



↑ The Tree of Life by the German Jesuit scholar Athanasius Kircher. 17th century.



The Ain Soph & the 10 Emanations Abraham de Herrera. c.1570-1635.



↑ The Hebrew letters, according to the *Sepher Yetzirah*: 3 Mother Letters, 7 Double Letters and 12 Simple letters.



↑ The Tree of the 10 Sephiroth. An early "organic" form. Paulus Ricius. *Porta Lucis*. Augsburg, 1516.

SG202.2.10.2 Modern Numerology

1	A	J	S
2	B	K	T
3	C	L	U
4	D	M	V
5	E	N	W
6	F	O	X
7	G	P	Y
8	H	Q	Z
9	I	R	

↑ Number associations
of the Latin Alphabet,
in Pythagorean Numerology.

What we now call “Numerology” is what used to be the wisdom of number symbolism. In ancient cultures, people had an intuitive understanding of numbers as prime principles of creation and they devised various ways to avail themselves of their benefits and powers, and use numbers as bridges to the unknown, the spirit world and the cosmos. Specific numbers as well as their ratios and associations were applied to all areas of culture & civilization (music, architecture, poetry, mythologies...), thus providing a coherent and meaningful foundation to the collective consciousness as a microcosm reflecting the macrocosm.

In our times however, numerology has been so trivialized as to be the mere computation of the numbers associated with personal names and birthdates in order to surmise character profile, purpose in life, motivations, talents... or preview best strategies and times for major moves etc... But, as we enter again a higher evolutionary cycle, numerology is starting to return to its original wisdom of a yoga of ascension to Oneness, tracing back the multiplicity of the manifested number field to the first integers and, ultimately, to the primordial dance of One-Zero as the ground of higher-dimensional consciousness.

There are many old and new systems of numerology, each with their own value. For instance, the “Chaldean” numerology system takes into account the compound sum of the name (deeper spiritual levels), in addition to the reduced sum (human personality level), but it omits the “9” and its essential cosmic presence. The ways are many, You are One. Below are some basic techniques in Pythagorean Numerology, based on the digital reduction of the Latin letters.

DESTINY PATH / EXPRESSION Number:

Method: Add together the numbers of every letter of your full birth name.

This number points to the overall field of opportunities at your disposal, on a human level. It is the potential of your abilities & talents and the call of your “destiny” i.e. what you can become or aspire to become.

SPIRITUAL URGE / SOUL Number

Method: Add together numbers of all vowels in your full birth name.

(The letters “y” and “w” are considered vowels when preceded by a vowel)

This number points to the inner longing of your spiritual nature, your deep desires and your soul wisdom. It is your “heart’s desire”.

PERSONALITY Number

Method: Add together the numbers of all consonants in your full birth name.

This number points to your outer personality, your social self and what others expect of you because of your outer image. This is what you allow to show, not necessarily your true essence.

BIRTH PATH / LIFE LESSON Number

Method: Add together the numbers of the day, month and full year of your birth.

This number represents who you are at birth, on a spiritual school level. It is a short reading of your astrology imprint. The Life Path describes the nature of your journey through this life, your mission or spiritual purpose. Also your life challenges and lessons to learn.

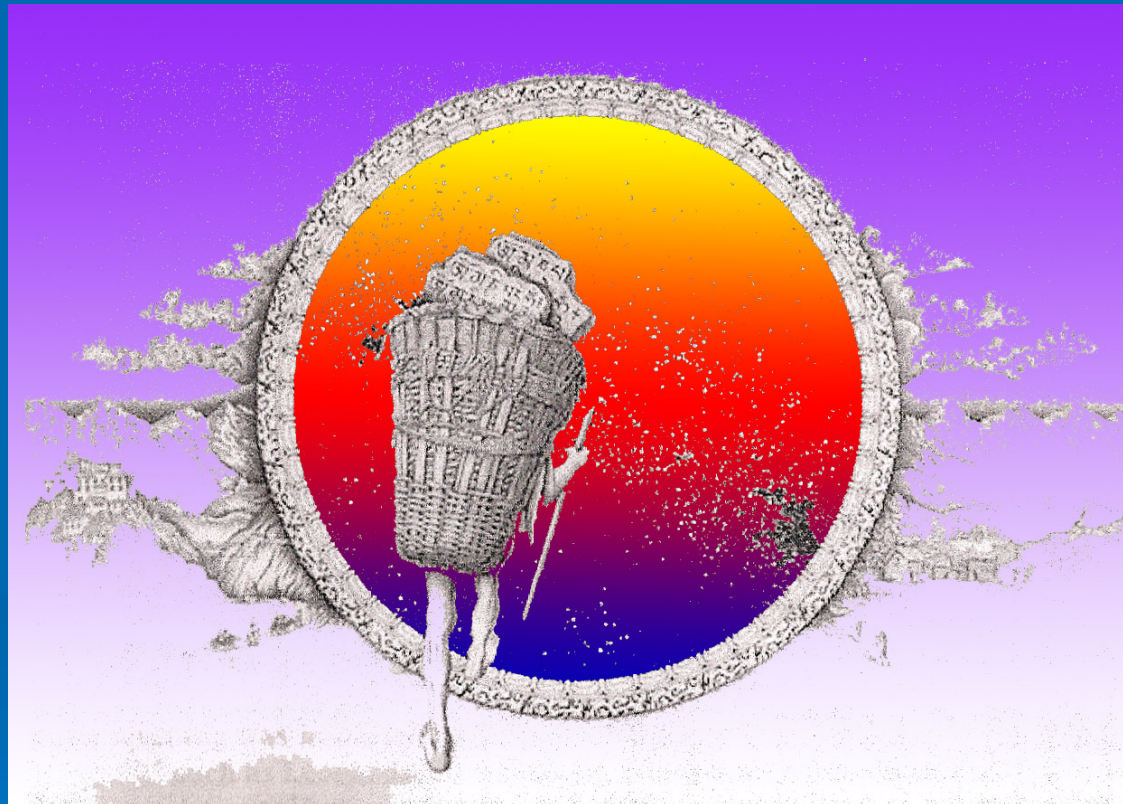
Once you have your numbers, you can refer to the section on the first nine integers (1 - 9)
or meditate on them with your own understanding & guidance.

SG202.2.11 Dance Interlude



The “anthropomorphic” numbers →
19th century engraving.
(In Marc-Alain Ouaknin. *Mystères des Chiffres*).

SG202.3. Chapter 3. The Remarkable Zero



SG202.3.1 The Legend of Sessa

The famous Indian Legend of Sessa attributes to the Indian mathematicians the invention of our modern number system: the nine integers with “zero” as a place-value. This is historically confirmed, as we have seen previously.

An Indian Brahmin of the name of Sessa one day created the game of *Shaturanja* (the ancestor of chess), played by 4 players on an 8 x 8 board. Sessa offered his invention to the King of India who was so amazed by the ingenuity of the game that he asked Sessa to name his reward.

The Brahmin replied: “*O Lord, I wish that you would grant me as many grains of wheat as will fill the squares on the board: one grain for the first square, two for the second, four for the third etc... each square receiving double the number of grains that were put in the previous square.*”

The King felt almost offended by a request seemingly so small compared to his immense wealth and generosity. But he ordered his minister to grant the Brahmin’s wish on the spot. However, the next day, the calculations were not yet completed and the King, not used to any delay in obeying his orders, dismissed the court mathematicians.

Seeking advice from his Counselors, the King was told that in one province of his Kingdom, mathematicians had been using for generations a far more efficient calculation method.

One of these ingenious calculators was brought to the court, solved the problem in record time and explained to the King: “*O Lord, the quantity of grain asked of you is enormous.*” But the King shrugged, replying that he owned vast granaries. The mathematician-sage continued:

“*O lord, in spite of all your riches, it is not within your power to provide such a quantity of grain. All the granaries in all of kingdoms on Earth would only provide a tiny portion of the amount of grain. You would need to turn the entire surface of the earth into a vast field of wheat and harvest it 73 times in a row to gather the quantity of grain needed.*”

[Later computations equated the quantity of wheat to 12 billions and 3,000 million cubic meters requiring a granary 5 meters wide, 10 meters long and 300 million kilometers high (twice the distance earth-sun or two A. U.)]

The mathematician-sage explained to the King the revolutionary method of calculation he used: “*We use 9 figures (1-9) standing for the 9 simple units and also a tenth figure, 0, which means ‘null’ and stands for units that are not present. With this system we can easily represent any number, however large, and we can perform every arithmetical operation.*”

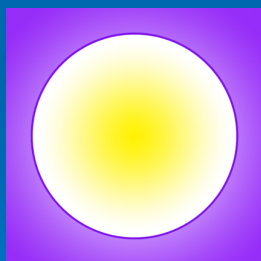
1	2	4	8	16	32	64	128
256	512	1024	2048	4096	8192	16384	32768
65536	131072	262144	524288	1048576	2097152	4194204	8388608
16777216	33554432	67108864	134217728	268435456	536870912	1073741824	2147483648
4294967296	8589934592	17179869184	34359738368	68719476736	137438953472	274877906944	549755813888
1099511627776	2199023255552	4398046511104	8796093022208	17592186044416	35184372088832	70368744177664	140737488355328
281474976710656	562949953421312	1125899906842624	2251799813685248	4503599627370496	9007199254740992	1801439850981984	360287970018963968
72057594037927936	144115188075855872	288230376151711744	576460752303423488	1152921504606846976	2305843009213693952	4611686018427387904	9223372036854775808

↑ Mathematical progression of the number of grains, the last case being doubled to = 18,446,744,073,709,551,615 grains!

The Legend of Sessa ends in the following way:
The king turned to his counselors and ask them what to do to be quit of this huge debt. He was told:
“*O lord, ask the Brahmin to come here and count for himself, grain by grain, the quantity of wheat he is asking for. Even if he works non-stop day and night, he will only gather up an insignificant amount of the whole in his entire life.*”

0 - ZERO - VOID (All)

Source of All
Zero Point Energy
Great Cosmic Mother
Nameless One
Boundless One
Empty Space of Heaven
Pointless origin
Abyss
Infinity
Quantum Plenum
Space Producer
Nun - The Primal Ocean
Wu Chi - Original Emptiness
Tao - Unity of Yin & Yang
Ain Soph - Source of Sephiroth
Super-essential Nothing
Point of Departure & Return
Ouroboros
Cup of Creation



SG202.3.2 Zero as Shunya

The concept of “Zero” is grounded in the primordial sacred wisdom of the original, unmanifested “space” out of which the entire universe was born. It is an “emptiness”, a void that is potentially “full”, pregnant with the entire cosmos. It is the condition existing prior to the “unit”. This ontological nature of Zero as Origin and the circle representing it has been most deeply developed in the ancient Indian culture.

Once the mathematical zero had been invented by Indian scholars and used in the place-value system to indicate the “absence” of units in a numerical order, it didn’t need to be given a new name: the Sanskrit language already had the term “*shunya*” to express “void” or “absence” and the Indian spiritual philosophy, for centuries, had been familiar with the concept of “vacuity” or “emptiness” and its many interpretations. So “zero” naturally dovetailed with an essential element of the Indian conception of the world.

Because of the rich vocabulary of Sanskrit, a whole range of words meaning sky, space, firmament, infinity, wholeness etc... came to signify “zero”. (See the table at the bottom of this page).

Another essential association was established between “zero” and the word and concept of “*akasha*”. Akasha, in the Hindu philosophy, means the “5th element”, the most subtle one, believed to be uncreated, penetrating everything, devoid of substance and beyond any description. Naturally, zero became a “*mathematical akasha*” playing, in science & mathematics, a role comparable to the role played by Akasha in terms of existence itself.

“At least since the beginning of the Common Era, ‘Shunya’ means not only void, space, atmosphere or ether, but also nothing, nothingness, negligible, insignificant etc... In other words, the Indian concept of zero far surpassed the heterogeneous notions of vacuity, nihilism, nothingness, insignificance, absence and non-being of Greek and Latin philosophies.” (G. Ifrah)

Shunya, as the mathematical zero, has been represented in two graphical forms:

Shunya-bindu (literally *void-dot*) in the shape of a dot •

Shunya-chakra (literally *void-circle*) in the shape of a small circle ◉

Abhra - Atmosphere
Akasha - Ether
Ambara - Atmosphere
Ananta - Immensity of Space

Antarishka - atmosphere
Bindu - Unmanifested Dot
Gagana - Canopy of Heaven
Jaladharapatha - Journey on water

Kha - Space
Nahba - Sky
Paramabindu - Supreme Bindu
Purna - Entire, Complete

Sunya - the Void
Vishnupada - Foot of Vishnu
Vyant - Sky
Vyoman - Sky, Space

↑ Some of the Sanskrit words for Zero

Full Shunya

Achyutananda, an Indian 16th century poet seer, believed in the form of god (Visnu) as *Sunya* (emptiness, void, zero) called *Shunya Purusha* and/or *Shunya Brahman*. Achyutananda's culminating work is called the *Shunya Samhita* where he discusses this philosophy in depth.

*“Oh Vira look at the shunya
By placing yourself in shunya,
And meditate on mahashunya,
Shunya itself is the form,
Ground of all discriminating knowledge.
... It has no shape, no color,
It is invisible and without a name.
Look at the whole world from the pedestal of shunya;
You will find everything manifested in the shunya,
Everything arises out of shunya and
Everything flourishes in the Shunya Brahman.”*

The understanding of the fullness of Shunya is sometimes called the *Purna Shunya* (the full/complete void).

Empty (Buddhist) Shunya

In the Buddha's spiritual teaching, *Śūnyatā* is the insight into the emptiness of phenomena as a step to spiritual wisdom.

“Śūnyatā signifies that everything one encounters in life is empty of absolute identity and permanence. This is because everything is inter-related and mutually dependent - never wholly self-sufficient or independent.

This teaching does not connote nihilism. In the English language, the word emptiness suggests the absence of spiritual meaning or a personal feeling of alienation, but in Buddhism the realization of the emptiness of phenomena, at basic level, enables one to realize that the things which ultimately have no independent substance cannot be subject to any irreconcilable conflicts or antagonisms. Ultimately, true realization of the doctrine can bring liberation from the limitations of form.”

(Wikipedia)

SG202.3.3 Mystical Shunya

Note: in India, the fundamental mystical concepts of *Shunyata* (“emptiness”) were pushed to such a degree that 25 types of Shunya were identified. No wonder the mathematical zero came to them easily. We offer here examples of the two extremes (although essentially united) of Full Shunya & Empty Shunya, as well as a western mystical view of the Void.

Meister Eckhart's Zero

Meister Eckhart (c. 1260-1328) was a German theologian, philosopher and mystic who expounded, with great eloquence, radical views for his times (so much so that he was tried as a heretic by Pope John XXII). At the core of his teaching were his views on “emptiness”:

*“When I preach,
I usually speak of detachment
and say that a man should be empty of self and all things.”*

“Meister Eckhart taught that all creatures are nothing; that being empty of things is to be full of God; that God, who must lie past all knowledge and all being, must therefore also be nothing, has been immovably disinterested in his creation from the beginning, and still is - and desinterest (Abgescheidenheit) comes so close to zero (Nichte) that nothing but God is rarefied enough to go into it... Eckhart sees that he is God and that anyone will be God if he goes beyond humility to desinterest (detachment)”. (Robert Kaplan. *The Nothing That Is*.)



← Meister Eckhart

*“God and I are One.
Now I am what I was
and I neither add to
nor subtract from
anything, for I am the
unmoved Mover, that
moves all things.”*

*“To be full of things is to be empty of God.
To be empty of things is to be full of God.”*

SG202.3.4 Zero and Infinity

One of the many Sanskrit words for zero is “*ananta*” (“Infinity”). Ananta or Shesha is the cosmological serpent floating on the primordial water of the original chaos or “ocean of unconsciousness”. Ananta, as the bearer of the universe, grasps in his coils the very basis of the axis of the world and represents the beginning and the end of all creation. Ananta is the symbol of Infinity, eternity and immensity. In Indian mythology, Vishnu is said to lie on Ananta in between two creations of the world, during the birth of Brahma born out of his navel.

While, in Indian mysticism, the concepts of zero and infinity were linked, in Indian mathematics, they were known to be the inverse of each other. Indian scholars, at least since Brahmagupta, knew that division by zero = infinity and “infinity” remains unchanged whether a finite number is added to it or subtracted from it.

$$A / 0 = \infty$$

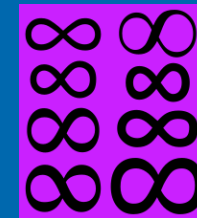


(//images.exoticindiaart.com)

*Pūrṇa madah pūrṇa midam
Pūrṇāt pūrṇa mudacyate
Pūrṇasya pūrṇa mādāya
Pūrṇa mevā vasiṣyate.*

That is whole, this is whole.
From the whole, the whole arises.
When the whole is taken from the whole.
The whole still will remain.

Isha Upanishad of the Yajurveda (c. 4th to 3rd century BCE)



↑ Vishnu resting on Ananta-Shesha, with Lakshmi massaging his "lotus feet."

SG202.3.7 Zero as “Zero Point”

“Zero” has lately come to attention in physics and energy technology under the labels of “Zero-point Energy” and “Zero-Point Field”.

In quantum physics, the zero-point energy (ZPE) is “the lowest possible energy that a quantum mechanical physical system may have and is the energy of the ground state”. The quantum mechanical system that encapsulates this energy is the zero-point field (ZPF) - now commonly known by the friendly & benevolent name “the Cosmic Field”.

The concept was first proposed by Albert Einstein and Otto Stern in 1913; they suggested the existence of a background energy that all oscillators have at absolute zero (where all thermal radiation is absent: a condition obtained when reaching a temperature of absolute zero = - 273° Celsius). They called this “*residual energy*” (German *Nullpunktenergie*) which later became translated as *Zero-Point Energy*. This energy derives its name from the fact that at absolute zero, elementary particles continue to exhibit energetic behavior.

Zero-Point Energy is sometimes used as a synonym for the *vacuum energy* (remember *Shunya?*), an amount of energy associated with the “vacuum” of “empty” space. In quantum field theory, the fabric of space is described as consisting of fields, with the field at every point in space/time being a quantized simple harmonic oscillator, with neighboring oscillators interacting; therefore there is an input of energy from every point in space, resulting in a calculation of “infinite” Zero-Point Energy. This energy is also called the *Zero Point Vacuum Fluctuations Energy*. Quantum theory predicts, and experiments verify, that the so-called empty space (the *vacuum*) contains an enormous residual background energy, a “thriving sea of energy”. The variation in ZPE, as the boundaries of a region of vacuum move, leads to the well-established *Casimir* effect (the generation of short-range attractive forces).

Theoretical considerations indicate the ZPF should be a background sea of electromagnetic radiation that is both uniform and isotropic (the same in all directions). The uniform and isotropic nature of the ZPF is important, and explains why it is not readily observed. Fundamentally, the lack of asymmetry of the ZPF prevents its easy identification, just as a fish being absolutely still in a sea of constant temperature and pressure water is unable to detect the water itself.

Originally, the possible uses of zero-point energy was thought to be of significance only for small perturbations in atomic emission processes. But then, advances in ZPE theories (in conjunction with nonlinear thermodynamics, connective physics, fractal field science, implosion, cold fusion etc...) along with breakthroughs in R & D suggested new ways to understand inertia and gravity (and thus potentially a friendly use of these forces). Such theories would also explain many “scientific anomalies” (that is for the old science paradigm) such as sonoluminescence, self-similar resonance, micro/macro-scale coherence ...

Technical applications include extracting these vacuum fluctuations for practical uses, in effect tapping the zero-point, and thereby accessing a universe-sized source of energy. Note: there is a long (and dark) history of such research dwarfed by the powers to be.



“The ‘vacuum’ is not just the lowest energy state of a system..., but a physically real energy domain.

This domain is neither a vacuum, nor indeed a quantum vacuum, but a PLENUM that extends throughout the cosmos below the level of quanta:

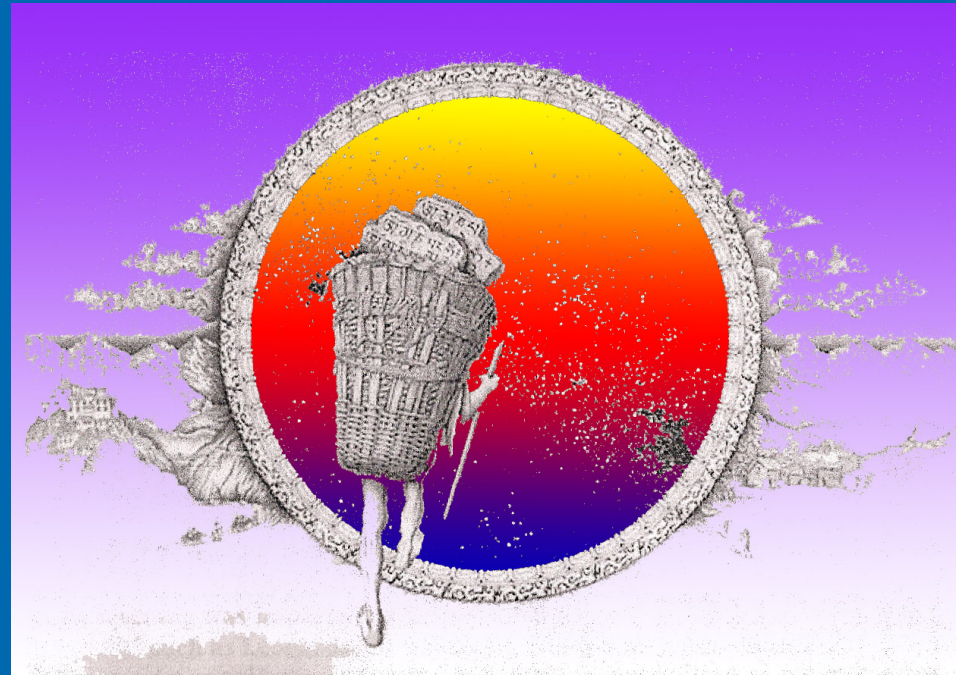
the COSMIC PLENUM.”

(Ervin Laszlo.
The Connectivity Hypothesis. 2003)

SG202.3.8 Zero as Doorway

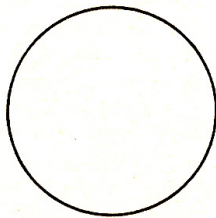


“Moon Doorway” in China.
Going through the Zero threshold
into the higher-dimensional universe.
(After [//travel.webshots.com](http://travel.webshots.com))



Like the Vesica on the portals of medieval cathedrals, the Zero-circle is the doorway between the un-manifested Quantum Plenum and the physical universe.

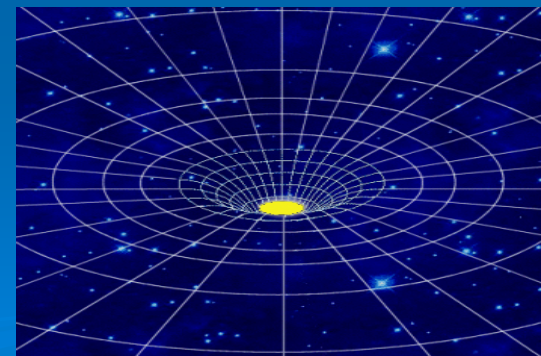
Thus when I draw the following figure on a black-board—



and ask, “What have I drawn?” people will generally identify it as a circle, a ball, a disk, or a ring. Only rarely will someone reply, “A wall with a hole in it.”

*“If you look at Zero,
you see nothing;
but LOOK THROUGH IT
and you will see the world.”*

Robert Kaplan. Opening sentence
of his book *“The Nothing That Is”*.

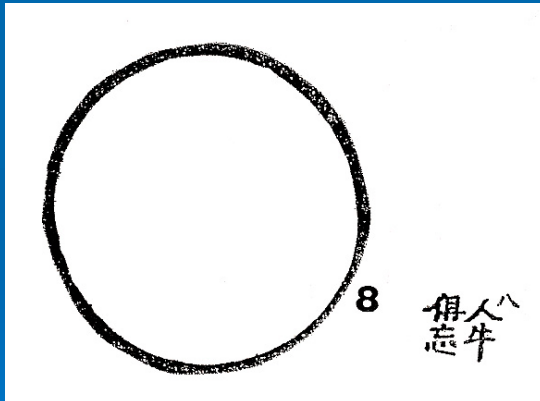


← Alan Watts. *“The Book”*. 1966. [◆SG101.4.2]

SG202.3.9 Zero in Oriental Cultures



↑ “Moon door” of a monastery.
Wu-Shi, China



↑ In the “Ten Oxherding Pictures”, a famous Buddhist teaching about enlightenment, the eight stage is represented by an empty circle and traditionally described as “Both the self and the ox are forgotten”, with the meaning of being empty of all desire and unifying all opposites into the “true void”.

ENSO: Mystical Zen Calligraphy



In Japanese, “*Enso*” means “circle”. This is one of the most prevalent images in Zen art and considered one of the most profound subjects in *Zenga* (Zen-inspired painting). Practicing *Enso* (as in “drawing a circle”) is an essential meditation-in-action for students of Zen calligraphy.

It is believed that only a person who is spiritually “whole” can draw a true *Enso*. Some artists practice drawing *Enso* as a spiritual exercise, much like Jung had a daily mandala practice. *Enso* art has provided much fascination, allowing people to ponder the meaning of the “circle”: infinity, emptiness, void, original self, totality, spirit fullness, doorway... It is a direct expression of being in-this-moment, a direct pointing to enlightenment... “Enter from here” says the *Enso*...

Here is a Zen “*Enso*” story:

Encountering two monks who challenged his understanding, Zen master Yangshan drew a circle in the air, showed it to them, and then threw it behind him, over his shoulders. Then he stretched out his arms and asked them to return the circle. The two monks were dumbfounded and did not know what to do.

(Quoted from: *Enso*. By Audrey Yoshiko Seo. 2007.)

Even 14th century Italy has a famous example of “Enso”. Here is an episode from the life of Giotto (1267-1337) told by Giorgio Vasari. Giotto is generally considered the first in a line of great artists who contributed to the Italian Renaissance.

“After this he was called to Assisi by Fra Giovanni di Muro, at that time general of the order of St. Francis, and painted in fresco in the upper church thirty two stories from the life and deeds of St. Francis, which brought him great fame.

It is no wonder therefore that Pope Benedict sent one of his courtiers into Tuscany to see what sort of a man he was and what his works were like, for the Pope was planning to have some paintings made in S Peter's. This courtier, on his way to see Giotto and to find out what other masters of painting and mosaic there were in Florence, spoke with many masters in Sienna, and then, having received some drawings from them, he came to Florence.

And one morning going into the workshop of Giotto, who was at his labours, he showed him the mind of the Pope, and at last asked him to give him a little drawing to send to his Holiness. Giotto, who was a man of courteous manners, immediately took a sheet of paper, and with a pen dipped in red, fixing his arm firmly against his side to make a compass of it, with a turn of his hand he made a circle so perfect that it was a marvel to see it. Having done it, he turned smiling to the courtier and said, "Here is the drawing." But he, thinking he was being laughed at, asked, "Am I to have no other drawing than this?" "This is enough and too much," replied Giotto, "send it with the others and see if it will be understood." The messenger, seeing that he could get nothing else, departed ill pleased, not doubting that he had been made a fool of. However, sending the other drawings to the Pope with the names of those who had made them, he sent also Giotto's, relating how he had made the circle without moving his arm and without compasses, which when the Pope and many of his courtiers understood, they saw that Giotto must surpass greatly all the other painters of his time...

So the Pope made him come to Rome, and he painted for him in St. Peter's, and there never left his hands work better finished; wherefore the Pope, esteeming himself well served, gave him six hundred ducats of gold, besides having shown him so many favours that it was spoken of through all Italy.”

SG202.3.10 The “O” of Giotto

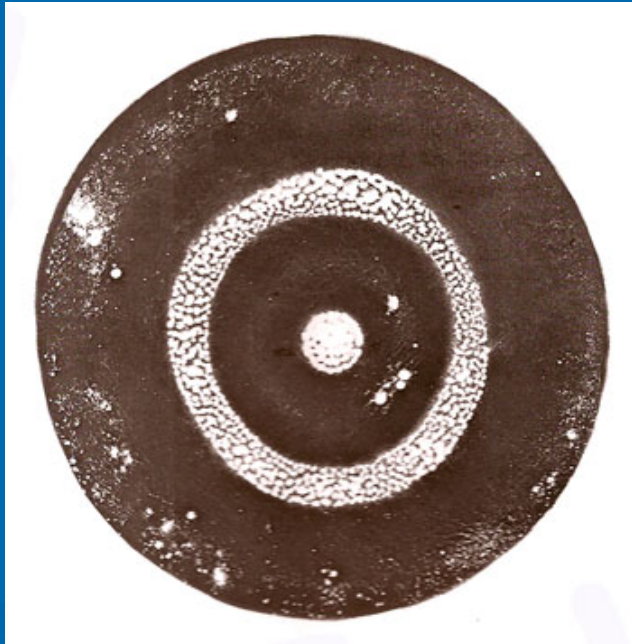


Lamentation (Mourning of Christ) by Giotto di Bondone.
Chapel Scrovegni, Padua, Italy.

(Note the round golden halos
as symbols of spiritual plenitude.)

SG202.3.11 “O” as Shape & Sound

Cymatics has shown that the shape of the circle is the visual expression of the sound “O”. When spoken or toned into a *tonoscope* or a *cymascope*, the sound of the power vowel “O” forms a circle of sand particles or water waves. [◆SG201.5]



↑ The vowel “O” spoken into a tonoscope.
(from Hans Jenny’s book “Cymatics”)



↑ Indian sadhu performing ceremony in his own “mandala” circle.
Sitting in one’s own mandala circle is the “re-unification of unity”,
the realization of Oneness by forming a cone of fractal spirit power homing on Source.



← The *Sri Yantra* is the visual expression of the sound OM, the primordial sound of creation in the Hindu tradition.

This pattern is said to be seen by monks, in deep contemplation, while chanting the mantra OM.



← The Sri Yantra can be seen as the continuum of the Number Field. It represents the unfoldment of all realms of creation, emerging from the dynamic male-female polarity of the up & down triangles.

At the center, there is the *shunya-bindu*, the focus of the Sri Yantra meditation practice. The *Bindu* is the symbol of (and doorway to) the un-manifest Absolute, the measureless unity and the formless origin of all things. [◆SG305]

SG202.3.12 Zero and Paradigms

In his seminal “*Sacred Geometry*” (1982), Robert Lawlor writes: “*The theological impulse of the Indian mentality did not allow it to place zero at the beginning of the series. Zero was placed after 9. It was not until the 16th century in Europe, the dawn of the ‘Age of Reason’, that 0 was placed before 1, allowing for negative numbers*”. From that point on, mathematicians created a whole population of abstract numerical entities: algebraic irrational numbers ($\sqrt{10}$), transcendental / complex / imaginary / literal numbers... Lawlor notes that the introduction of zero permitted numbers to represent ideas which have no form and this signaled a change in the definition of the word ‘idea’, which in antiquity was synonymous with ‘form’ and implied a web of geometric relationships and proportions.

“The western rationalistic mentality negated the ancient and revered spiritual concept of Unity, for with the adoption of zero, Unity loses its first position and becomes merely a quantity among other quantities.” (Lawlor). This enshrining of zero as new “God” was instrumental in establishing the dualistic paradigm & mindset that has plagued the western culture (and the world) for centuries and whose grip was only released with the advent of quantum physics re-introducing interconnectedness and “oneness”.

The dualistic paradigm caused science (and consequently the whole western culture, all the way to mental & psychological attitudes) to build its course upon separation: matter composed of “building blocks”, life (people, nature and planets) made out of reductionist physico-chemical processes, the mutual ignorance of life and after-life or human life realities and psychic-spiritual realities... i.e. the “quantitative” separated from the “non-quantitative”, the inert and invisible ignored or superceded by the physically living and provable. The extreme development of this dualistic paradigm led to the cultural conviction that the non-quantitative was inferior: ‘civilized’ cultures exploiting nature as an inert and endless resource; ‘civilized’ people colonizing ‘primitive’ people; and people competing with each other as separate ‘individuals’ rather than ‘persons’ belonging to a larger whole: humanity.

We can see here how, historically, the traditional understanding of the continuum of numbers, with Unity at the center, was displaced by the glorification of zero separating the ‘negative’ from the ‘positive’ and introducing a break-point in the continuous interchange and flow of consciousness perceiving the universe as One.

But we are NOW at a new juncture where the dualistic paradigm is replaced by the new/ancient paradigm of interrelatedness: the web of life & consciousness is being revered again and gives everyone a “context” to belong to. Reality, small and large, is again including the “observer” and becomes more & more friendly. An atom is no longer a mechanistic little toy but a complex holographic, fractal matrix of subtle frequency patterns in direct resonance with other fields, both local & non-local, both material and meta-physical or multi-dimensional. We are starting to laugh at the old idea that anything or anyone can be isolated or ‘alone’ and that there can be any separation between nature and the quantum plenum, between matter and spirit. We can let go of the zero of separation and welcome the zero of Infinity.

ZERO, indeed, is a great teacher. Its introduction into the world culture was at first misleading us into dualistic alienation as it became a tacit cultural god, taking the place of number One.

Now we realize that there is a higher consciousness dance between zero and one: zero and one are two expressions of the same Source. We do not need to choose matter over spirit (old West) or spirit over matter (old East) and negate the other side. It’s a false debate as we are expanding human consciousness to embrace both. The evolution of human consciousness is leading us to co-create a global culture of mutual significance & support between the manifested and the un-manifested, a culture of Harmony & Beauty between zero and one, matter & energy, human life and spirit consciousness.

Zero, in the past 8 centuries of western culture, has been undergoing a full spiral revolution: from being perceived as a dreadful evil-labeled emptiness and chaotic abysmal void, Zero has now come to be seen as a doorway of tremendous hope, both in the metaphysical and the science-technology sense.

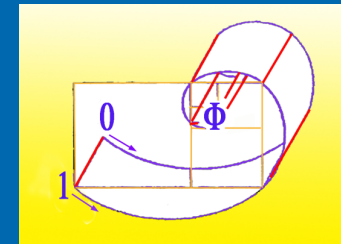
- Spirit-wise, there is an obvious & urgent need, for each human, to get back to the “zero point” or “blank slate” by applying the wisdom of “emptying one’s cup” of all extraneous and non-essential habits and data.
- Science-wise, “Zero-Point Energy” is the name for the staggering energy potential available in the cosmic quantum plasma field, provided that human consciousness moves on to global conscious inter-connectedness (global ZPE).

Zero and One, from being two different and antagonistic historical & cultural paradigms, are NOW revealed as two labels pointing to the same, two different paths of consciousness evolution leading to a center: the Source of All, the Cosmic Matrix or Plenum. It is up to each one of us to tune our consciousness and personalize our unique, intimate way to LIVE within and BE this realization.

1 (One) was the focus of the ancient cosmologies.
0 (Zero) is the focus of the modern cosmologies.

We offer, as an inspiration,
that Zero and One are meeting in PHI,
both merging into the power of Fractal Infinity.

SG202.3.13.1 The Dance of Zero & One (1)



$$1 + 0 = 10$$
$$10 = \Phi$$

SG202.3.13.2 The Dance of Zero and One (2)



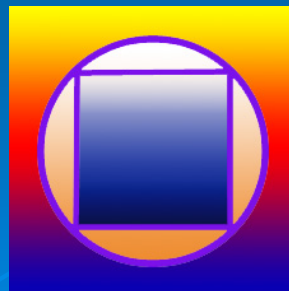
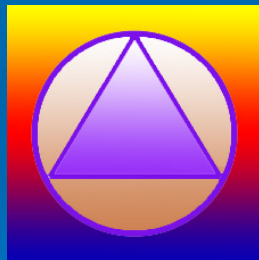
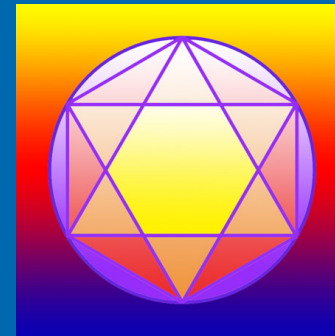
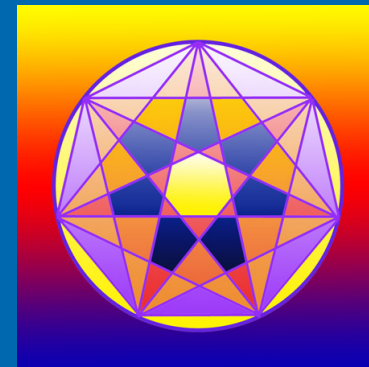
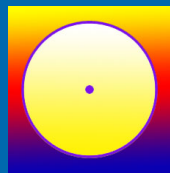
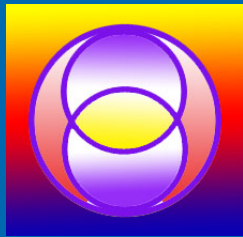
↑ Men-An-Tol, Cornwall, England.

This holed stone is about 4,000 years old. It is a traditional healing stone that cures ills and infertility when passing through it.

It offers the experience of merging zero and one, the Fullness of the absence and the Fullness of the presence.

It is a western replay of the Indian archetypal Dance between Yoni and Lingam.

SG202.4 Chapter 4. The Archetypal Numbers: 1 - 7



SG202.4.0 The Archetypal Numbers: 1 - 7

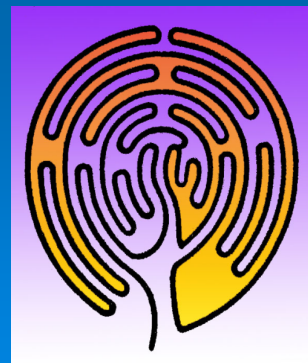
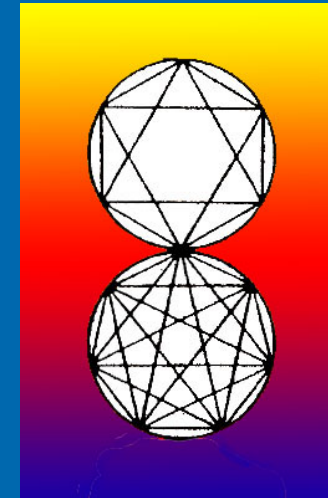
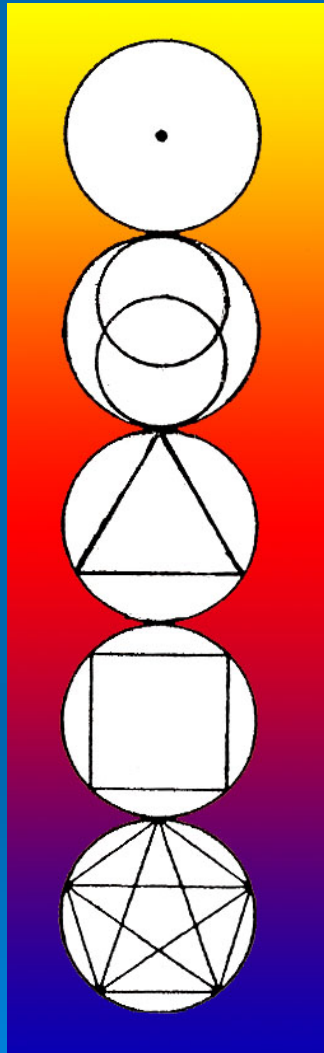
Chapters 4 and 5 are an introduction to the symbolism of Archetypal Numbers. The main page for each of the integers 1 - 9 offers a double portrait:

- First as a metaphoric poem giving some of the traditional names, qualities, attributions, cultural & symbolic expressions for each number. These names are freely woven from wisdom as well as historical sources. The sources span East and West, ancient and modern, from the Sanskrit word-symbols of Varahamihira to the Pythagorean School number symbolism, and through the various traditions of Gnostic & mystical arithmology.
- Also, the numbers are represented in the form of graphic collages assembled from the qualities of the numbers themselves as well as from many traditions who transmitted their knowledge through numerological, geometrical diagrams or architectural achievements.

To complement this double “portrait”, we share additional images, cultural examples and symbolic significance relevant to each number.

Beyond 9, we also explore, in Chapter 5, the Numbers 10, 11, 12 and 13 (as the center of 12) as particularly rich in symbolism in every culture.

Our goal here is to leave behind the old paradigm, linear, ordinal, abstract, boxed-in perception of separate “numbers” and to weave instead a spherical, vortical, multi-dimensional understanding of the interconnectedness of numbers as Living Fields of Creation and Resonant Grids of Harmonics.

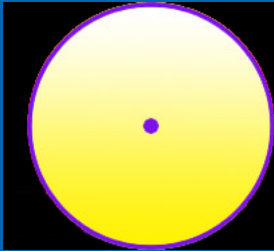


← Outline of labyrinth.
Poitiers. France.

“The whole universe is manifestly completed and enclosed by the Decad, and seeded by the Monad, and it gains movement thanks to the Dyad and life thanks to the Pentad.”

Iamblichus (c. 245-c. 325)

SG202.4.1.2 The Monad (2)



Monad (Greek *monas* = unit; *monos* = alone; *menein* = to be stable).

Also, in Greek Gematria, MONAS = 40 + 70 + 50 + 1 + 200 = 361 = 360 degrees of the circle, considering the *Rule of the Colel* (“add or subtract one unit”) and/or counting the unit twice to indicate a complete circle.

Something simple and indivisible. (Webster).

The Monad is the principle of Oneness, the ultimate unit.

The Monad is the idea of the unit or quantum, the recognition of the wholeness and uniqueness of an entity. So fundamental is the unit to arithmetic and thinking that the ancient sacred cultures did not consider “1” to be a number but rather the source of numbers, the Monad or indivisible entity from which all other numbers arose.

Ancient tradition considered that One creates all numbers. All numbers are only modulations of One, the Monad. The Monad or Unity contains everything potentially: it holds seminally the inner principles of all numbers. The Monad has an invisible ubiquitous presence sustaining all of creation and causing the myriad manifestation to strive back toward Oneness.

The concept of the omni-present unit is a key that forms a principle of connection, a common denominator among things that, on the surface, may appear to be unrelated.

Simple arithmetic demonstrations show that:

1. The Monad remains Itself whether in multiplication or in division:

$$1 \times 1 = 1 \quad \text{and} \quad 1 : 1 = 1$$

2. The Monad is both odd and even (“*Androgyn*”):

if added to an even number, the result is odd;

If added to an odd number, the result is even.

$$1 + 3 \text{ (odd)} = 4 \text{ (even)}$$

$$1 + 4 \text{ (even)} = 5 \text{ (odd)} \text{ etc...}$$

3. The Monad preserves the identity (original nature) of the numbers it creates:

$$1 \times 6 = 6 \quad 6 : 1 = 6$$

[♦SG104 Review the Golden Ratio Φ , its relationship to Unity and the unique property that its values are in both a multiplicative & additive relationship:

$$\Phi + 1 = \Phi \times \Phi \quad \text{and} \quad \Phi = 1 + 1 / \Phi$$

With Φ , waves can both add and multiply without losing their identity.]



**TRY this: 11111111 x 11111111
= 12345678987654321**

“*Number is but a fraction of Unity.*” Schwaller de Lubicz

“*From One comes Two, from Two comes Three, and from Three comes One as Four.*”

Mary the Prophetess. 16th century.

SG202.4.1.3 Primal Act: The Division of Unity

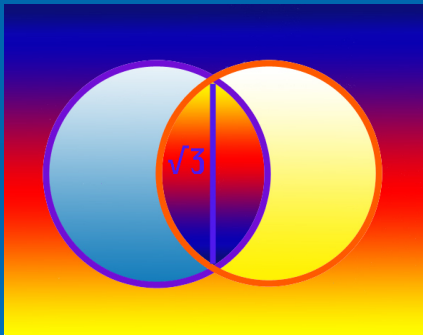
In *Esoterism and Symbol* (1960), R. A. Schwaller de Lubicz said: “Number is living, an expression of life, and speaks directly to the intelligence-of-the-heart. Its true secret lies in the becoming of One into Two.”

The transition from One to Two is the cosmogonic Creative Event, the Primordial Act. Creation happens between the numbers 1 and 2 as the two limits containing manifestation. 1 and 2 are like an octave of tones to be filled by musical chords, in harmonic proportions. No matter how it is approached, this passage from One to Two is utterly mysterious: how can absolute Unity become diverse multiplicity?

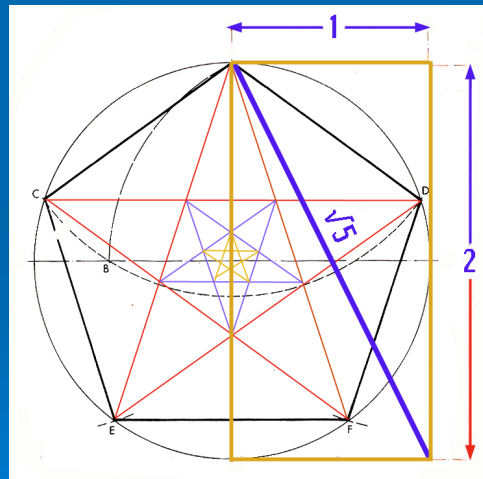
Whereas, in practical arithmetic, Two is “1 + 1”, from the metaphysical (and nature’s) point of view, Two is “1 in 1”. Stage #2 of cell division, is not one cell added to another cell, it is the first cell *dividing* into two. In the same way, Unity, as Primal Source, divides itself from within itself in order to create “Two”.

“There cannot be two Ones, for One, by definition, is singular, is Unity and therefore is all inclusive.” (Lawlor).

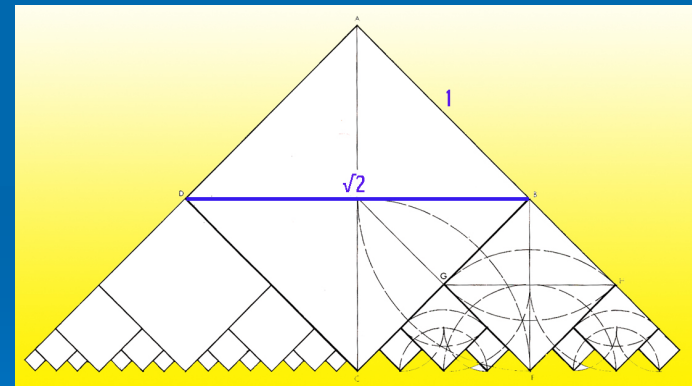
One creates by dividing itself. Sacred Geometry offers several ways to illustrate this passage of 1 to 2, by using the “roots” of numbers. Think of vegetable roots: the root of a plant is embedded in its parent, the earth; the mathematical root is embedded in numbers that are aspects of their “parent”: Unity. The “root” of a number follows a numerical “umbilical cord” that retraces an ancestry and fulfills functions of nutrition/assimilation and growth (generation/transformation). Sacred Geometry uses the root of two ($\sqrt{2}$), the root of three ($\sqrt{3}$) and the root of five ($\sqrt{5}$) as ways to symbolize the manifestation of multiplicity out of Unity.



↑ 1-2 in Circle Geometry
 If Unity is a circle, the Original Circle generates a “partner” circle, forming a Vesica Piscis, through the root power of $\sqrt{3}$.
 [◆SG108]



↑ 1-2 in Double Square Geometry
 If Unity is a double square, the Original Rectangle generates a “partner” figure, forming a cascade of penta-symmetries, through the root power of $\sqrt{5}$.



↑ 1-2 in Square Geometry
 If Unity is a square, the Original Square generates a “partner” square forming a geometric progression, through the root power of $\sqrt{2}$.

SG202.4.1.4 Division of Unity: Heaven & Earth

Most ancient mythologies give an account of how Heaven became the Earth, how 1 became 2.

In the Egyptian tradition, there is the story of Nut and Geb. Nut is the sky goddess, daughter of Shu & Tefnut (Air & Moisture). Nut is the barrier separating the forces of chaos from the ordered cosmos in this world. Her fingers and toes were believed to touch the four cardinal points or directions. The sun god Ra was said to enter her mouth after setting in the evening and travel through her body during the night to be reborn from her vulva each morning.

Nut and her husband Geb (the Earth) are great lovers. During the day, they are separated by Shu-Tefnut but at night they reunite. Nut is the mother of Osiris, Horus the Elder, Isis, Set and Nephtys.

Schwaller de Lubicz explains this story as the *First Scission* between Unity (Heaven as the informal, original matrix) and the Multiplicity of forms (Earth). This primordial portioning is done through the power of the Phi Ratio principle:

$$1 + (1 - 1/\Phi) = 1$$

Since $1 - 1/\Phi = 1/\Phi^2$,
we have $1/\Phi$ (Heaven) + $1/\Phi^2$ (Earth) = 1
or $.618 + .382 = 1$

Inversely, the “root” of the Earth is Heaven:

$$\sqrt{1/\Phi^2} = 1/\Phi$$

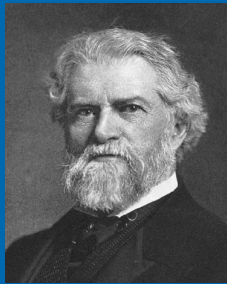
These are the 3 mystical thirds where $2 = 1$
i.e. the whole Unity they are coming from.

74



↑ Nut (heaven), Geb (Earth) and Shu (Air). Cairo National Museum www.cesras.org





Simon Newcomb
(1835-1909)

SG202.4.1.5 The Towering One: First Digit Law

Is it possible that certain numbers come up more often than others?
 This is certainly a question that gamblers of all times & breeds have been eagerly asking.
 Put this question to anyone around you and they will probably tell you that there is no reason why a specific digit would appear more frequently than others.
 The universe is a “random” game, right?
 And so the number 1, for instance, should only appear, statistically speaking, in about 10% of the cases.
 Well, this has been proven completely wrong.

Simon Newcomb discovered what he called the “*First Digit Law*”. Newcomb was a distinguished astronomer & mathematician who, among many other valuable contributions, computed tables of planetary motions adopted by observatories the world over. He was the editor of the *American Journal of Mathematics* in which, in 1881, he published an article about his First Digit law. According to Mario Livio, in his book “*The Golden Ratio*”, Newcomb had noticed that, in libraries, books of mathematical tables were dirtier in the beginning (where numbers 1 and 2 were located) than in the end. After more investigations, he deduced the following statistical formula:

$$P = \log(1 + 1/D)$$

Where P = probability that the digit D appear in the first place.

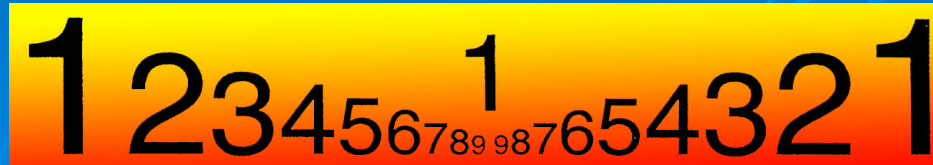
Newcomb’s formula assigns the following probability to the nine integers:

- 1 ~ 30%
- 2 ~ 17.6%
- 3 ~ 12.5%
- 4 ~ 9.7%
- 5 ~ 8%
- 6 ~ 6.7%
- 7 ~ 5.8%
- 8 ~ 5%
- 9 ~ 4.6%

In 1938, physicist Frank Benford rediscovered the same law and proved it valid by testing it on a large sampling of data. This “First Digit Law” is now known as “*Benford’s Law*”, even though Newcomb was the first discoverer. More research has been done since on many diverse and apparently “random” sets of data and the First Digit Law has been confirmed.

Mario Livio caps what he calls a “*puzzling and dumbfounding*” situation with this additional piece of research: in a list of the first 2,000 Fibonacci numbers, the number 1 appears as the first digit 30% of the times, the number 2 appears 17.65%, 3 appears 12.5% etc... “*In fact*”, explains Mario Livio, “*Fibonacci numbers are more likely to start with 1, with the other numbers decreasing in popularity in precisely the same manner as the random selection of numbers!*”

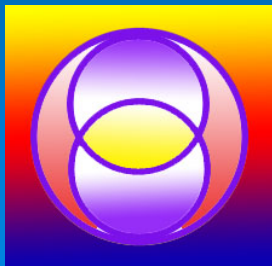
Could it be that the UNITY expression of the Monad, familiarly known as the number “1”, has a special “towering” presence within the phenomena of this universe? Unity certainly acts as the “Progenitor” and “Attractor”.



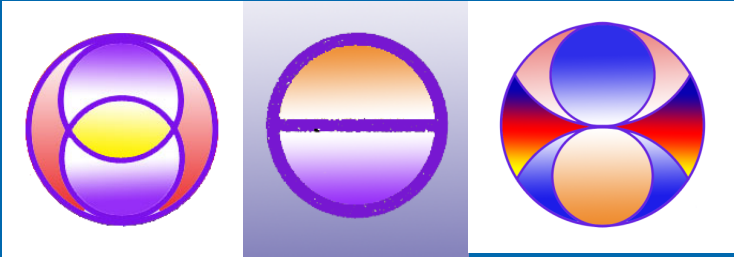
TWO - DYAD (Polarity & Complementarity)

(Semi-circle - arc = 180°)

Principle of Two-ness
Oneness looking at Itself
Otherness
Erato - Lover of the Monad
First Daring One - Audacity
Mother of Numbers
Beginning of the Many
Boundary Membrane
Reciprocity & Alternation
Plus & Minus
Motion & Progress
Yin & Yang
Immortal Tantric Couple
Diameter & Diabolus
Yearning Mirror
House with Two Doors
Vesica - Womb of Cosmic Child
Vesica - Womb of Numbers
First atom - 1 proton, 1 electron
Opposition & Discord
Transition
Echo



SG202.4.2.2 The Dyad (2)



Dyad (Greek *dyas*, *dyados* = two; Latin *dyas*, *dyadis* = two.)

Diameter (Greek *dia* + through, across. + *metron* = to measure.)
Also, *Diometor* (Rhea) was the mother of Zeus.

The Dyad is the source of differentiation in numbers and represents matter or differentiation in nature. The Dyad embodies the Law of polarities: opposition AND complementation or the dynamics of balancing opposites. Without the friction of polarities, there is no spark, but without the conjunction of opposites, there is no child.

The Dyad is the partner of the Monad in the game of manifesting the overall Oneness. The Dyad is the bridge between multiplicity, starting with the plane (triangular surface) defined by number 3, and the Oneness of the Monad (the point), number 1. So, the Dyad partakes of both the Monad and the Myriad. Therefore, the Dyad has two faces: strife and harmony.

- The “Strife face” (opposition) is turned towards the confusion of multiplicity and the fascinating challenge of being pulled apart by two seemingly opposite polarities, and breaking away from the Monad. See all the words in modern languages starting with the prefix *di(s)-* (or *du-*): divide, divorce, discord, dichotomy, duality, duplicity etc...

- The “Harmony face” (complementation) is turned toward remembering the source, extracting the deeper oneness buried in conflicts and giving preference to common ground: attraction rather than separation, positive rather than repelling traits, peace rather than war, harmony rather than ego...

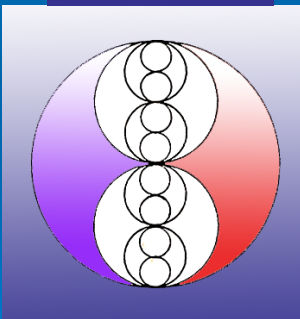


↑ The Aztec/Mayan symbol
“Hunab Ku”

The wisdom of the Dyad is to see all polarities as cycling within a context of greater equilibrium: all vectors and tensions are needed to co-create a larger balance. The peace coming out of resolved conflicts is deeper than a superficial peace, glossing over the tensions. *“In opposition, there exists true friendship”* (Heraclitus c. 535 – c. 475 BCE)

Only by acknowledging that both polarities are unified in essence (rooted in common Oneness) can we overcome the strife of relative duality and enjoy the larger perception of harmony, the Monad. In our deepest heart, we are beyond polarity. The art of the Dyad is to keep our necks very flexible, seeing and being both faces of the Dyad simultaneously. The Dyad is teaching us how to change the old paradigm (being fascinated by duality and siding with one party) into co-creating a synthetic win-win solution (Number 3 is Return to Oneness).

The old “you-against-me” paradigm stopped humanity at Two, the competitive duality and the separation. This is only one face of the Dyad. The progressive dismantling and abandonment of the binary trance is now turning us to the other face of the Dyad: the true Dyad wisdom returns to Unity after balancing the polarities in order to extract new energy and the joy of creative consciousness.

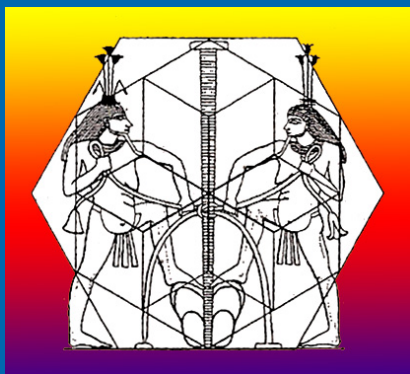


↑ The dyadic polarity of the Yin-Yang and its dynamic (spiral/vortex) representation in oriental cosmology. The Yin-Yang geometry creates a nested doubling (binary fractal expansion).



↑ Yin-Yang crop circle.
Wiltshire, 2009

SG202.4.2.3 Archetypal Dyads



↑ The *sma tawi* is a perfected Dyad as symbol of the unity between North and South Egypt. It portrays the arch-enemies Horus and Set tying together papyrus and lotus flowers, plants growing at opposite ends of the Nile.



↑ The binary chess board represents the Field of life with its black & white polarities. “Winning” or “losing” are secondary to playing and enjoying a fair game leading to know better the friend hidden in the partner.



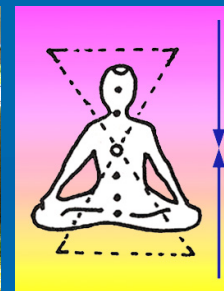
←↑ Dōsojin are Japanese Shinto deities protecting travelers from evil spirits. They are often sculptured in the form of a happy married couple or united rocks.



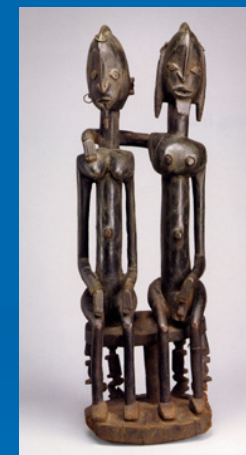
↑ Navajo Twins rock. SE Utah.



↑ Adam & Eve with the serpent, in the form of Lilith. Paris Cathedral, France.



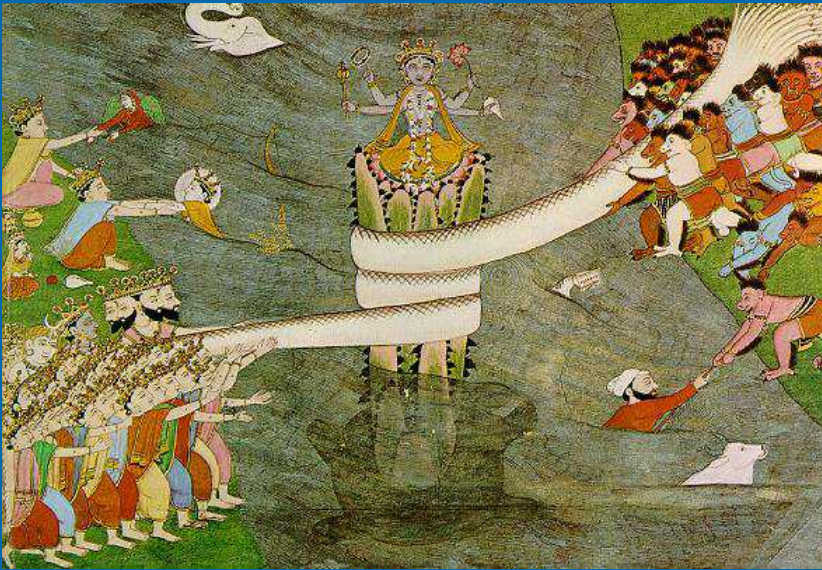
↑ Above and Below. The Double Triangle illustrates the Hermetic Principle “As Above, so Below” and the delicate balance of Ascension-Descension.



↑ Primordial Couple. Dogon art. Metropolitan Museum.

In his famous dissertation “I and Thou” (1923), philosopher Martin Buber (1878 -1965) addresses the archetypal experience of “*I and the Other*” and places it in the larger context of the “Ultimate Thou” or Divine Source as the “relation of all relations”.

SG202.4.2.4 The Churning of the Milky Way



The classic Vedic myth, *'The Churning of the Milky Ocean at the Dawn of Time'* shows the polarities (the “gods” tugging against the “demons”) as dynamic sides of Oneness - the Axis of the world.

This charming tale, while extraordinarily simple, contains the wisdom of the Dyad. It illustrates the cosmological dynamic between two opposing forces which generates the passage from chaos to cosmos through the creation of an axial alignment, a point of unification.

In the process of churning, treasures emerge like butter rising from the working of the cream. Gifts appear which can only come into being through the dynamism of the creative process. Out of the momentous churning event comes a new cosmic alignment. The Dharma is once again restored and harmony rules throughout the worlds.

(Story & image credit: www.aeongroup.com)

Over the great cycles of time the Dharma begins to degenerate and the balance between the forces of light and darkness becomes lost. The Demons, ever watchful for an opportunity to gain the upper hand, seize the moment and chaos reigns in the upper and lower kingdoms. As a result of this disorder, things of great value are lost, the most important of which is *"Amrita"*, the cream of the great Milk Ocean whose absence threatens the very existence of the universe. After complaints from *Indra*, warrior king of the three worlds, to *Brahma*, the creator, the god *Vishnu* is called to restore the Dharma and the cosmic order.

According to the myth, Vishnu, the preserver, devised a plan to restore order. His plan was to activate the dynamic equilibrium by churning the great Milk Ocean using Mount Meru as a churning stick. However, the weight of Mount Meru was such that it began to sink into the soft bed of the Milk Ocean and so Vishnu assumed the form of the Tortoise, *Kurma*, whose curved back became the stable support and pivot upon which the churning stick could rest. He then called on the cosmic serpent *Vasuki* who conveniently wrapped himself around the Mount Meru axis, as a churning rope. Following a ruse by Vishnu which convinced the demons that the gods wanted to hold *Vasuki's* head, they became irate and insisted that the demons should take the head and the gods the tail. Thus the demons and the gods took opposite ends of the cosmic serpent and the churning process began. Unbeknownst to the demons, as the churning progressed *Vasuki's* breath became hot and out of his mouth came poisonous fumes which suffocated the demons while the gods, at the tail, were refreshed by cool ocean winds. As the churning of the Milk Ocean continued, treasures began to appear in the manner as butter might emerge from the churning of cream. Most important of the treasures was *Amrita*, the nectar of immortality. *Surabhi*, the cow of plenty also emerged from the churning process as did *Airavata*, a beautiful white elephant and *Uchchaisravas* the white horse. However, as these treasures arose so did a poison which the myth tells us was consumed by *Shiva* in order to save the world. The poison was caught in *Shiva's* throat which turned his neck blue but it also purified the serpent *Vasuki* which *Shiva* thereafter wore as his girdle.

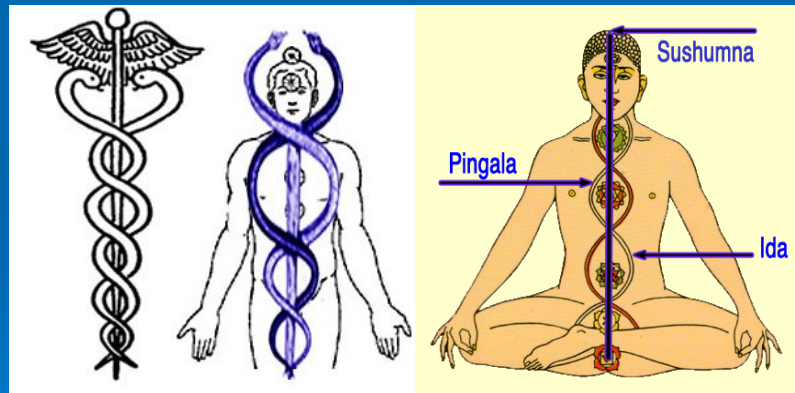
Many treasures appeared as the churning continued but the demons were interested in only one thing, the *Amrita*, which was borne in a cup by *Dhanwantari*, the physician of the gods. When *Dhanwantari* appeared, both gods and demons dropped *Vasuki* and rushed to seize the *Amrita*. The demons reached it first and made off with it but they began to quarrel over which of them should be first to drink. As they argued, there appeared among them a girl named *Mohini*, the most beautiful woman they had ever seen. Having been enchanted by her charms the demons asked *Mohini* how to apportion the *Amrita* and promised to abide by her decision. *Mohini* pointed out that since the gods and demons had labored equally to produce the *Amrita*, that the gods were also entitled to a share. Reluctantly the demons agreed since they had made a promise. Then *Mohini* insisted that the gods and demons face each other in two long rows. She began to pass down the row of gods giving each a drink of the *Amrita*. But as she reached the end of the row, she suddenly vanished and the cup of *Amrita* vanished with her. For *Mohini* was none other than *Vishnu* in a female incarnation.

SG202.4.2.5 Mystical Marriage



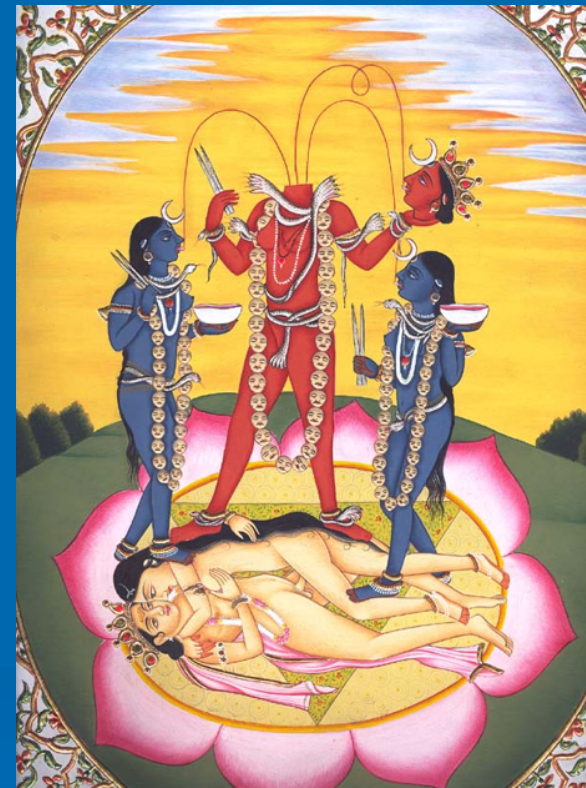
↑ Alchemical / Mystical Marriage

As depicted in numerous alchemical texts like the *Mutus Liber*, the Chemical Marriage is a process in which the Sun (represented by a king), and the Moon (represented by a queen) are reunited into a single primeval being, the Royal Hermaphrodite or illumined human.



↑ Ida & Pingala

The goal of Kundalini yoga is to balance and unify the Sun (*Pingala*) and Moon (*Ida*) subtle energy channels that coil around the central *Sushumna* channel. This is the wedding (*sandhya*) or reunion of Shiva, the male cosmic principle and Shakti, the creative Great Mother. This leads the yogi to experience Kundalini ascending the central *Sushumna* from the base to the crown chakras.



↑ Chinna Masta Devi, assisted by the two gate-keepers: Jaya and Vijaya.

She stands over Rati and Kama, the plane of material duality, showing that through mastery of primal instincts one can sever the head of the ego. When this happens the *Sushumna*, *Ida*, and *Pingala* channels open to the subtle Kundalini energy.

Note how Two becomes One through Three.

SG202.4.2.6 Pairs of Gods & Goddesses

Spiritual or heavenly
archetypes
of paired Oneness

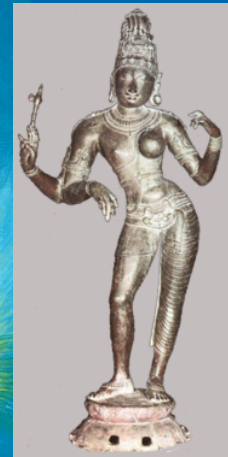
← Fu Xi and Nu Wa,
in Chinese creation myths.
◆ SG101.5.5



↑ Meoto Iwa are a couple of small rocky stacks in the sea off Futami, Mie, Japan. They are joined by a *shimenawa* (a heavy rope of rice straw). In Shinto belief, the rocks represent the union of creator gods *Izanagi* (Male Principle, Creator God and Earth God) and *Izanami* (Female Principle, Divine Mother and Earth Goddess).



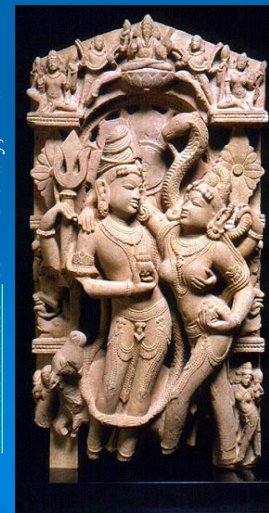
↑ Khishna & Radha
It is believed that Krishna enchants the world, but Radha enchants even Him. Therefore
“She is the supreme goddess of all”.



↑ Two in One: Ardhanarishvara, the union of Shiva & Shakti.

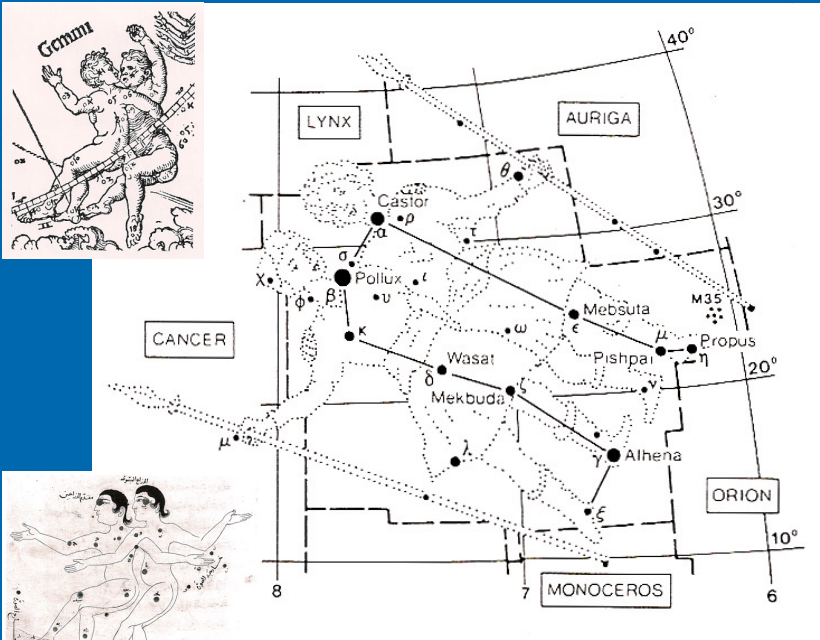
← Shiva & Parvati

Parvati is the consort of Shiva, the Hindu God of destruction and rejuvenation. She is also the Divine Shakti, the embodiment of the energy of the universe. The legend says that, at the moment Shiva and Parvati married, the earth turned green and the growing season began. Being gods, the happiness of Shiva and Parvati reverberates throughout the universe, ushering in an age of peace, prosperity and harmony.



www.asianart.com John Eskenazy, Lmt.

SG202.4.2.7 Famous Twins



↑ Gemini, the Heavenly Twins

The constellation Gemini looks like two elongated figures marked by a pair of bright stars named after the *Dioscuri* ("Sons of Zeus"), Castor and Pollux. The lore of the sidereal twins extends worldwide. Twin stories are found in the Sumerian, Egyptian, Vedic, Greek, Roman, Aztec, African mythologies... Under the tropical zodiac, the Sun is in the sign of Gemini roughly from May 21 to June 21, ending at the moment of summer solstice. Under the sidereal zodiac, it is currently there roughly from June 15 to July 15. An air sign, Gemini (II) symbolizes duality and separation but also similitude and a complementary quality.



← Navajo Twins:

Usually described as Mother Earth and Sky Father twins, or Brother Sister twins, the Navajo Twins are Native American symbols for creation. They also represent perfect balance.



← Romulus and Remus.

The twin sons of Mars and the Vestal Rhea Silvia, Romulus & Remus were the mythical founders of Rome. They were raised by a she-wolf.



← Ibeji is a term in the Yoruba language meaning "twins."

The incidence of dizygotic twin births in much of Africa is significantly greater than in the United States, with the highest incidence among the Yoruba peoples of Nigeria, with a frequency of 45 per 1000 births. In fact, the Yoruba town of *Igboora* boasts of an average of 150 twins for 1,000 births and is considered Nigeria's, and the world's, "capital of twins".

In the Aztec Mythology, **Quetzalcoatl and Xolotl** were the twin sons of Coatlicue



Twins are a biological fact: the number of living human twins in the world has been estimated to be approximately 125 million in 2006 or roughly 1.9% of the world population. (Wikipedia).

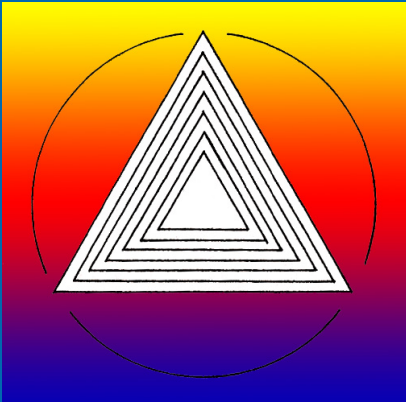


← Fraternal twins



← Identical Twins

But Twins are also an archetypal symbol of duality and integration. In many cultures, Twins are oftentimes the figurations of a polarity system: Good / Evil, Light / Dark, Mortal / Immortal, Peaceful / Warlike, Sun / Moon, Fire / Water... They are the dual offspring from Origin (Monad) and yet enact the human quest to return to the One Origin.



SG202.4.3.2 The Triad (2)

Between presence and absence, there are degrees, nuances and shades of relationship or meaning. Just like there are many harmonic tones (microtonal frequencies) between set musical notes. The Triad is the awareness of the opening “in between”, the beginning of perceiving the field of life pulsing with myriad fractal octaves of potential energy.

A properly chosen “Third Factor” is a force of HARMONIC MEDIATION: it induces a higher relationship between two opposites that unifies them and brings them to a new level. 3-ness resolves the Dyad into Oneness & Wholeness.

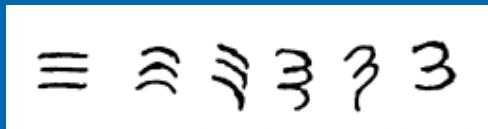
In case of irreducible conflict, traditional wisdom suggests referring to “the apex of the triangle”, i.e. releasing the tension into a higher spirit/self power. Solutions are rarely found at the level of the problem: they come from a bird’s eye perspective, the well-known Hegelian “synthesis” resolving thesis & anti-thesis into a common “apex”. External mediation nowadays is called “third party referral”.

Folk sayings:

*Never Two without Three!
 Make 3 guesses!
 Row, row, row your boat!
 Third Time lucky!
 Third Time is the charm!
 Make 3 wishes!
 Win, lose or draw!
 What you do comes back 3 Times!
 Ready, willing and able
 Hither, tither and yon
 Good things always come 3 Times!
 Two’s company, 3’s a crowd!
 Promise it 3 Times!
 Once, twice, thrice!
 Go, fight, win!
 Veni, vidi, vici!
 Hear, See, Speak no evil!*

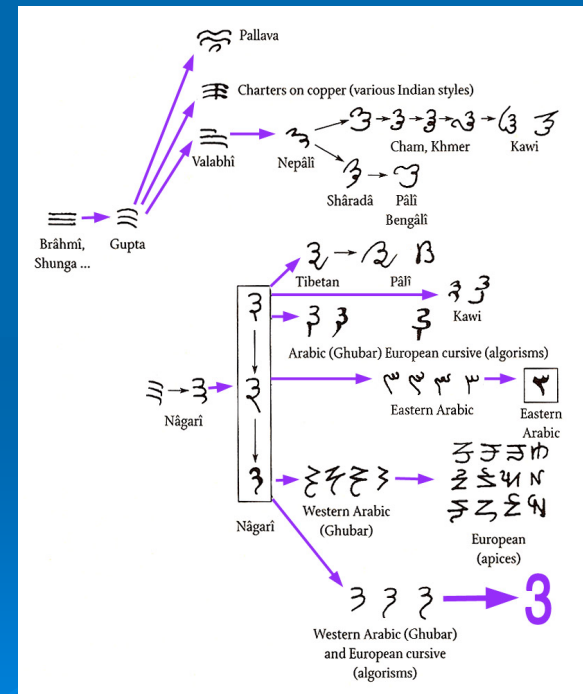
3 is the 4th Fibonacci number
 3 is the first prime
 3 is the second triangular number

Evolution of the numeral “3” ↓



“Three is often the largest number written with as many lines as the number represents. To this day 3 is written as three lines in Roman and Chinese numerals. This was the way the Brahmin Indians wrote it, and the Gupta made the three lines more curved. The Nagari started rotating the lines clockwise and ending each line with a slight downward stroke on the right. Eventually they made these strokes connect with the lines below, and evolved it to a character that looks very much like a modern 3 with an extra stroke at the bottom. It was the Western Ghubar Arabs who finally eliminated the extra stroke and created our modern 3.” (Wikipedia)

The “extra” stroke, however made it to the current Arabic numeral 3, while rotating the strokes above to lie along a horizontal axis:



↑ Origins of our modern “3”. Credit: Georges Ifrah. *The Universal History of Numbers.*

SG202.4.3.3

One, Two, Three!!!

3 of a kind

3 Little Pigs
Goldilocks & the 3 Bears
3 principles: creation, destruction, balance
3 members family: Father, Mother, Child
3 Fates: Clotho, Lachesis, Atropos
3 Graces: Aglaia, Euphrosyne, Thalia
3 Horae: Eunomia, Dike, Irene
3 kingdoms: mineral, vegetal, animal
3 cheers: Hip, Hip, Hurray!
3 traffic lights: green, yellow, red
3 Germanic Norns: Uror, Veroandi, Skuld
3 Musketeers: Athos, Porthos, Aramis
3 counts: ready, set, go!
3 medals: bronze, silver, gold
3 breaths: in-breath, hold-breath, out-breath
3 branches: executive, legislative, judiciary
3 Hebrew mother letters: Aleph, Mem, Shin
3 Virtues: Faith, Hope, Charity
3 parts of the day: morning, noon, evening
3 phases of the moon: waxing, full, waning
3 Druidic cycles: Keugant, Abred, Gwenved
3 Attributes of Brahman: Sat, Chit, Ananda
3 Pillars Tree of Life: Rigor, Mercy, Balance
3 Gunas: Rajas, Sattvas, Tamas
3 Doshas: Vata, Pitta, Kapha
3 sounds of mantra OM: A - U - M
3 Jewels Buddhism: Buddha, Dharma, Sangha
3 alchemical phases: black, white, red
3 alchemical substances: sulfur, salt, mercury
3 events in triathlon: swim, bike, run
3 Hindu bodies: Dharma, Sambogha, Nirvana
3 times: Past, Present, Future
3 Realms: Heaven, Earth, Underworld

This page gives some of the myriad examples of 3-ness: trichotomies, trinities, triads, treblings, triplicities, trivalences, triptychs, triplets, tripartitions, trines, trilogies, tristichs, triforms, trifurcations, triangles... Not forgetting ternary, triple, 3-way, trinal, trimerous, trilinear, trinodal, tripterous, tristichous, tristylous, tripodal, trimetric, trimestrial, trihedral, trigonous, triennial, trilateral, trifid, tricolor, tricuspoid... structures.

The **Rule of Three** is a principle in English writing suggesting that things that come in 3 are inherently funnier, more satisfying, or more effective. The reader/audience is more likely to receive information if it is written in groups of 3. A series of 3 is often used to create a progression in which the tension is created, then built up, and finally released.

For rhetorical effects, an *hendiatris* (Greek: *hèn dià tríon* = 1 through 3) is a figure of speech used for emphasis, in which three words are used to express one idea. A *tricolon* is a sentence with 3 parts of equal, ascending (*tricolon crescens*) or diminishing (*tricolon diminuens*) length.

3 in Nature & Science

- **3 terms relationship in the Golden Ratio.**
- **3 spatial dimensions perceived in our universe.**
- **3-plet codon system encoding genetic information.**
- **3 light colors: red, green, blue-violet & 3 pigment colors: red, yellow, blue.**
- **3-angle is the most durable shape possible, the only "perfect" figure which, if all endpoints have hinges, will never change its shape.**
- **3 notes in a triad, the most important and basic form of any musical chord.**
- **3 primary music chords: unison, 5th, 4th.**
- **3 of the five Platonic Solids have triangular faces: the Tetrahedron (4 faces), the Octahedron (8 faces) and the Icosahedron (20 faces).**
- **3 of the five Platonic Solids have vertices where 3 faces meet: the Tetrahedron, the Hexahedron (cube), and the Dodecahedron.**
- **3 different types of polygons comprise the faces of the five Platonic Solids: the triangle, the square, and the pentagon.**
- **3 generations of fundamental leptons (electron, muon, tauon and their neutrinos).**
- **3 groups of flavors of quarks (up-down, charmed-strange, top-bottom).**
- **3 quarks to a proton: two up quarks and one down quark.**
- **3 quarks to a neutron: two down quarks and one up quark.**



[//en.wikipedia.org/wiki/3_\(number\)](https://en.wikipedia.org/wiki/3_(number))

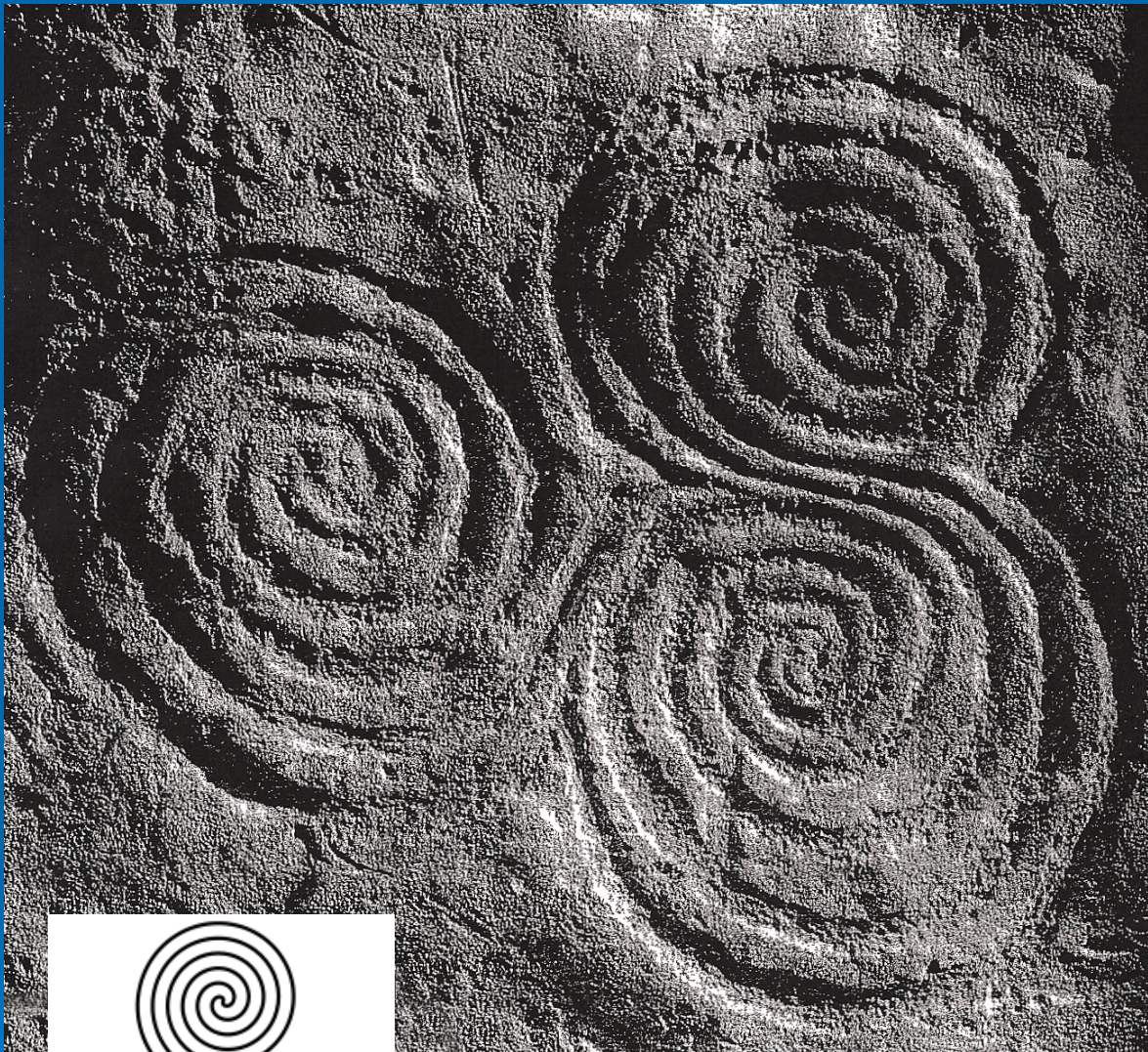
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SG202.4.3.4 The Triple Spiral

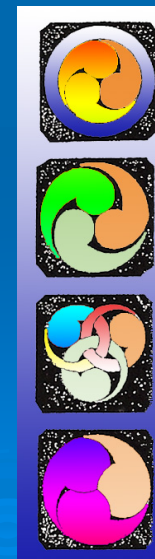
The Triple Spiral symbolizes the dynamic, co-creative cycling/vortexing of 3 Primordial Principles in nature, culture or consciousness.



↑ A triple spiral labyrinth
[//commons.wikimedia.org](https://commons.wikimedia.org)



↔↑ The Triple Spiral is a Celtic and pre-Celtic symbol found on a number of Irish Megalithic and Neolithic sites. Newgrange, Ireland.



↔↑ Triskel designs from various traditions.

SG202.4.3.5 Holy Trinities

A Triple Deity or Trinity is a deity associated with the number 3. A trinity can be:

- Triadic ("forming a group of three"): a triad, three entities inter-related in some way and always or usually associated with one another or appearing together.
- Triune ("three-in-one, one-in-three"): a being with three aspects or modes of existence (e.g. Father, Son and the Holy Spirit in traditional Christian theology).
- Tripartite ("of triple parts"): a being with three body parts where there would normally be one (three heads, three pairs of arms...)

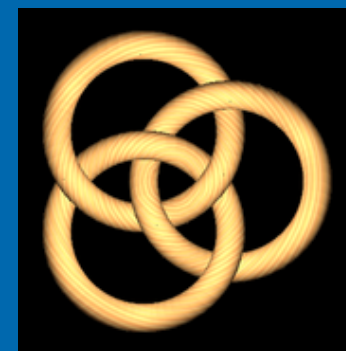
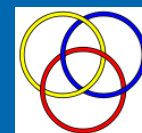
Sumer: Anu, Enlil, Ea
 Chaldea: Baal, Astarte, Melkart
 Egyptian 1: Osiris, Isis, Horus
 Egyptian 2: Amun, Mut, Khonsu
 Egyptian 3: Ptah, Sekhmet, Nefertem
 Egypt Ra: Kheper, Re-Horakhty, Atum
 Vedic: Mitra, Indra, Varuna
 Roman: Jupiter, Juno, Minerva
 Greece: Zeus, Hera, Apollo
 Zoroastrian: Ormuzd, Arhiman, Mithras
 Christian: Father, Son, Holy Spirit
 Nordic: Oddin, Frega, Thor
 Pagan: Sun, Moon, Earth
 Taoism: Yu-Qing, Shang-Qing, Tai-Qing
 Taoism 3 Star Gods: Fu, Lu, Shou
 Mahayana Buddhism:
 Shakyamuni, Avalokitesvara and Ksitigarbha
 Hindu Tridevi: Saraswati, Lakshmi, Parvati
 Hindu Trimurti: Brahma, Vishnu, Shiva
 Wicca: Mother, Maiden, Crone
 Finni-Ugric: Juksahka, Sahrahkha, Uksahkka
 Slavic Triglav: Svarog, Perun, Svetovid
 Arabia: Al-Lat, Al-Uzza, Manat
 Celtic: Esus, Toutatis, Taranis
 Etruscan: Tin, Uni, Cel



↑ Woodcut from a *Book of Hours*, Paris, 1524.
 Father, Son and Spirit are not each other but they are "God".
 Note the tetrahedron geometry.



SG202.4.3.6 Borromean Rings



← In mathematics, the Borromean rings consist of three topological circles which are linked and form a *Brunnian* link, i.e., removing any ring results in two unlinked rings.

Although the typical picture of the Borromean rings may look like the link can be formed from geometrically round circles, the circles cannot be exactly circular. It is, however, true that one can use ellipses. These may be taken to be of arbitrarily small eccentricity, i.e. no matter how close to being circular their shape may be, as long as they are not perfectly circular, they can form Borromean links if suitably positioned: for example, Borromean rings made from thin circles of elastic metal wire will bend.



Triquetra

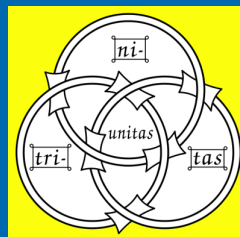
The *Triquetra* (Latin *tri* = 3 + *quetrus* = cornered) is an ancient symbol of goddess trinity whose original meaning was simply "triangle".

Nowadays, it refers to 3 interlaced Vesica Piscis, sometimes with an added circle in or around it. It is a "gateless" continuous design, always regarded as protective.

The Triquetra can be found in the *Gandharva* Afghan Buddhist art (2nd c. C.E.), and, by using 3 triangles, in the symbol called the "*Valknut*" on Norse stones (7th c.)



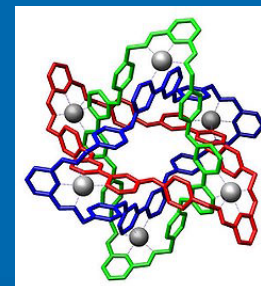
Valknut



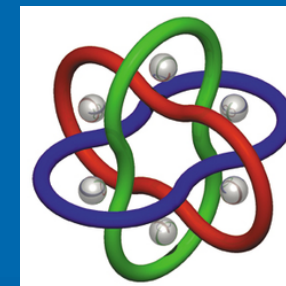
↑ Trinity symbol.
13th century manuscript.



↑ The Discordian "mandala", containing five Borromean rings configurations.



↑ Crystal structure



↑ Model

↑ Molecular Borromean rings are an example of a mechanically-interlocked molecular architecture in which three macrocycles are interlocked in such a way that breaking any macrocycle allows the others to disassociate. They are the smallest examples of Borromean rings.

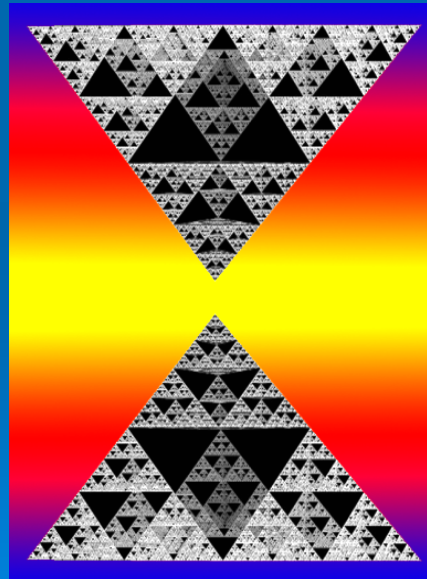
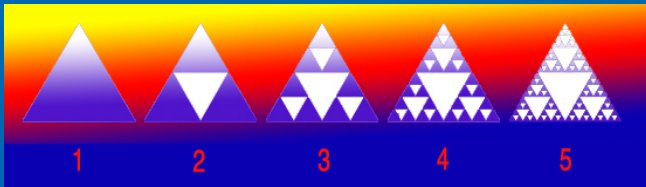
(Wikipedia)

SG202.4.6.5 The Sierpinski Fractal

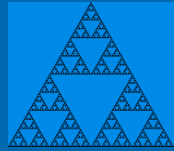
The *Sierpiński Triangle*, also called the *Sierpiński Gasket* or *Sieve*, is a fractal named after Waclaw Sierpiński who described it in 1915, way before the term “*fractal*” was coined by Benoit Mandelbrot (1975). Originally constructed as a curve, this is one of the basic examples of self-similar sets or fractals: a mathematically generated pattern that can be reproducible at any magnification or reduction.

The original equilateral triangle (1) gets divided into four identical triangles (2) by inserting one triangle pointing down at the mid-points. The same iteration rule repeats at smaller magnifications (3, 4, 5...)

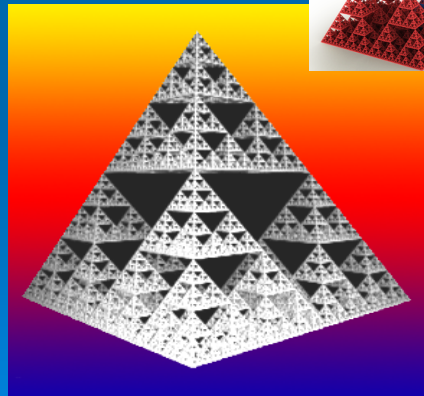
[◆SG203.1]



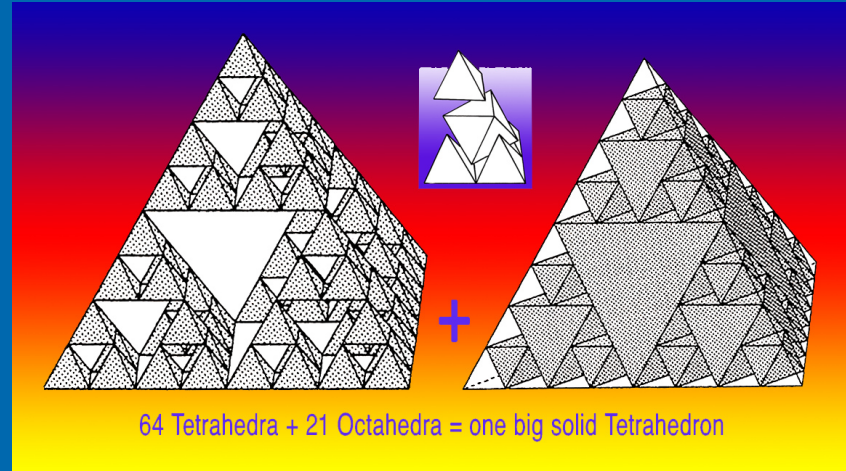
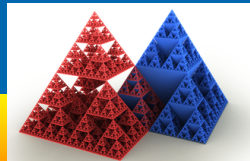
↑ The Double Triangle as 3D Sierpinski Fractal (face view)



Original images:
www.phidelity.com

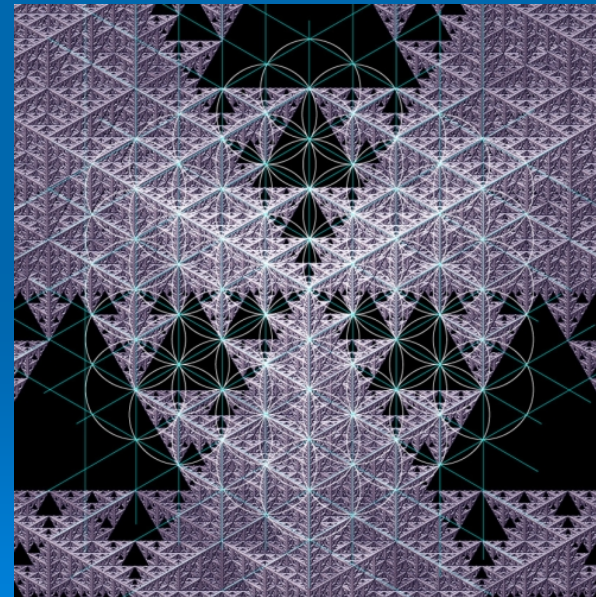


↑ 3D Sierpinski (edge view)



64 Tetrahedra + 21 Octahedra = one big solid Tetrahedron

↑ The nesting of the Tetrahedron (4 equilateral triangles) and the Octahedron (8 equilateral triangles). (B. Rawles www.geometrycode.com)

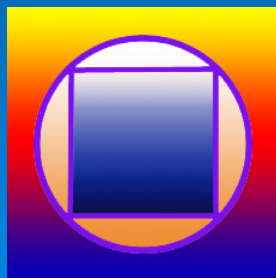


↑ The Flower of Life and the isometric triangular grid fit perfectly on top of the Sierpinsky Triangle.

FOUR - TETRAD (Manifestation & Foundation)

(Square / Cross - 90° - 90°)

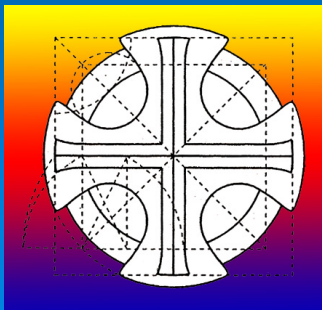
- Double Duality
- First Volume
- The Depth
- Equally Even
- Four Directions
- Justice
- The Crossing
- Firmness
- Fountain of Effects
- Virility
- Stability & Solidity
- Safety
- Self-sufficiency
- Base Chakra
- Persistence & Endurance
- Calmness
- Tetraktys
- Embracing Home
- Material Roots
- Protection
- Predictability
- Organization & Order



SG202.4.4.1 The Tetrad (1)

Four...

- 4 rivers of Paradise
- 4 gateways of the mandala-yantra
- 4 doors of the Imperial Palace in China
- 4 Noble Truths in Buddhism
- 4 Aztec Trees holding Heaven
- 4 worlds of the Kabbalah
- 4 nucleotide bases in DNA
- 4 chambers in the mammalian heart
- 4 canines, 4 incisors, 4 wisdom teeth
- 4 states of matter: solid, liquid, gas, plasma
- 4 world ages or Yugas
- 4 color process (CMYK) in printing
- 4 arithmetic operations
- 4 classical elements (fire, air, water, earth)
- 4 seasons: spring, summer, autumn, winter
- 4 cardinal directions: north, south, east, west
- 4 classical temperaments & 4 humors
- 4 great ancient capitals of China
- 4 canonical Christian Gospels
- 4 horsemen of the Apocalypse
- 4 years term for the President of the US
- 4 years in a single olympiad
- 4 suits of playing cards
- 4 letters in name of God
- 4 Christian archangels
- 4 petals of the base chakra
- 4 Evangelists
- 4 Beatles



SG202.4.4.2 The Tetrad (2)

4 describes and maps out the perceived structure of space & time. The cross of materialized spirit is inscribed in the square of manifestation.

The cross reaches out to the 4 directions / the four seasons and brings the universe back to the center hub. The square (and its 3D volume, the cube) contains, protects and provides a FOUNDATION, a home-enclosure to nurture and manifest further. 4 is the *quaternity*, an essential geometry of the Wheel of Cycles mapping out the 4 phases of growth and evolution.

Although issued from the Trinity, 4-the-Square tends to settle in and to forget its origin: it can mark a limitation, a self-sufficiency, a stop to the cosmic flow and to the harmonic cascading of inherent oneness.

4 in Geometry. A four-sided plane figure is a quadrilateral (quadrangle) or square, sometimes also called a *tetragon*. Because a circle divided by 4 makes right angles, 4 is the base number of plane mathematics. The duodecimal system and vigesimal system are based on 4.

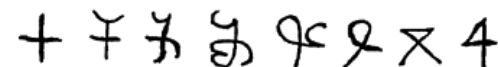
A solid figure with 4 faces is a tetrahedron, the simplest Platonic Solid. A tetrahedron, which can also be called a *3-simplex*, has 4 triangular faces and 4 vertices. It is the only self-dual regular polyhedron. 4 is a tetrahedral number, as well as a centered triangular number.

Four-dimensional space has the largest number of dimensions used by more than three convex regular figures. There are infinitely many convex regular polygons (two-dimensional); five convex regular polyhedra (three-dimensional, the five Platonic Solids); and six convex regular *polychora* (four-dimensional). (Wikipedia). [See ♦SG107]

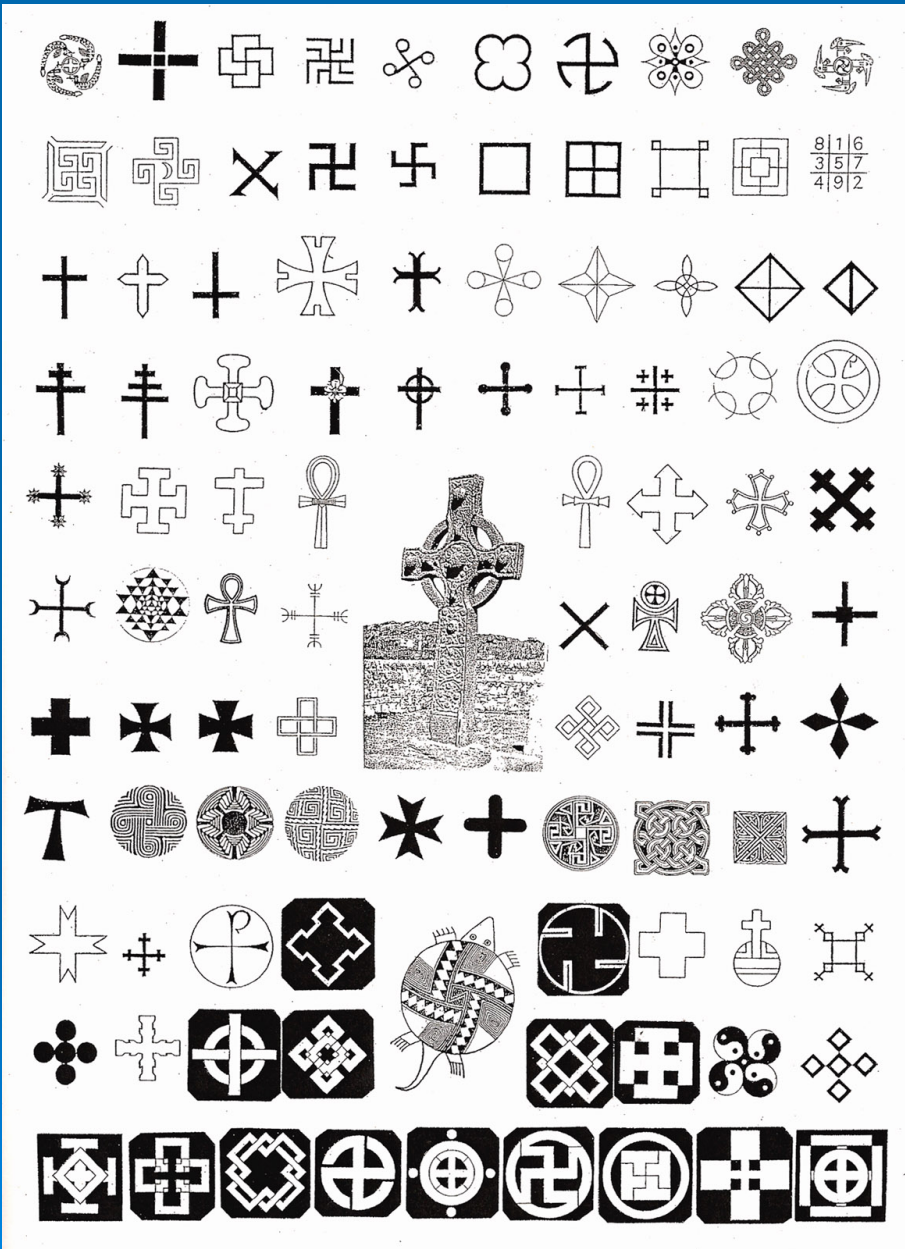


↑ The maritime flag signaling "4"

Evolution of the number 4

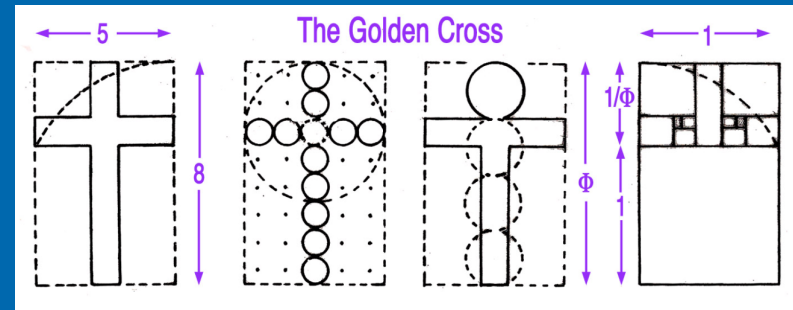


The *Brahmin Indians* simplified 4 by joining its four lines into a cross. The *Sunga* would add a horizontal line on top of the numeral, and the *Kshatrapa* and *Pallava* evolved the 4 to an elaborate sign. The *Arabs* still had the early concept of the cross, but for the sake of efficiency, was made it one stroke by connecting the "western" end to the "northern" end; the "eastern" end was finished off with a curve. The *Europeans* dropped the finishing curve and gradually made the numeral less cursive, ending up with a glyph very close to the original Brahmin cross. (Wikipedia)



SG202.4.4.3 Crosses

The Cross symbolizes the unification of dimensions, both in physical and spiritual space.

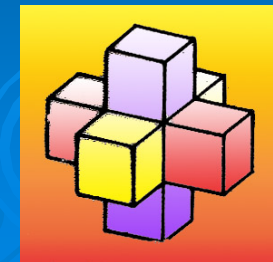


↑ The Golden Cross

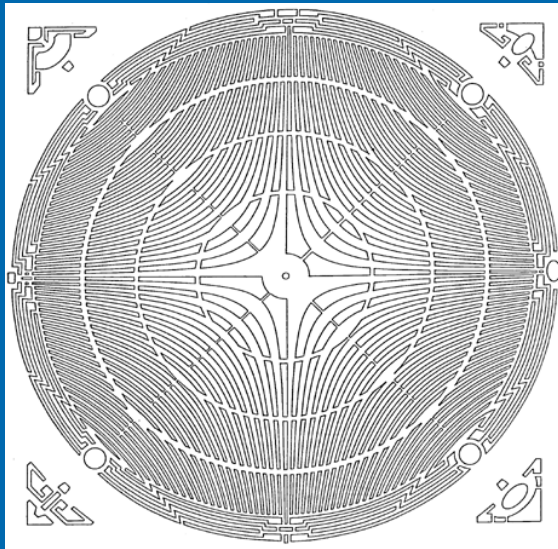
The true Latin Cross is the PHI or Golden Cross inscribed in a Golden Rectangle:

- The baseline of the arms forms the reciprocal Golden Rectangle.
- Areas: 40 square units in the 5 x 8 Golden Rectangle, 25 units in the 5 x 5 square (Magical Square of Mars) and 15 units in the 5 x 3 rectangle.
- Perimeter of the cross = 26 units long.
- Area of the PHI cross = 12 square units.
- The ancient Egyptian *Ankh* (“Cross of Life”) has the same PHI geometry but its “head” is a budding lotus flower that resonates with the cascading spirals of life force. In the ankh, a celestial circle heads the terrestrial cross.

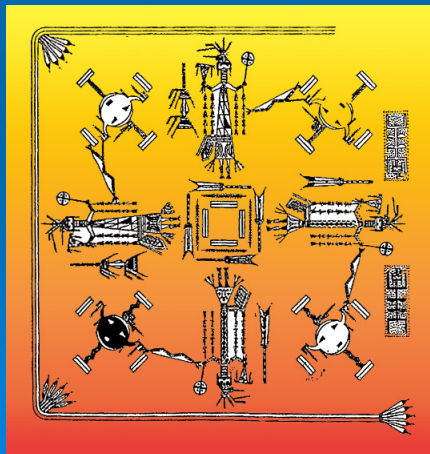
The 3D Cross → as 6 cubic extensions of the hexahedron (cube) at the center.



SG202.4.4.4 The Four Directions



↑ Outline of StarWheel #38



↑ Navajo sand painting

For traditional cultures around the world, the Sacred Mystery is revealed through the powers of the 4 directions: they provide an organizing principle for all cycles and circumstances of life: seasons, elements, stages of life and growth, feelings...

The 4 directions result from the archetypal act of ORIENTATION (Latin *oriens* = east, rising sun). Once the cosmological point of centeredness is marked, the horizon is projected in the 4 directions and the 4 Guardians are propitiated.

Standing at the center of the Medicine Wheel thus formed, we are connected: we find our proper place in the cosmos and establish harmonic relationships with ourselves, each other and all things. The individual and the Earth are kept alive and happy.

In China, the 4 directional symbolism was laid out at Peking in the Temple of the Spirits of the Land: the 4 sides of the eastern terrace were colored according to the corresponding directions.

In early Mexico, the god Tescatlipoca was differentiated into 4 aspects: *Tlaloc*, god of rain, in the South; *Xipe Totec*, the sunrise, in the East; *Tescatlipoca* in the North; and the Plumed Serpent *Quetzalcoatl* in the West.

Ancient Ireland was traditionally divided into 4 provinces, with Tara, seat of the royalty, at its geometric center. The center then stood for kinship, the North was reserved for the warriors, the East for the craft people, the South for musicians and the West for the learned.

In Tibet, the 4 Dhyani Buddhas of the ritual 5-fold mandala can be divided into two groups for the main directional flows: *Aksobhya - Amitabha* (East - West) as those in whom knowledge is emphasized; and *Amoghasiddhi - Ratnasambhava* (North - South) as those functioning on feeling. *Vairocana*, at the center represents their unification.

In sacred cultures, the polarities of the 4 directions are not antagonistic forces but are flowing and dancing through each other and their center-source, thus nurturing a spirit of balance between complementary aspects and a deep understanding of the cyclical harmony and interconnectedness of the Whole.

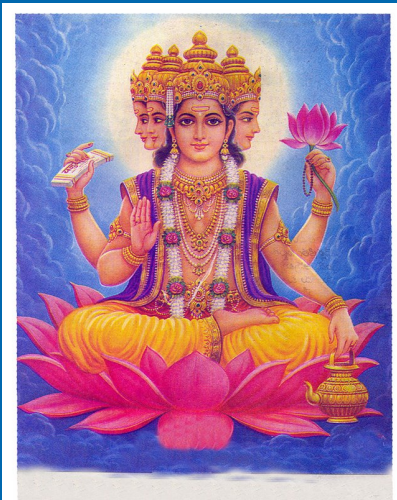


↑ The Earth symbol



↑ The Hopi symbol & flag

SG202.4.4.5 Four in Cultures



4 faced and 4 armed Brahma

[//library.thinkquest.org](http://library.thinkquest.org)



4 armed Lakshmi

[//commons.wikimedia.org](https://commons.wikimedia.org)

4 armed & 4 faced Hindu Deities

In Hindu iconography, most deities are represented with 4 arms symbolizing their more than human, supra-natural qualities and multiple attributes. It is an artistic technique to evoke the higher dimensions of spiritual power and teach people about the specific aspects of each deity. It also points to the double nature of deities as male-female or complete beings. Some deities have more than 4 arms, up to 8 or 10, such as *Durga*, a very active, multi-tasking warrior-goddess. Some deities also have 4 heads, usually *Brahma* as the god-head, thus symbolizing simultaneous presence in the 4 directions and therefore omnipotence and omni-vision.

A note on Tetraphobia in Chinese cultures

Four (pinyin *sì*) is considered an unlucky number in Chinese culture because it sounds like the word "death" (pinyin *sǐ*). Similarly, the Sino-Japanese and Sino-Korean words for four, *shi* (Japanese) and *sa* (Korean), sound identical to death in each language.

In these cultures, special care is taken to avoid occurrences or reminders of the number 4 during festive holidays, or when a family member is sick. Similarly, 14, 24, etc. are also to be avoided due to the presence of the digit 4. These floor numbers are often skipped in buildings, ranging from hotels to offices to apartments, as well as hospitals. Table number 4, 14, 24, etc. are also often left out in wedding dinners or other social gatherings. In many residential complexes, building block 4, 14, 24 etc. are usually replaced with block 3A, 13A, and 23A.. Due to this custom, many numbered product lines skip the "four": e.g. Nokia cell phones (there is no series beginning with a 4), Microsoft Windows (which switched to "Windows 95" for version 4)... Some buildings skip floor 4 or replace the number with the letter "F", particularly in heavily Asian areas.

The Tetramorph in Christian cultures

A *tetramorph* is a symbolic arrangement of 4 elements. The most-developed *tetramorph* in Christian symbolism is that of the four evangelists, or their symbolic creatures, the Four Living Creatures. This originated from the vision of Jewish prophet Ezekiel: "*As for the likeness of their faces, they four had the face of a man, and the face of a lion, on the right side: and they four had the face of an ox on the left side; they four also had the face of an eagle*".

In exile in Babylonia (c. 550 BCE), Ezekiel used the symbolism of Babylonian astrology.



↑ Christ in the Vesica surrounded by the Tetramorph. Chartres cathedral, France.

1. (top left) MAN
Matthew
Aquarius
Winter Solstice



2. (top right) EAGLE
John
Scorpio
Fall Equinox

3. (bottom left) BULL
Luke
Taurus
Vernal Equinox

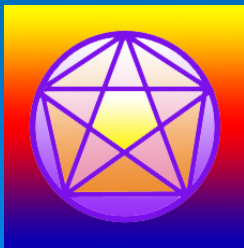
4. (bottom right) LION
Mark
Leo
Summer Solstice

↑ The 2 solstices & equinoxes in the Tetramorph.

FIVE - PENTAD (Creative Life & Harmony)

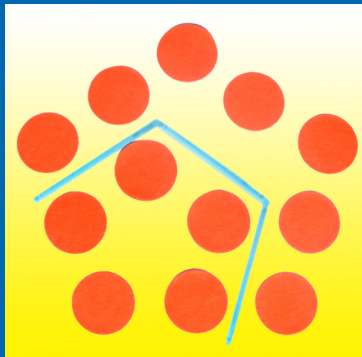
(Pentagon / Pentagram - 72° - 108°)

- Nuptial Number
- Beauty of Creation
- Androgyn
- Odd & Even
- Immortal
- Golden Flower
- Quintessence
- Heart-like
- Living Geometry
- Phi Frequencies of Love
- Lack of Strife
- Star of Knowledge
- Number of Man
- Center Number
- Gateless Protection
- Apple Blossom
- Nature
- Flower of Love
- Hidden Womb & Nourishment
- Diapente Music Chord
- Engenderer of Light
- Significance
- Venus



The collage features several key elements:

- Top Left:** A black and white photograph of a flower.
- Top Row:** Three geometric diagrams: a circle with five overlapping circles, a circle divided into five sectors, and a complex circular geometric pattern.
- Second Row:** A figure with arms outstretched inside a pentagon, a five-petaled flower, a five-pointed star in a circle, a face inside a pentagon, and a complex geometric diagram.
- Third Row:** A tarot card labeled 'LE PARE', a cluster of five dots, a large purple pentagram with a yellow center, a sphere with five points, and a complex geometric diagram.
- Fourth Row:** A human figure with arms outstretched inside a circle, a five-pointed star with a complex internal pattern, a circle with a 108-degree angle, and a complex geometric diagram.
- Bottom Row:** A circular diagram with a pentagram and five elements: Wood (木), Water (水), Fire (火), Metal (金), and Earth (土). Next to it is a sculpture of a figure and a large geometric diagram.



SG202.4.5.2 The Pentad (2)

"Five is the soul of humanity."
Friedrich von Schiller (1759-1805).
Piccolomini (II, I).

Give me five!

5 is the "middle" number.

The 9 integers:

1 - 2 - 3 - 4 - **5** - 6 - 7 - 8 - 9

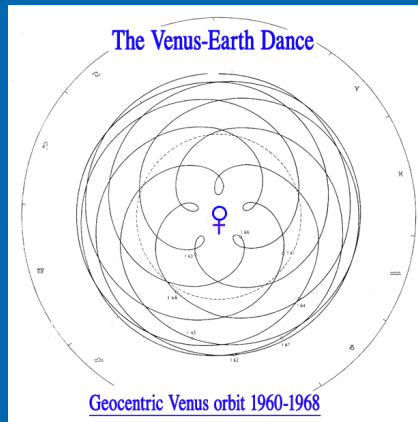
The 5 odd numbers:

1 - 3 - **5** - 7 - 9

Sum of 9 integers = 45

$45 / 9 = 5$

4	9	2
3	5	7
8	1	6



Geocentric Venus orbit 1960-1968

↑ The 5-fold dance of
Venus & Earth

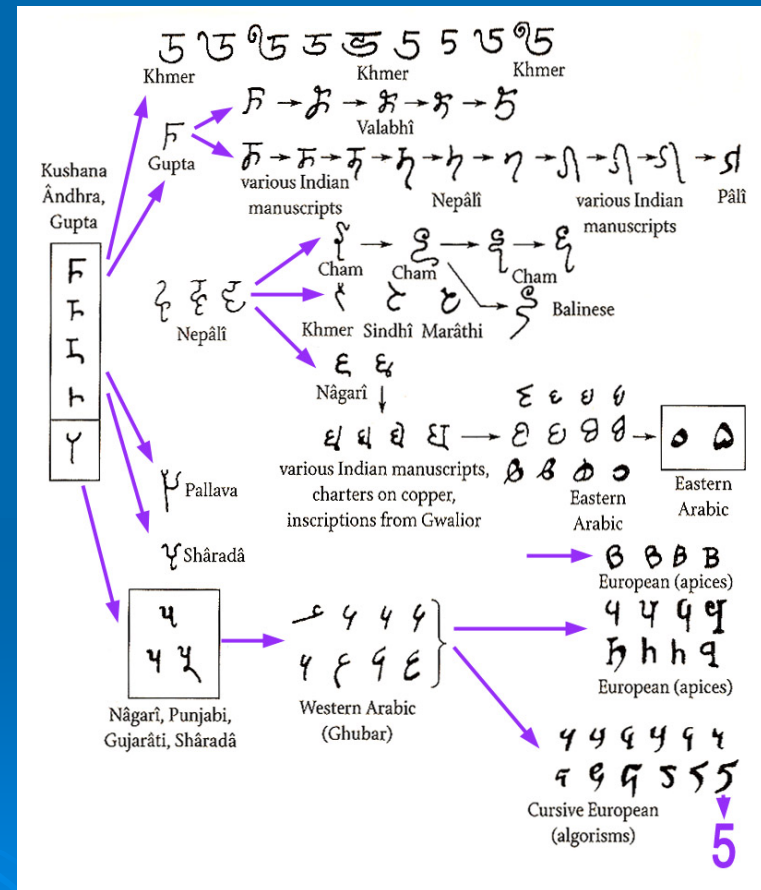
*"If 5 bread crumbs are cast
on the table and a cross can be formed
by moving just one crumb,
then the question raised
while casting the crumbs
will be answered affirmatively".*

Medieval German folklore.

5, at the center of 4, connects 4 to beyond itself: the Quintessence.
5 reestablishes the cosmic flow of verticality and ascension-descension.

5, as the Pentagon & Pentagram, is directly embodying the Golden Ratio. By tracing the five inner diagonals of the Pentagon, every two vertices, one obtains the traditional figure of the *Pentagram* or *5-pointed Star*. [◆SG106]

5 is the attractor and connector, allowing for the cascading flows of universal codes. As such it rightly deserves its traditional name of "Number of Love".



↑ Origins of our modern "5". Credit: Georges Ifrah.
The Universal History of Numbers.

SG202.4.5.3 The Quinconx

5 seems to be the most typical number in nature, especially in plants - and now even in crystals, with the discovery of quasi-crystals!

We already met Sir Thomas Browne [◆SG202.2.2]. In his *Garden of Cyrus* (1658), an ode to the number 5, he eagerly showed that 5 pervaded horticulture and recurs throughout the life of plants & animals. In his unique style of “inexcusable Pythagorism” (his own words) and his very ornate language Sir Thomas Browne expounds on the virtues of the “Quinconx”:

“(We) cannot omit the ancient conceit of five surnamed the number of justice; as justly dividing between the digits, and hanging in the centre of Nine, described by square numeration, which angularly divided will make the decussated number; and so agreeable unto the Quincunciall Ordination, and rows divided by Equality, and just decorum, in the whole com-plantation; And might be the Originall of that common game among us, wherein the fifth place is Sovereigne, and carrieth the chief intention. The Ancients wisely instructing youth, even in their recreations unto virtue, that is, early to drive at the middle point and Central Seat of justice.

Nor can we omit how agreeable unto this number an handsome division is made in Trees and Plants, since Plutarch, and the Ancients have named it the Divisive Number, justly dividing the Entities of the world, many remarkable things in it, and also comprehending the general division of Vegetables. And he that considers how most blossomes of Trees, and greatest number of Flowers, consist of five leaves; and therein doth rest the settled rule of nature; So that in those which exceed there is often found, or easily made a variety; may readily discover how nature rests in this number, which is indeed the first rest and pause of numeration in the fingers, the naturall Organs thereof. Nor in the division of the feet of perfect animals doth nature exceed this account. And even in the joints of feet, which in birds are most multiplied, surpasseth not this number; So progressionally making them out in many, that from five in the fore-claw she descendeth unto two in the hindmost; And so in fower feet makes up the number of joynts, in the five fingers or toes of man.

Not to omit the Quintuple Section of a Cone, of handsome practice in Ornamentall Garden-plots, and in some way discoverable in so many works of Nature; In the leaves, fruits, and seeds of Vegetables, and scales of some Fishes, so much considerable in glasses, and the optick doctrine; wherein the learned may consider the Crystalline humour of the eye in the cuttle fish and Loligo.

He that forgets not how Antiquity named this the Conjugall or Wedding number, made it the Embleme of the most remarkable conjunction, will conceive it duely applicable unto this handsome Oeconomy, and vegetable combination; May hence apprehend the allegorical sence of that obscure expression of Hesiod,⁸ and afford no improbable reason why Plato admitted his Nuptiall guests by fives, in the kindred of the married couple.

And though a sharper mystery might be implied in the Number of the five wise and foolish Virgins, which were to meet the Bridegroom, yet was the same agreeable unto the Conjugall Number, which ancient Numerists made out by two and three, the first parity and imparity, the active and passive digits, the materill and formall principles in generative Societies. And not discordant even from the customes of the Romans, who admitted but five torches in their Nuptiall solemnities. Whether there were any mystery or not implied, the most generative animals were created on this day, and had accordingly the largest benediction: And under a Quintuple consideration, wanton Antiquity considered the Circumstances of generation, while by this number of five they naturally divided the Nectar of the fifth Planet.

The same number in the Hebrew mysteries and Cabalistical accounts was the character of Generation; declared by the letter He, the fifth in their Alphabet; According to that Cabalisticall Dogma: If Abram had not had this Letter added unto his Name he had remained fruitlesse, and without the power of generation.”

“Where plants have five-fold patterns, a consideration of their souls is in place.”

Johannes Kepler.

Sir Thomas Browne. *The Garden of Cyrus.*

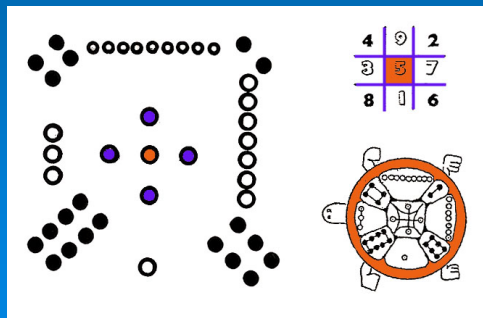
SG202.4.5.4 Five in the Chinese Culture

In ancient China, the entire conception of life was based on 5 considered an auspicious and lucky principle & number. On new year's Day, inscriptions were posted over doorways: "May the 5-fold luck enter!". 5 represented the principle of the CENTER, China being the "Land of the Middle" (Zhōngguó). This center was not only geographical, but also energetic and spiritual. It is this Center that allowed for balance and harmony in the constant play of the Yin and the Yang through their various manifestations, and thus insured the Oneness of the cosmic flow.

In the Chinese culture, certain numbers are believed to be auspicious or inauspicious based on similar-sounding Chinese words. "Because of the supposed auspiciousness of certain numbers, some people will often choose, attempt to obtain, or pay large sums for numbers that are considered to be lucky for their phone numbers, street addresses, residence floor (in a multi-story building), driver's license number, vehicle license plate number, bank account number..." (Wikipedia)

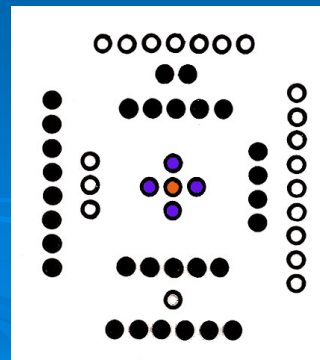
The number 5 (pinyin: wǔ) is associated with the Five Elements in Chinese philosophy, and in turn was historically associated with the Emperor of China, as Guardian of the Center. For example, the *Tiananmen Gate*, being the main thoroughfare to the Forbidden City, has 5 arches. 5 is also referred to as the pronoun "I" because the pronunciations of "I" (pinyin: wǒ) and 5 are similar in Mandarin. Supporting this meaning of "I" is the Chinese word "me" (pinyin: wǒ).

Although 5 can also have a negative connotation (in Mandarin, there is another homophone: pinyin wú, meaning "not"), generally 5 is very auspicious and has a strong significance of centeredness: physical, psychological and cosmogonic. 5 as Center shows up in two mythical diagrams: the *Ho-T'u* ("Chart of the Yellow River") and the *Lo-Chou* ("Writing of the Lo River"). [◆SG203]



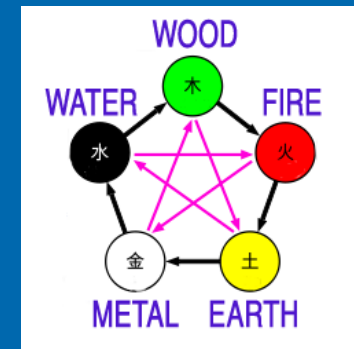
← Ho-T'u

Lo-Chou →



Five

- 5 Directions
- 5 sacred mountains
- 5 colors
- 5 spices
- 5 classical books
- 5 tones
- 5 relationships
- 5 virtues
- 5 nobilities
- 5 punishments
- 5 cereals



The Cycles of the 5 Elements:
 The CREATION cycle (black arrows, clockwise pentagon shape).
 The DESTRUCTION (overcoming) cycle (purple arrows, pentagram shape).
 [SG106.5.6]

5 Pentatonic Notes

There are five notes in ancient Chinese music. Each note is associated with an element and an organ of the body.

- Gong** (C-Do): Earth and spleen. Balancing & calming. Alleviates fear.
- Shang** (D-Re): Metal and lungs. Clearing & quieting. Treats anxiety.
- Jiao** (E-Mi): Wood and liver. Soothing & comforting. Dissolves anger.
- Zhi** (G-Sol): Fire and heart. Invigorating & exciting. Heals depression.
- Yu** (A-Si): Water and kidneys. Cooling & moistening. Balances excesses.

五
Wǔ
Five

SG202.4.5.5 Five in the Western Cultures

The 5 Epagomenal Days

The ancient solar year was based on 60. The Egyptian year was divided into 12 months of 30 days: each year was about 5 days shorter than the astronomical year of 365 1/4 days. To compensate for calendar shift, 5 extra days were added called the “epagomenal days”. (To adjust for the 1/4 day, the Romans later added a “leap year” every 4 years.)

Plutarch (c. 46 – 120 BCE), a Greek historian, tells a beautiful mythological story about these 5 additional days:

Helios, the sun God (Ra), cursed Rhea (Nut) because she had betrayed him. The curse was that she would not be able to give birth during the sun’s rule or the moon’s rule, i.e. during any of the 360 days of the year. But Hermes (Thot) came up with a solution: he gambled with the Moon god and gained the 72nd part of a day every day. Thus, by the end of 360 days, he had won the 5 days that were not ruled by the sun or the moon and therefore were exempt from the curse.

(After Annemarie Schimmel. *The Mystery of Numbers*, 1993.)



↑ The western 5 elements

The Pentacle

In the western magical tradition, the Pentacle is an amulet, used for invocation & protection, and is designed in the geometry of the Pentagram or 5 pointed, unicursal star.

◆SG106.1.4

In the Tarot cards, the “coins” in the fourth suit are oftentimes marked with the design of a pentagram-pentacle representing the element Earth and divine manifestation.



The Hand of Fatima

Khamsa (Hebrew) or *Hamsa* (Arabic) means “5”. This is also the name given to an amulet to protect from the “evil eye”.

An Islamic alternative name is “Eye of Fatima” or “Hand of Fatima”, after Fatima Zahra, Prophet Muhammad’s daughter.

The 5 fingers represent the 5 virtues in Islam.

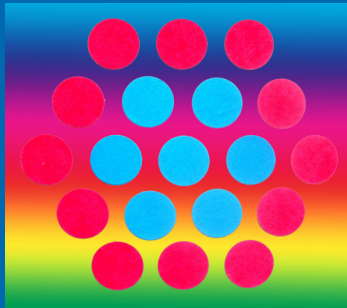
The Jewish tradition calls it “Miriam’s Hand”, after Miriam, the sister of Aaron and Moses. The 5 fingers represent the 5 books of the Torah.

In both cultures, it is described as “Protection of the Hand”, i.e. the Hand of God, and is a widespread talismanic tool.



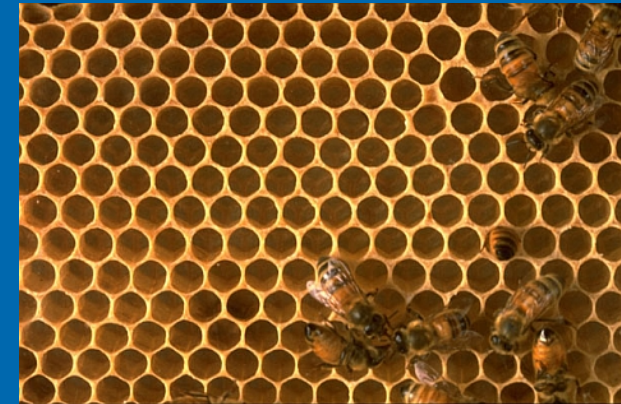
The Pentagram, once the secret emblem of the Pythagorean School, is now flying on many national flags and is used by cutting edge science for “Penrose Tiling” and “Quasi-crystal” technology. Penta-symmetry, with its underlying PHI ratio, has been found as essential in the Fibonacci-resonant architecture of the DNA, the growth angle of plants, Platonic & geodesic structures, and even the eyes of hurricanes...

Pentagram 5, with its music-like ladder of Phi-harmonics, is indeed the number of Cosmic Marriage, capable of opening the access to the quantum plenum and revealing many star-gate secrets.



SG202.4.6.2 The Hexad (2)

Efficient building principle in space and ordering sequence in time, the Hexad is the first “Perfect Number” according to ancient interpretation: it is equal to the sum of its factors. Furthermore, 6 is both the sum and the product of its parts: $6 = 1 + 2 + 3$ and $6 = 1 \times 2 \times 3$. [◆SG202.1.9.4]



6 in Space & Time

- 6 directions
- 6 days of creation
- 6 active days per week
- 6 sides of cube
- 6 vertices of octahedron
- 6 regular polytopes
- 6 hexagrams Yi Ching
- 6 levels of healing
- 6 dimensions Lorentz Group
- 6 chemical reactions
- 6-sided benzene ring
- 6-structure web cellulose
- 6 net cells human lungs
- 6-sided snow flakes
- 6-sided quartz crystal
- 6 geese a-laying
- 6 cords of guitar
- 6-based sextant
- 6-legged insects
- 6 biomes

“Six is a number perfect in itself... God created all things in 6 days because this number is perfect. And it would remain perfect, even if the work of 6 days didn't exist.”
St Augustine (354 - 430 CE)

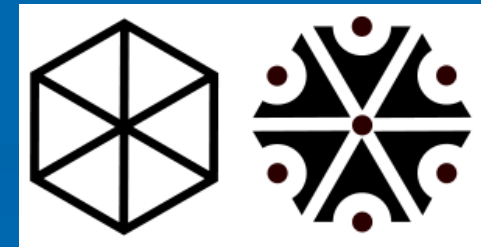
Whereas 5 is the sum of the first even (2) and the first odd (3) numbers, 6 is their product. Here we can see the close connection between 5 and 6 (see next page). Also, when squared, 6 always ends up with “6”, just like, when squared, 5 always ends up with “5”.

6 needs also to be referred to 7 as 7 is the center of 6, just like 5 is the center of 4: thus the 6 directions are actually 7 when we count the center.

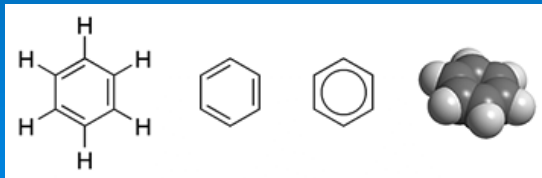
As the Hexagram symbolizing the reconciliation of opposites and as a prime archetype underlying both natural phenomena & the 3D coordinate system itself, the Hexad holds a special place in the systems of traditional cosmology: it is the geometric basis of the Pythagorean Tetraktys, the Kabbalistic Tree of Life and the fish symbolism of early Christians.

↑ Hexagonal “beehive” tiling of the 2D plane. Note that 6 hexagons enclose a center hexagon. ([//i.zdnet.com](http://i.zdnet.com))

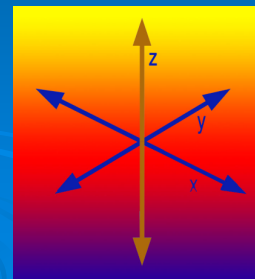
↓ Hexad as protection



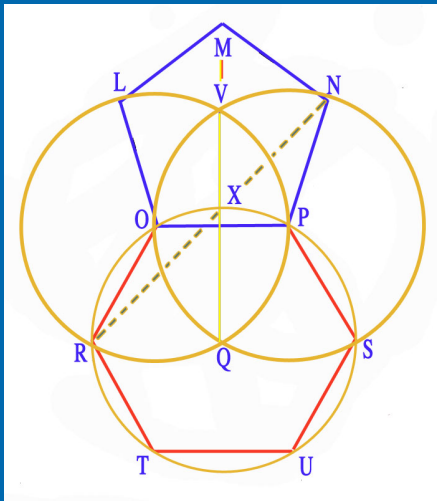
↑ *Gromoviti znaci* or Slavic thunder marks were often engraved upon roof beams of houses to protect them from lightning bolts. Identical symbols were discovered on Proto-Slavic pottery of 4th century *Chernyakhov* culture. They are thought to be symbols of the supreme Slavic god of thunder, Perun.



The 4 directions → of the 2D plane are complemented by “up” and “down”., forming the 6 directions of 3D .



SG202.4.6.3 Five & Six: Mystical Wedding



↑ Durer's construction of the Pentagon
[◆SG106.3.2]

Here, the pentagon is united with the Hexagon through the Vesica Piscis. They share the same base unit 1 which is also the width of the Vesica. Note the elegance of this construction done "with the opening of the compass unchanged". The same base unit 1 generates a whole family of polygons: square (4), pentagon (5), hexagon (6), octagon (8), decagon (10) and dodecagon (12).

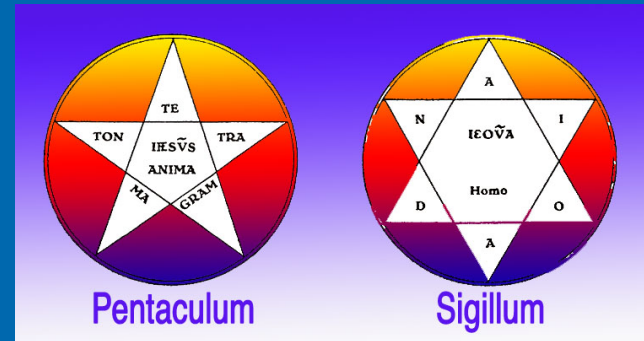
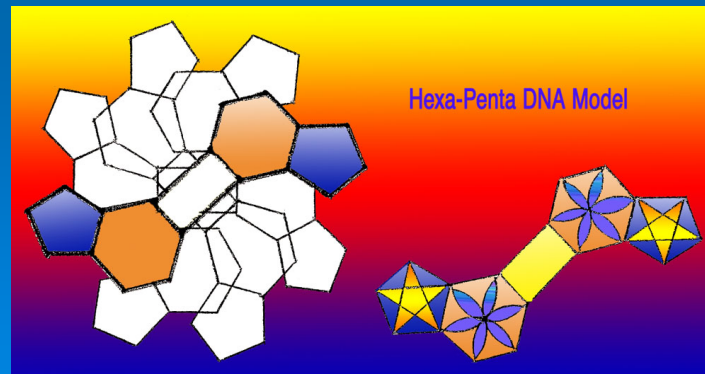
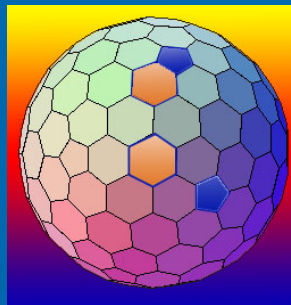
[◆SG108.1.11.1]

In Sacred Geometry, there are practical exercises for spiritual upliftment, using geometric figures to point to inner, mystical, alchemical transformations. The Wedding of Five & Six is such an exercise.

[◆SG106.3.3]

In the Pythagorean tradition, the Pentad 5 is called the "Nuptial Number" (O PENTE GAMOS) and the Hexad 6 is called "Cosmos" (O HEXA KOSMOS, KOSMOS = 600 in Greek gematria). The unification of 5 and 6 symbolizes the integration of the dualistic human nature: the inner moon and sun, i. e. the feminine and masculine archetypes within. But 5 and 6 also take this integration further: between the bodily incarnated human and the cosmic spirit soul.

→ Geodesic domes incorporate hexa (orange) & penta (blue) geometries in order to create a spherical surface. 5 or 6 alone can't make a curved space.



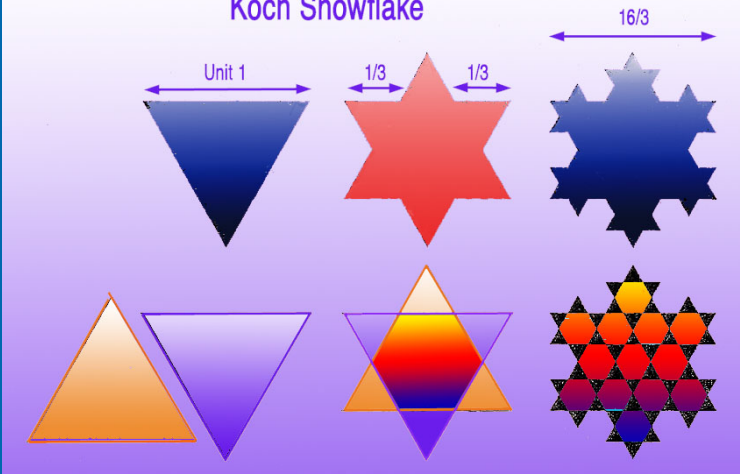
↑ Heinrich Cornelius Agrippa von Nettesheim (1486 - 1535) was a Renaissance theologian, astrologer and occultist. In his *De Occulta Philosophia*, a most influential book on western occultism and esoteric traditions, he writes about the Pentagram (*Pentaculum*) and the Hexagram (*Sigillum*):

"With these two signs the Israelites and Jews have done much and brought about much. They are still kept highly secret by a number of them. For these two have such a strong power that everything that can be done by characters and words is possible for these two".

← The Hexa-Penta Model in the DNA.

Two fused pairs of hexagons (orange) and pentagons (blue) are joined by a Golden Ratio rectangle (yellow). This model has the same shape and proportions as the nucleic bonds of the DNA molecule. These platelets spiral upon each other forming a PHI vortex-mandala.

Koch Snowflake

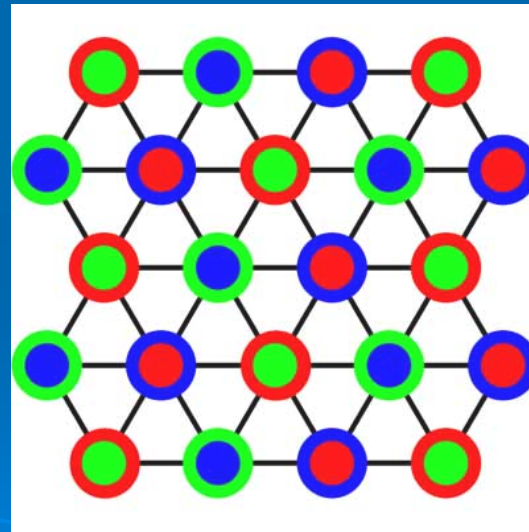
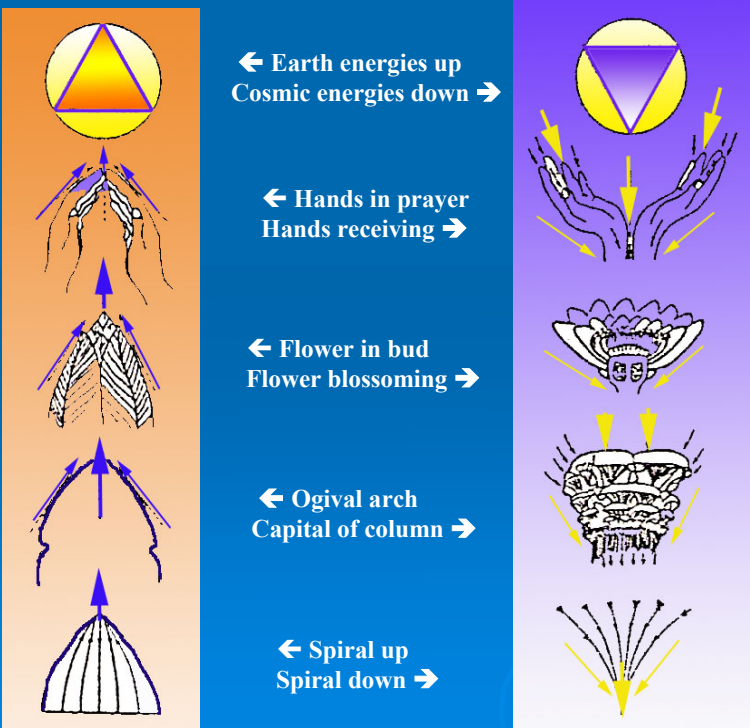
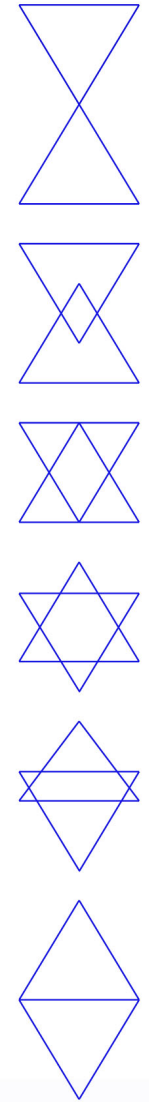


SG202.4.6.4 The Double Triangle

The dynamics and symbolism of two equilateral triangles
 → meeting apex-to-apex is profound: it is the coming together of Above and Below, two vortical cones of energy uniting ascending earth energies and descending cosmic energies.

As the triangles enter each other and merge mid-way, they form the 6-pointed star or Hexagram. Continuing the process, the two triangles will end up being base-to-base, forming a rhombus.

In 3D, the equilateral triangles are tetrahedra coming together to form a Star-Tetrahedron.



↑ Triangular Lattices.
 Play with them in your mind's eye,
 in 2D and 3D.

SG202.4.6.6 The Hexagram

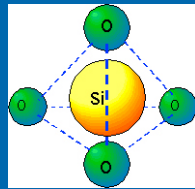
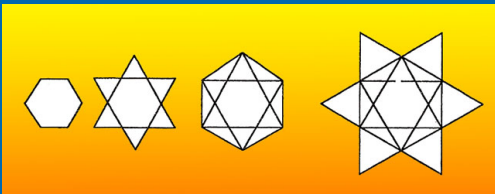
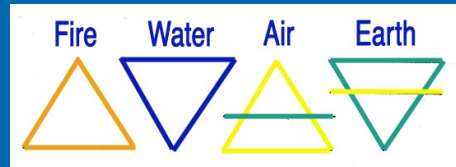
As the Hexagram uniting the upward-pointing and downward-pointing triangles, the Hexad rest on a stable foundation whose parts are mutually supporting. The Hexagram is a 2D projection of the 3D Star-Tetrahedron, a primordial structure in nature and higher-dimensional grid systems.



forum.myspace.com

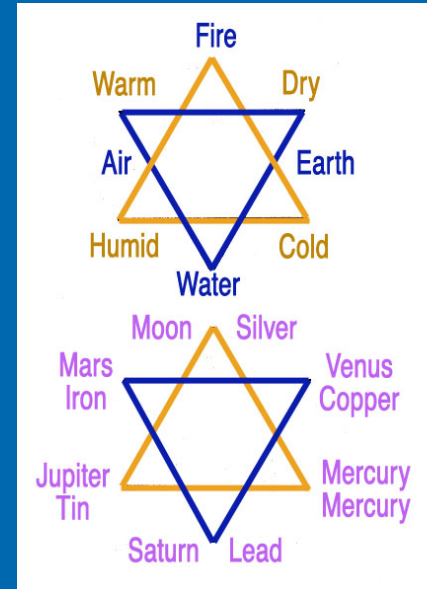


↑ The StarTetra or 3D Hexagram

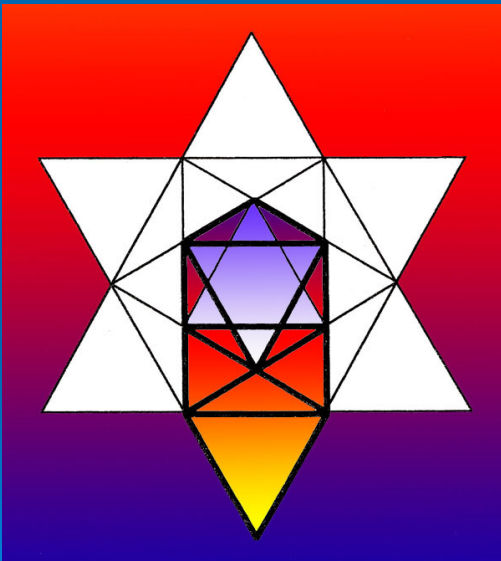


Geometry of the Quartz crystal

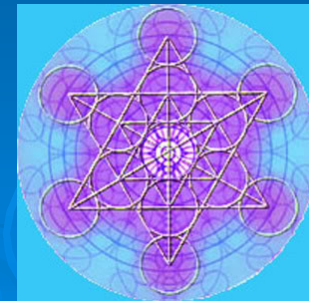
→ Quartz crystal (silicon dioxide SiO₂) is made of spiraling helixes of tetrahedra interlocking to form the typical hexa structure. Quartz combines the qualities of tetrahedron molecules, spiral latticework, and hexagonal geometries in a unique shape: a prism of light, capable of creating and maintaining balance & universal order in living & electronic systems. Because quartz geometry depends upon the angle of bonding between oxygen and silicon, each quartz crystal is unique, has its own history and specific uses.



↑ The 4 traditional elements as components of the Hexagram, along with their qualities, planetary associations and metals.



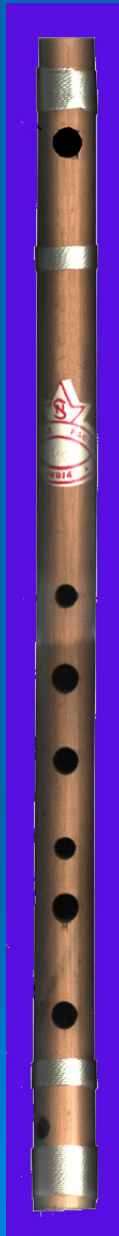
↑ The Tree of Life in the Hexagram
(Lenora Leet. *The Secret Doctrine of the Kabbalah*, 1999.)



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Seven...

- 7 notes, vowels & colors
 - 7 Rishis - sages
 - 7 hills & mountains
 - 7th heaven
 - 7 heavenly spheres
 - 7th day of rest
- 7th year for fallow land
 - 7 wonders of world
 - 7 chakras and 7 seals
 - 7 faeries & 7 dwarves
- 7 Lipikas - Lords of Karma
 - 7 princes & 7 princesses
 - 7 steps in each direction
 - 7 constellations & 7 stars
 - 7 original cities
 - 7 blessings & 7 curses
 - 7 rings labyrinth
 - 7 sisters & 7 brothers
 - 7 daughters & 7 sons
 - 7 frieze symmetries
 - 7 planets & 7 metals
 - 7 trumpets of Jericho
 - 7 degrees of wisdom
 - 7 gates & 7 doors
- 7 rungs, 7 steps & 7 stories
 - 7 generations
 - 7 paths & 7 pillars
 - 7-league boot
- 7 brooks, 7 pools & 7 seas
 - 7 sephiroth
 - 7 virtues & 7 vices
- 7-up & Boeing 747
 - 7 liberal arts
 - 7 ages of life
- 7-branched Menorah
 - 7-year itch
 - 7 times rituals
 - 7 virgins
 - 7 swans



SG202.4.7.2 The Heptad (2)

The number 7 has always exerted a deep & mysterious fascination upon humankind, almost like a legacy from primordial, more magical times.

7 is the only integer that does not divide evenly into the 360° circle. It does not arise from any union and does not unite with anything. 7 is motherless and virgin and so was the Greek Goddess Athena “Parthenos”, the patroness of “parthenogenesis” (See next page).

7 is the “singularity”, a dimensional doorway.

“According to general relativity, the initial state of the universe was a singularity. Another type of singularity is inside a black hole: any star collapsing beyond a certain point would form a black hole, inside which a singularity (covered by an event horizon) would be formed, as all the matter would flow into a certain point (or a circular line, if the black hole is rotating). These singularities are known as curvature singularities.” (Wikipedia)

Traditionally described as the union of a ternary of spiritual quality with the quaternary of the material elements, 7 embodies a cyclic completion bringing about a new transformation and launching the next order of evolution.

← The traditional *bansuri* Indian flute, with 7 finger holes (*swar randhra*).
//chandrakantha.com

Names of “seven”

The names for 7 sound remarkably similar in many languages:

Indo-European	- <i>septm</i>
Sanskrit	<i>sapta</i>
Avestan	<i>hapta</i>
Hittite	<i>sipta</i>
Tokharian A	<i>spāt</i>
Armenian	<i>ewhnt</i>
Greek	<i>hepta</i>
Latin	<i>septem</i>
Spanish	<i>siete</i>
French	<i>sept</i>
Romanian	<i>shapte</i>
Old Erse	<i>secht</i>
Modern Irish	<i>secht</i>
Welsh	<i>saith</i>
Breton	<i>seiz</i>
Gothjic	<i>sibun</i>
Dutch	<i>zeven</i>
Old Icelandic	<i>siau</i>
Swedish	<i>sju</i>
Old saxon	<i>sibun</i>
English	<i>seven</i>
Old high German	<i>siben</i>
German	<i>sieben</i>
Slavonic	<i>sedmi</i>
Russian	<i>sem'</i>
Polish	<i>siedem</i>
Lithuanian	<i>septyni</i>

SG202.4.7.3 Athena Parthenos, the Virgin

“(The number 7) is comparable to the goddess Athena, the leader and ruler of all things, eternal as a deity, steady, immobile, similar only to itself, different from all others.”

Philolaus (5th c. BCE).

In Greek mythology, Athena (also called *Pallas Athena* and *Athena Parthenos*) is the goddess of wisdom, war, strategy, industry, justice and skill. Minerva, Athena's Roman incarnation, embodies the same attributes. Athena is also the protectress of heroes and heroic actions. She is the virgin patron of Athens. The Athenians built the Parthenon (the temple of the “*Virgin Goddess*”) on the Acropolis of her namesake city, Athens, in her honor.

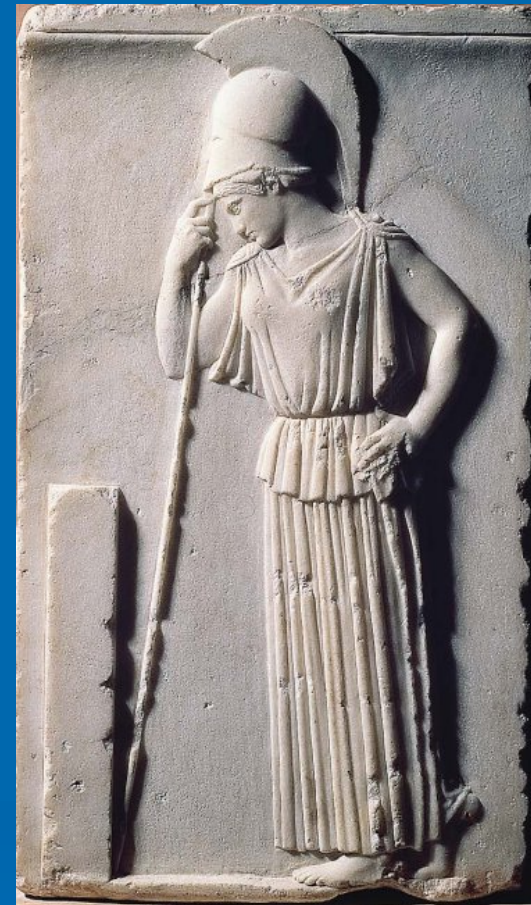
Here is the classical story of Athena’s “virgin” birth:

The second wife of Zeus was the Oceanid Metis (of the Titan generation and an ancient goddess of wisdom). As explained by Hesiod (8th c. BCE) in his *Theogony*:

“Zeus lay with Metis but immediately feared the consequences. It had been prophesied (by Ouranos & Gaia) that Metis would bear extremely powerful children: the first, Athena and the second, a son more powerful than Zeus himself, who would eventually overthrow Zeus.”

In order to forestall these dire consequences, Zeus tricked Metis into turning herself into a fly and promptly swallowed her, just like Cronos, his father, had swallowed his children. He was too late: Metis had already conceived a child. In time she began making a helmet and robe for her fetal daughter. The hammering as she made the helmet caused Zeus a painful headache and Prometheus, Hephaestus or Hermes (depending on the sources) either clove Zeus's head with an axe, or hit it with a hammer at the river Triton, in Lybia. Athena leaped from Zeus's head, fully grown, armed, and shouting a triumphant cry of victory. At the sight, all the Immortals were struck with astonishment and filled with awe.

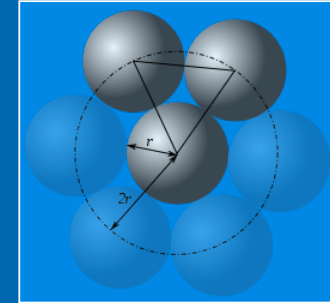
Athena was the favorite daughter of Zeus and he let her use his insignia: the terrible shield, the aegis and his devastating weapon, the ray. The most used expression to describe Athena is “*Glaukōpis*” (“*bright eyed*”). Her emblem is the olive tree (created by her), and her symbol is the owl.



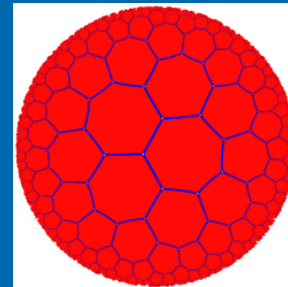
↑ The Parthenon.
Athens.

SG202.4.7.4 Mathematics of Seven

A regular heptagon can only be approximated with compass and straightedge but is constructible with a marked ruler and compass. [◆SG302]



↑ The centers of 3 circles in contact form an equilateral triangle, generating the hexagonal packing of $6 + 1 = 7$. 7 is therefore considered to be a “centered” hexagonal number.



← Regular heptagons can tile the hyperbolic plane, a non-euclidian geometry.

Rhind Papyrus & Mother Goose

The *Rhind Papyrus* (also called the Ahmes Papyrus) is named after the British collector, Rhind, who acquired it in 1858. It was copied by a scribe (Ahmes) in ~1650 BC from another document written ~2000 BC, which, possibly in turn, was copied from a still older text ~2650. (Wikipedia). Rhind Papyrus Problem 79 offers the following:

“There are seven houses; in each house there are seven cats; each cat kills seven mice; each mouse has eaten seven grains of barley; each grain would have produced seven hekat. What is the sum of all the enumerated things?”

Two columns of solutions are given leading to the sum $7 + 7^2 + 7^3 + 7^4 + 7^5 = 19,607$. Mathematicians have found that the second column gives the formula for the sum of a geometric series: $(r^n - 1)/(r - 1)$.

Much later, Leonardo da Pisa (aka Fibonacci) included the same problem in his *Liber Abaci* (1202).

In the 18th century, the *Mother Goose* compilation (French *La Mere l'Oye*) included the following rhyme:

“As I was going to St Ives, I met a man with 7 wives. Every wife had 7 sacks, and every sack had 7 cats, every car had seven kittens. Kittens, cats, sacks and wives, how many were going to St Ives?”

This tale of seven has survived for several millennia.
Such is the perennial power of seven.

108

The 360° circle divides evenly all integers 1-10, except for 7 which divides into $51.428571\dots$ (For comparison, the face-to-base angle of the Great Pyramid = 51.84 or $51^\circ 51'$). As a consequence, it is impossible to construct an exact heptagon with a compass. The heptagon does not belong to the family of brothers & sisters born out of the the cosmic womb of the Vesica, [◆SG108.1.11]
7, the 4th prime number, is “neither produced nor producing”: within the decad, it has no dividing factor and it is not creating any other number by multiplication. 7 is “virgin and childless”.

$$1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \\ = 7 \times 8 \times 9 \times 10 \\ = 5040$$

$$1 \times 2 \times 3 \times 4 \times 5 \times 6 \\ = 8 \times 9 \times 10 \\ = 720$$

5040 and 72 (and its multiples like 144) are highly revered “canonical” numbers.
 $5040 = 72 \times 70$.

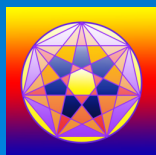
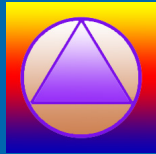
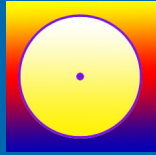
A curious mathematical fact

999,999 divided by 7 is exactly 142,857. Therefore, when a fraction with 7 in the denominator is converted to a decimal expansion, the result has the same six-digit repeating sequence after the decimal point, but the sequence can start with any of those six digits:

$$142857 \\ 1/7 = .142857142\dots \quad 1/2 = .285714285\dots \\ 3/7 = .428571428\dots \quad 4/7 = .571428571\dots \\ 5/7 = .714285714\dots \quad 6/7 = .857142857\dots \\ 7/7 = 1 \quad 8/7 = 1.142857142\dots \\ 9/7 = 1.285714285\dots \quad 10/7 = 1.428571428\dots$$

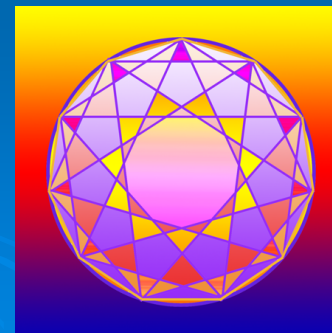
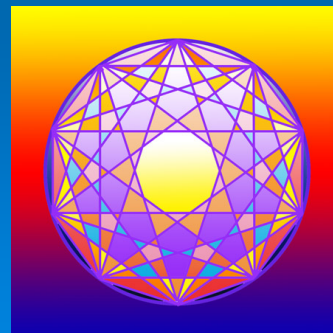
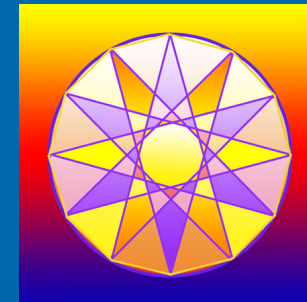
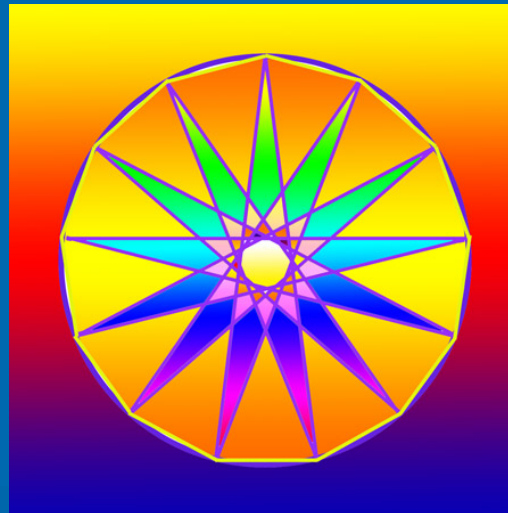
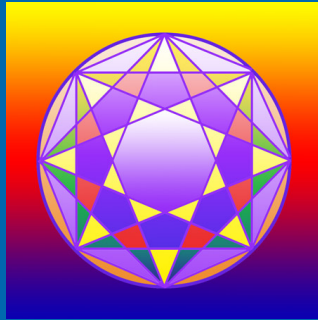
Note the absence of 3, 6 or 9.

SG202.4.8 Numbers 1 - 7 - Summary



	PRINCIPLE	EXPRESSION	DYNAMICS
1	Monad	Unity	Oneness & Communion
2	Dyad	Duality	Polarity & Complementarity
3	Triad	Trinity	Synthesis & Higher Solution
4	Tetrad	Quaternity	Manifestation & Foundation
5	Pentad	Pentagon/Star	Creative Life & Harmony
6	Hexad	Hexagon/Star	Balance & Cosmic Order
7	Heptad	Heptagon/Star	Transformation & Singularity

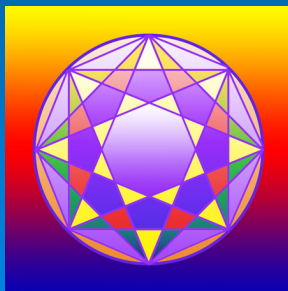
SG202.5 Chapter 5 The Archetypal Numbers: 8 - 13



EIGHT - OCTAD (Renewal & Auspiciousness)

(Octagon / Octagram - 45° - 135°)

- Resurrection & Renewal
- Evenly Even
- Safety & Support
- Reliability
- Embracer of All
- Double Foundation
- Second Beginning
- Regeneration
- Purification
- New Song
- Cosmic Equilibrium
- Expansion & Progression
- Power & Influence
- Responsibility & Service
- Strength & Determination
- Justice
- Achievement & Nobility
- Paradise
- Good Luck
- Security & Insurance



Summer
S
Li

Sun
E
Chên

K'un

Autumn
W
Tui

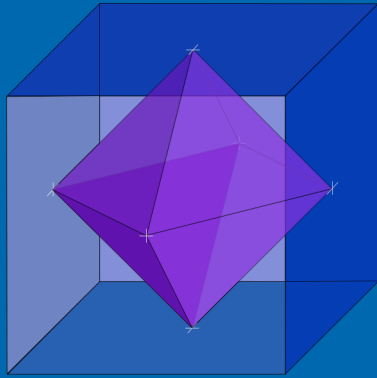
Ch'ien

K'an
N
Winter

8 x 135 = 1080

135°

SG202.5.1.2 The Octad (2)



Among the integers, 8 has more factors than any other number: it is divisible by 1, 2 and 4. Therefore the Octad partakes of the properties of the Monad, the Dyad and Tetrad.

In 3D, 8 project itself as the Cube ($2 \times 2 \times 2$), the second Platonic solid, a volume with 6 faces but 8 vertices (corners). The dual of the Cube, the Octahedron is the third Platonic Solid and has 8 faces but only 6 vertices. The Cube & Octahedron morph into each other. [◆SG107.3].

As double square (2×4), 8 provides a double safety in the establishment of foundations. In ancient numerology, the doubling of even numbers guarantees a multiplied power. 8 is particularly auspicious to create reliable & secure environments, both on a material level (architecture, 8 directions etc...) and on a spiritual level (Pa Kua of Feng Shui, 8 Paths...).

8 is also a new beginning, a renewal, a resurrection. Coming after the cycle of 7, 8 marks the first step, the monad, of the next cycle. Hence the symbolism of the 8-sided medieval baptistery as regeneration (See next page).

You said 8?

- 8 Paradises
- 8th sphere of fixed stars
- 8-fold Buddhist path
- 8-pointed star
- 8 beatitudes
- 8 Chinese Immortals
- 8 Trigrams of Pa Kua
- 8-spoked wheel
- 8 binary bits
- 8 legs of spiders
- 8 tentacles of octopi
- 8 directions & inter-directions
- 8 winds
- 8 Loka -Palas - World Guardians
- 8 rays of Celtic Wheel
- 8 Buddhist offerings
- 8 Dogon ancestors
- 8 deities Hermopolis Ogdoad
- 8 - icon of infinity
- 8 axis of mandala
- 8 stages in mitosis
- 8 rows/columns chessboard



↑ The Pa Kua (“8 changes”) is the foundation diagram of Chinese philosophy. Using an 8-fold system of correspondences based on the 8 Trigrams, it is an insurance map for navigating the ever changing circumstances of life.

Mathematics of 8

- 8 is the first cubic number: $2^3 = 8$, breaking through into a higher dimensional “octave”.

- 8 is the 6th Fibonacci number.

- All squares of odd numbers differ by a multiple of 8”:

$$9^2 - 6^2 = 81 - 36 = 45 = 8 \times 5$$

- 8 is a “promiscuous number”:

$$1 + 7 = 2 + 6 = 3 + 5 = 4 + 4 = 8$$

$$\bullet 1 + 2 + 3 + 4 + 5$$

$$+ 6 + 7 + 8 = 36$$

(36 is the Great Tetraktys)

- 8 is “evenly even”:

It can be halved all the way to unity.

SG202.5.1.3 Baptisteries & Baptismal Fonts

In Christian architecture the baptistery (or baptistry) is the separate centrally-planned structure surrounding the baptismal font. Drawing on the symbolism of the Octad as “second beginning” the Christian church built baptisteries in an octagonal shape, to house the baptismal font, also an octagonal structure.

The Lateran Baptistery, in Rome, was the first structure expressly built as a baptistery in the 5th century. It was for many generations the only baptistery in Rome, and its octagonal structure, centered upon the large octagonal basin for full immersions provided a model for others throughout Italy and later throughout medieval Europe.

In early Christian number mysticism, Jesus is connected with the number 8 because the gematria of the Greek name for Jesus (IESOUS) = 888, a master number strengthening the power of the sacred 8. Also, Christ's resurrection constituted the 8th “day of creation”, and baptism, reminding of the Jewish circumcision on the 8th day, thus marked entry into eternal life.



↑ Lateran Baptistery.
5th century. Rome.



Baptismal font and
baptistery.
6th century.
Aix-en-Provence, France.



↑ Baptismal font. Santa Maria church.
Visso, Umbria, Italy.

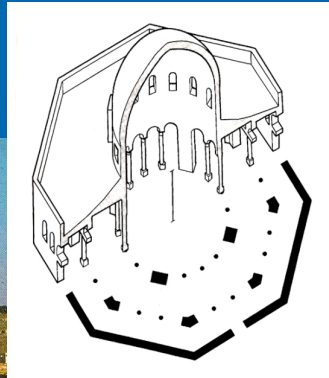
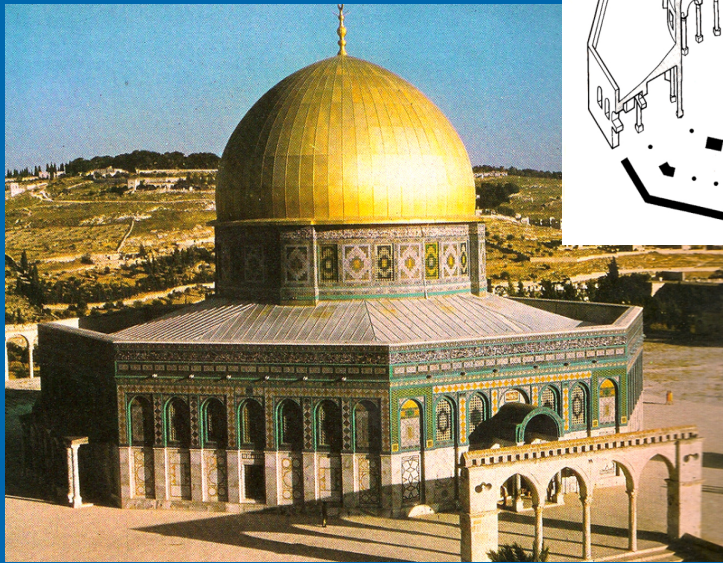


Baptistery. 12th century.
Parma, Italy.

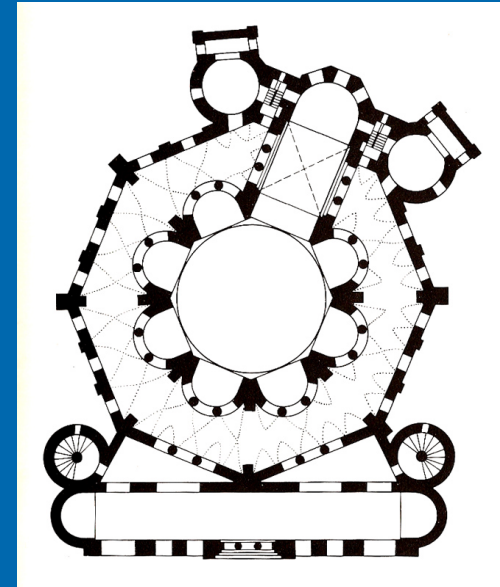
SG202.5.1.4 Octagonal Architecture

In architectural design, the octagon is the form traditionally serving as a transition from the square (the 4 pillars of the earthly plane) to the circle (the celestial sphere).
The octagon is therefore important in the construction of churches in the shape of a dome.

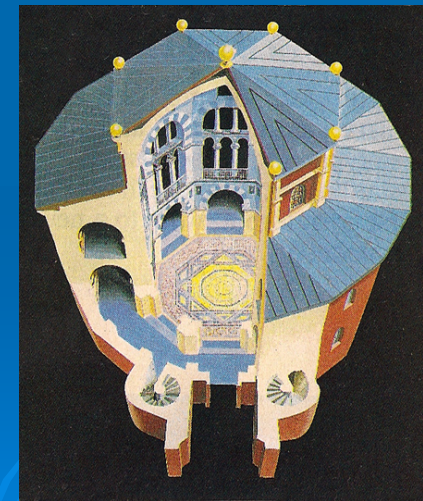
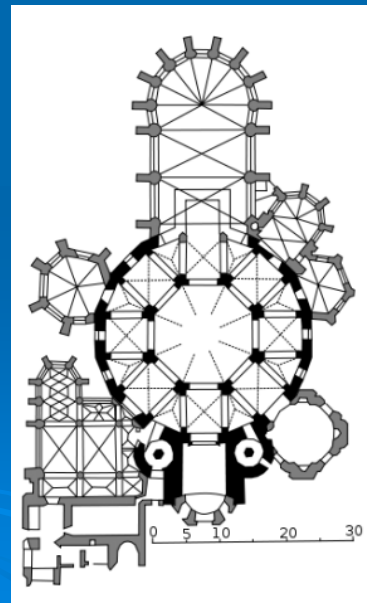
↓ → The Dome of the Rock,
Jerusalem.



St. Vitalis →
Ravenna, Italy.



↑ Navajo Hogans



← ↑ Charlemagne's chapel.
Aachen, Germany.

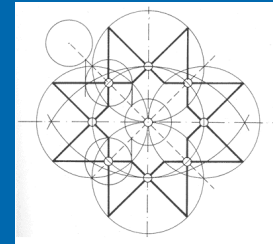
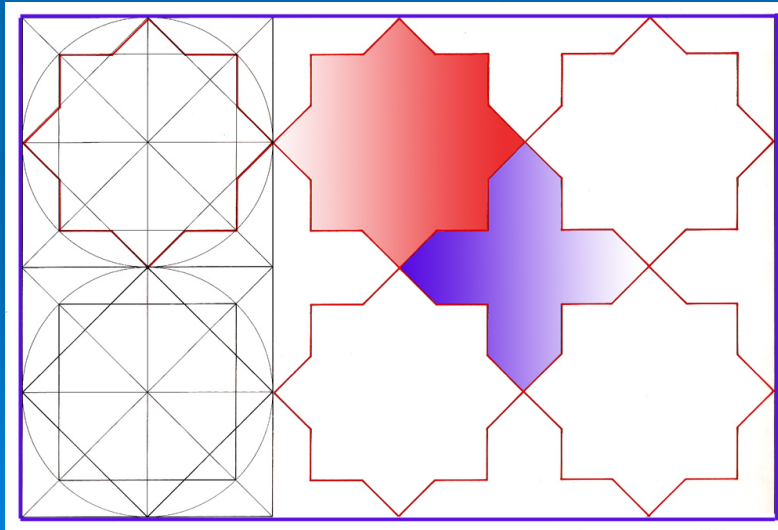
SG202.5.1.5 The Islamic Katham Star

The Islamic or Sufi star is the 8-pointed star pattern consisting of two overlapping squares. Called *khatam* or *katham sulayman* (seal of the prophet), this octagram design is widely used in Islamic ornamentation.

In the Sufi tradition, the *katham* is the visual representation and ubiquitous reminder of the Breath of God whose highest name is the “Compassionate” (*Rahman*). Just like in the Hindu tradition where the created universe is but one outbreath of Brahma, in the Islamic & Sufi tradition, God, in his divine compassion, breathes the universe in and out.

Appearing, with many beautiful artistic derivations, in all aspects and locations of the Islamic culture, the *katham* is a powerful sacred geometric pattern that resonate on many levels:

- The archetypal principle of the Octad or double Tetrad of the manifestation/foundation of form, coupled with the Dyad of cyclic polarity and the Monad of encompassing union.
 - The dynamics of a universal, cosmological pulse of contraction / expansion or emptiness / fullness: the “cycle of creation”.
- The *katham* imprints by its very waveform the dance of the cosmic polarities that create, sustain and dissolve life.
- The mystical awareness of being embraced by the compassion of a divine creator being.
 - The emulation of divine creation by, in turn, consciously inhaling & exhaling the creative breath.
 - The chanting of the Name of the Compassionate as an offering of celebration.
 - The blowing of the divine breath-power onto situations and creations of daily life.



[//morocandesign.com](http://morocandesign.com)



FORM



Contraction / Exhaling



Expansion / Inhaling



Full Breath
of the
Compassionate

SG202.5.2.2 The Ennead (2)

Nine we find:

- 9 months in the womb
- 9 skies & 9 heavens
- 9 celestial spheres
- 9-headed dragon
- 9 openings in human body
- 9 muses & 9-fold blessing
- 9 years facing the wall
- 9-tailed mythical fox
- 9 and 99 gifts
- 99 names of God
- 9 knots secret
- 99 and 999 years lease
- “Being on cloud 9”
- 9 lives of a cat
- 9th generation period
- 9 years curse
- 9-fold strength
- “A stitch in time saves 9”
- 9 days prayer
- “The work of 9 men”
- 9 brothers or sisters
- 9 treasures & 9 magical rings
- 9 caves & 9 rivers
- 9 twists to the river Styx
- 9 books of Plotinus
- 9th house of fortune
- “The whole 9 yards”
- 9-storied pagoda
- “Dressed to the 9th”
- 9th Tarot - the Hermit
- 9th Sephiroth - Foundation
- 9-dots patterns & Squares
- “Possession is 9/10th of the law”

Nine is the number of completion: the last of the 9 integers... and also the return to original Oneness. Composed of 3 x 3, Nine is the Triad to the next power: the magnified sacred 3.

9 is the number-principle-energy which “flows around all the other numbers, within the decad, like an ocean”.
(Nichomachus of Gerasa. 1-2nd c. CE).

The Greeks said that the muse Terpsichore was causing all the numbers to spiral into a dance.

9 is the last offspring of the cosmic parents, the Monad and the Dyad, and, as such, has a favorite position: it is holding the boundaries of the decad. The Ennead and the Monad hold the family together.

$$12345678 \times 9 = 111111101$$

The digital sum of all the integers comes back to 9:

$$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 = 45 = 4 + 5 = 9$$

$$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 81 = 9^2$$

(The sum of an ascending & descending series starting with 1 is always = the square of its highest number)

$$1 / 9 = .111111111$$

$$2 / 9 = .222222222$$

$$3 / 9 = .333333333$$

$$4 / 9 = .444444444$$

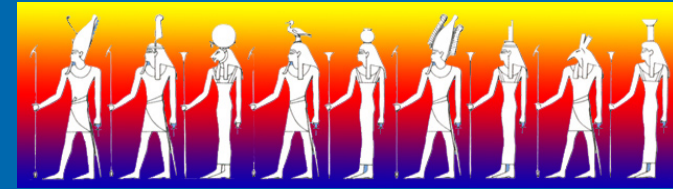
$$5 / 9 = .555555555$$

$$6 / 9 = .666666666$$

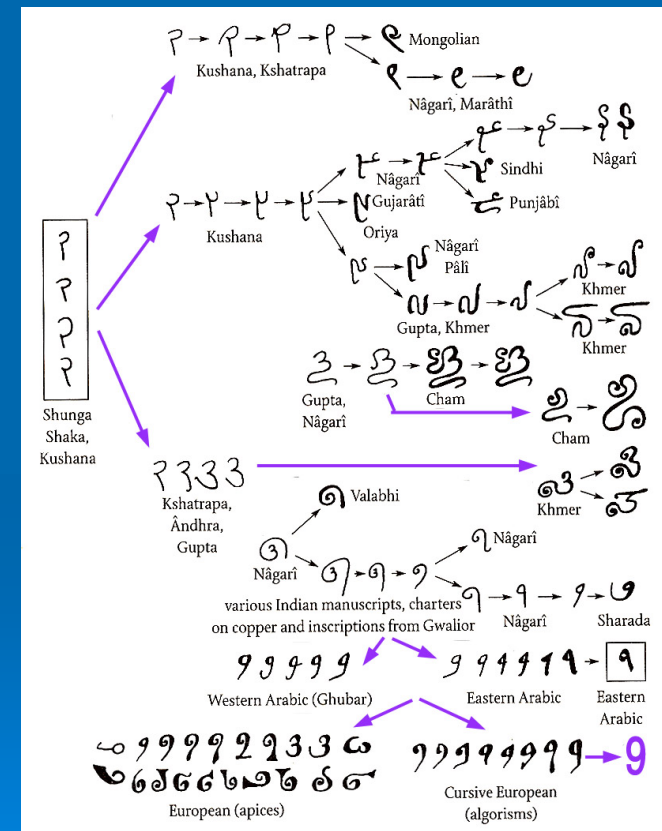
$$7 / 9 = .777777777$$

$$8 / 9 = .888888888$$

$$9 / 9 = 1$$



↑ Egyptian Ennead at Heliopolis: Atum, his children Shu and Tefnut, their children Geb and Nut and their children: Osiris, Isis, Set and Nephthys.



↑ Origins of our modern “9”.
Credit: Georges Ifrah.
The Universal History of Numbers.

SG202.5.2.3 Nine Years Facing a Wall

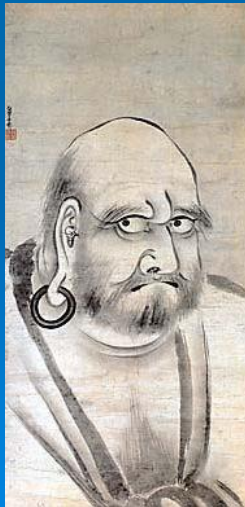
Bodhidharma was a Buddhist monk from southern India who lived during the early 5th century and is traditionally credited as the transmitter of Zen (Chinese: Chán) to China. Many legends and stories surround the life & teachings of Bodhidharma.

In one legend, it is said that the patriarch remained seated in meditation before the wall of the Shaolin Monastery for NINE years. While Bodhidharma was meditating, he became sleepy, and his eyelids grew heavy. In frustration, he tore off his eyelids and threw them on the floor, where they became the first tea plants. Later, tea-drinking became a habit among the Zen practitioners, to keep awake. It also grew into the beautiful tea-ceremony.

In other versions of the story, after the nine years, Bodhidharma "passed away, seated upright" or disappeared, leaving behind holy writings. In yet another version of the legend, Bodhidharma's legs atrophied after nine years of sitting, which is why Japanese Bodhidharma dolls have no legs.

The Shaolin temple where Bodhidharma meditated for nine years and achieved enlightenment has preserved a large rock on which, it is said, one can see the shadow of the sage – apparently it burned into the rock. The Zen practice of wall-gazing is called *pi kuan*.

Facing the wall - Facing the Self - Facing the mirror -
Facing the mind - Facing nothing...

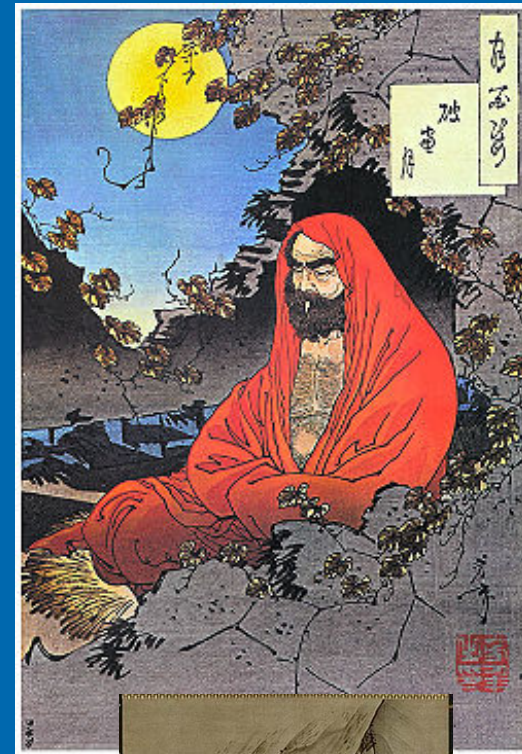


← Bodhidharma by Shokei.
15th c.

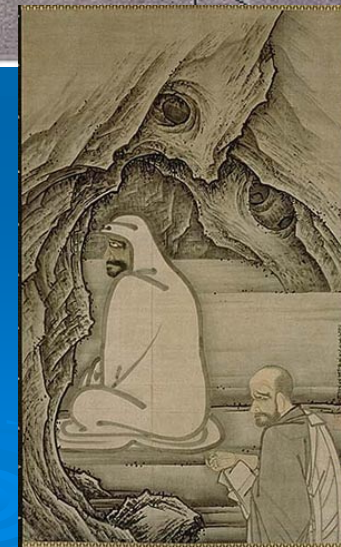
[//ssubbanna.sulekha.com](http://ssubbanna.sulekha.com)



Facing a wall for nine years.
Neither being nor non-being.
The universe is emptiness.
Facing a wall for nine years.
Who is knowing?



Bodhidharma by Yoshitoshi. 1887. Wikipedia.



Bodhidharma
→facing the
wall.
Ink by Sesshu.
Wikipedia.

SG202.5.2.4 The Nine Muses

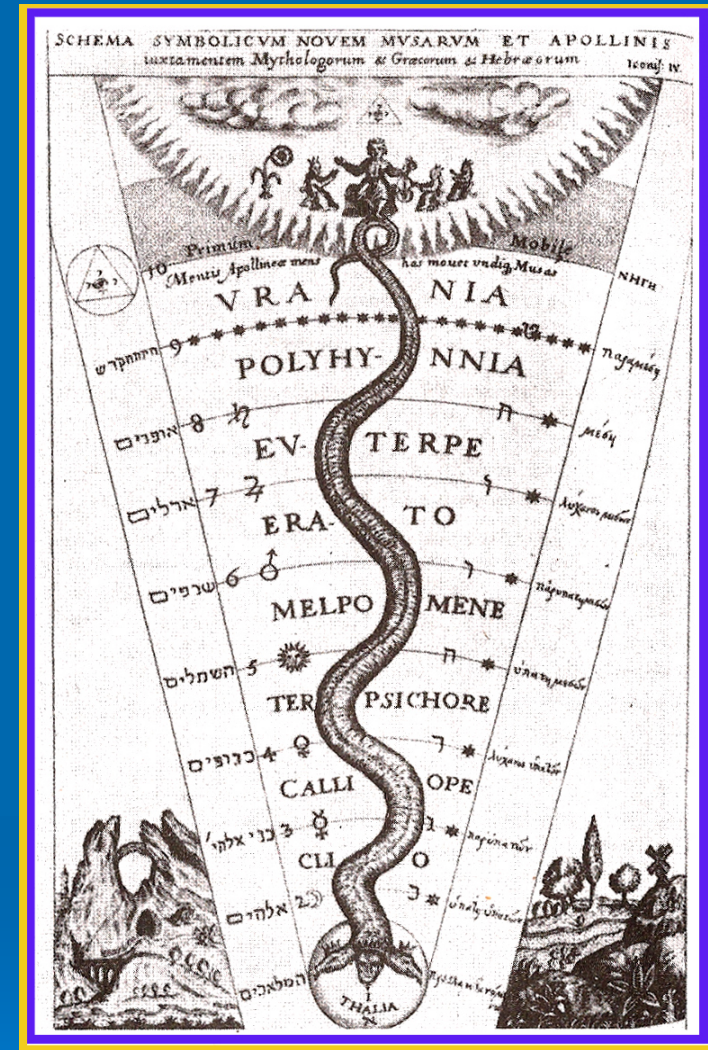


← The 9 Muses.
Roman mosaic.
(www.ualberta.ca)

Originally said to be 3 in number, by the Classical times of the 400s BC, their triad had tripled and become a set of 9 goddesses who embody the arts and inspire the creation process with their graces through remembered and improvised song and stage, writing, traditional music, and dance.

“Not only are the Muses explicitly used in modern English to refer to an artistic inspiration, as when one cites one’s own artistic muse, but they also are implicit in words and phrases such as ‘amuse’, ‘museum’ (changed from museion = a place where the muses were worshipped), ‘music’, and ‘musing upon’.” (Wikipedia).

Muse	Domain	Emblem
Calliope	Epic poetry	Writing tablet
Clio	History	Scrolls
Erato	Lyric poetry	Cithara (an ancient Greek musical instrument in the lyre family)
Euterpe	Music	Aulos (an ancient Greek musical instrument)
Melpomene	Tragedy	Tragic mask
Polyhymnia	Choral poetry	Veil
Terpsichore	Dance	Lyre
Thalia	Comedy	Comic mask
Urania	Astronomy	Globe and compass



↑ The Harmony of the Spheres. Each sphere has an assigned Muse. Interestingly, Thalia (comedy) oversees the Earth. Above the heaven of fixed stars, Apollo conducts the music of the spheres.

(Athanasius Kircher.
Obeliscus Pamphilius. Rome, 1650).

SG202.5.2.5 The Vedic Square

0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

9

0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	1	3	5	7	9
3	3	6	9	3	6	9	3	6	9
4	4	8	3	7	2	6	1	5	9
5	5	1	6	2	7	3	8	4	9
6	6	3	9	6	3	9	6	3	9
7	7	5	3	1	8	6	4	2	9
8	8	7	6	5	4	3	2	1	9
9	9	9	9	9	9	9	9	9	9

In India, there is a very ancient mystical diagram called the “Vedic Square”. Designs obtained from it are widely used in arts, crafts and rituals for decoration, healing, and talismanic purposes. In the Islamic culture as well, intricate patterns were also derived from the Vedic Square.

Actually, the Vedic Square is nothing more than our dusty “Multiplication Table” of old school days, except that the Vedic Square Table is reduced to single digit roots by the process of Gematria Addition or Digital Reduction.

← By adding the digits of the Table on the left, we obtain the reduced integers on the right. Note how “9” forms a framework (the “Horizon”) around the new matrix.

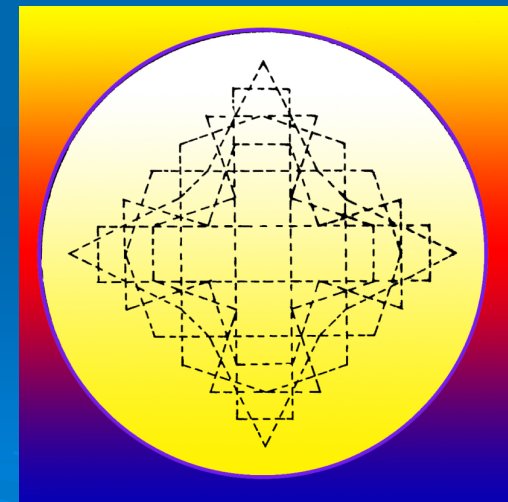
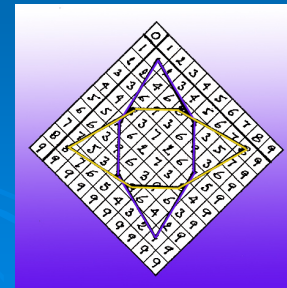
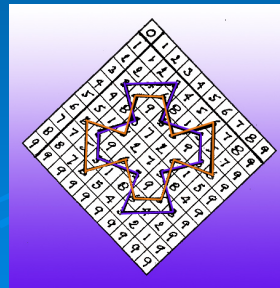
0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	1	3	5	7	9
3	3	6	9	3	6	9	3	6	9
4	4	8	3	7	2	6	1	5	9
5	5	1	6	2	7	3	8	4	9
6	6	3	9	6	3	9	6	3	9
7	7	5	3	1	8	6	4	2	9
8	8	7	6	5	4	3	2	1	9
9	9	9	9	9	9	9	9	9	9

← By connecting all positions for each number, we obtain a specific pattern, a yantra signature reflecting the “personality” of each number.

Note the paired symmetries appearing: 1 - 8, 2 - 7, 3 - 6, 4 - 5. These patterns can be overlaid by couples ↓ or as an overall mandala →.

0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	1	3	5	7	9
3	3	6	9	3	6	9	3	6	9
4	4	8	3	7	2	6	1	5	9
5	5	1	6	2	7	3	8	4	9
6	6	3	9	6	3	9	6	3	9
7	7	5	3	1	8	6	4	2	9
8	8	7	6	5	4	3	2	1	9
9	9	9	9	9	9	9	9	9	9

0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	1	3	5	7	9
3	3	6	9	3	6	9	3	6	9
4	4	8	3	7	2	6	1	5	9
5	5	1	6	2	7	3	8	4	9
6	6	3	9	6	3	9	6	3	9
7	7	5	3	1	8	6	4	2	9
8	8	7	6	5	4	3	2	1	9
9	9	9	9	9	9	9	9	9	9



↑ Vedic Square Mandala

TEN - DECAD
(Wholeness & Return Home)
(Decagon / Decagram - 36° - 144°)

- Return Home
- Higher Unity
- Holiest of Numbers
- Monad in the Void
- Fulfillment
- Ever-flowing Nature
- Ouranos
- Pan (all)
- Pure Harmony
- Eternity
- Fate & Necessity
- Atlas
- All Perfect
- Key Holding
- Earth Holding
- All-Containing



SG202.5.3.1 The Decad (1)

The Decad is the sum of the first 4 natural numbers :
 $1 + 2 + 3 + 4 = 10$

As such, it was associated with the Monad's Oneness of existence, the Dyad's Balanced Polarity of manifestation, the Triad's activity of spirit synthesis and the Tetrad's Foundation of matter.

The Ennead brings completion, but the Decad **CONTAINS EVERYTHING**: the 9 integers and the return to the beginning. By Digital Reduction, 10 emanates out of 1:

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

Also 55 is the value of the Greek numeral "one": EN (en).

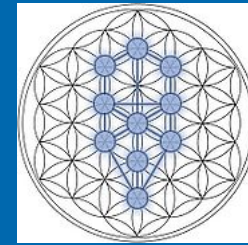
In mythological stories of vision questing, 10 represents the RETURN HOME, after navigating 9 days / 9 years / 9 spheres of tests and initiatory experiences.

In the West: Odysseus journey, the Troyan war, Demeter & Persephone, Dante's journey through the Paradise...

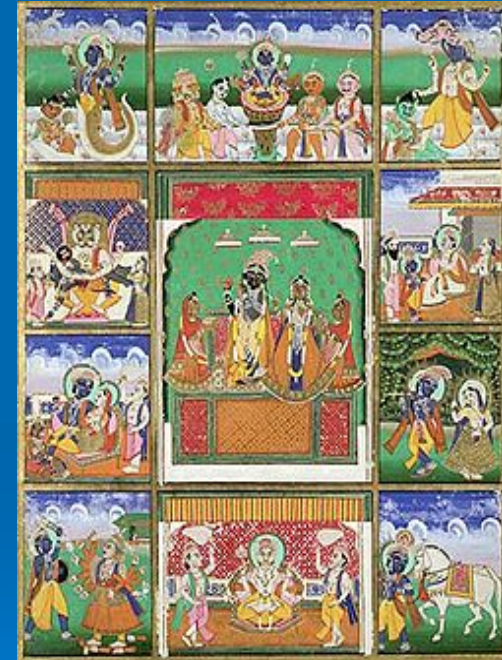
In the East: the 10 Bulls Zen teaching, the 10 Heavenly Stems...



↑ The 10 petals of the Manipura chakra
 (3rd human energy center, located above navel).
 The petals are indicated by Sanskrit letters.
 The seed sound in the centre is *ram*.
 The red triangle is the element of fire.



↑ The Tree of Life
 in the Flower of Life:
 10 Sephiroth

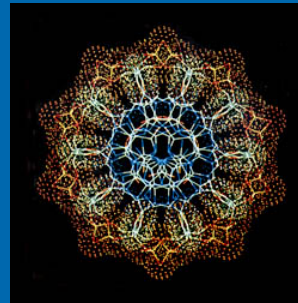
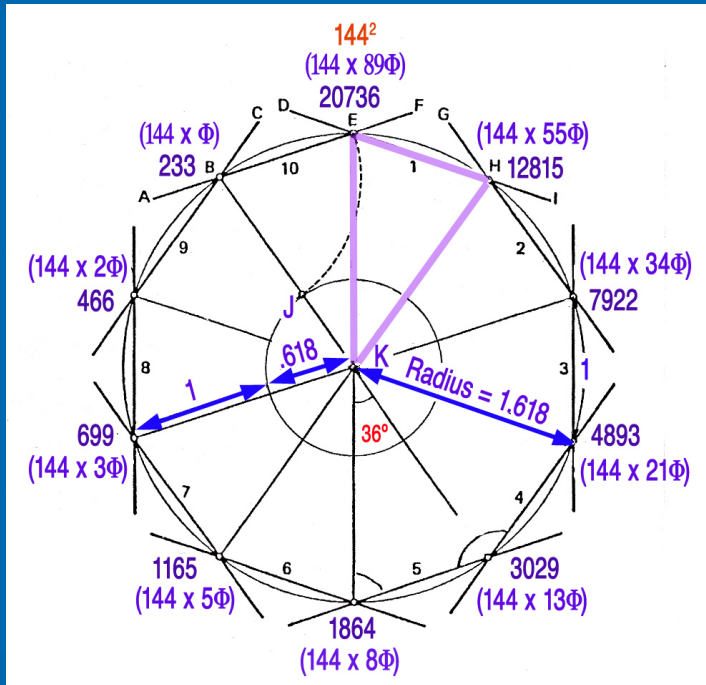


↑ The 10 Avatars of Vishnu
 "Avatar" means the descent of a deity into manifested form. Vishnu is the maintainer aspect of the Hindu Trimurti (Trinity).

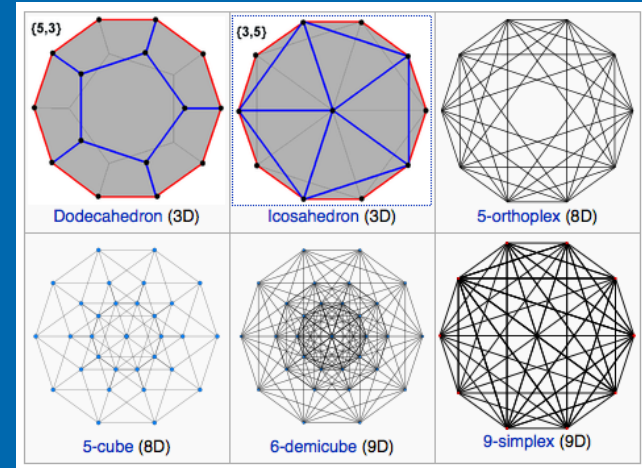
SG202.5.3.2 Harmonic Braiding in the Decagon

The decagon ("Double Pentagon" or "Di-Pentagon"), home of the DNA, is a cosmic template revealing extraordinary relationships.

It brings together the circle, the Golden Ratio properties of the Pentagon with its 5 Golden Triangles, the harmonic power of 10, the Fibonacci Numbers... and the canonic (and Fibonacci) number 144...



↑ DNA decagonal Phi-based fractal structure. Top view. (Historical image by Robert Langridge.)



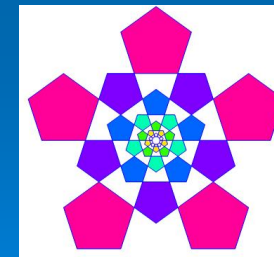
↑ The decagon maps out the regular Dodecahedron and Icosahedron as well as higher-dimensional polytopes (seen here as orthogonal projections).

↑ Harmonics of the Decagon

Geometrically, the subtended angles of the decagon (ABC, DEF etc...) = 144° . Each inner angle KBE, KEH etc... = 36° .

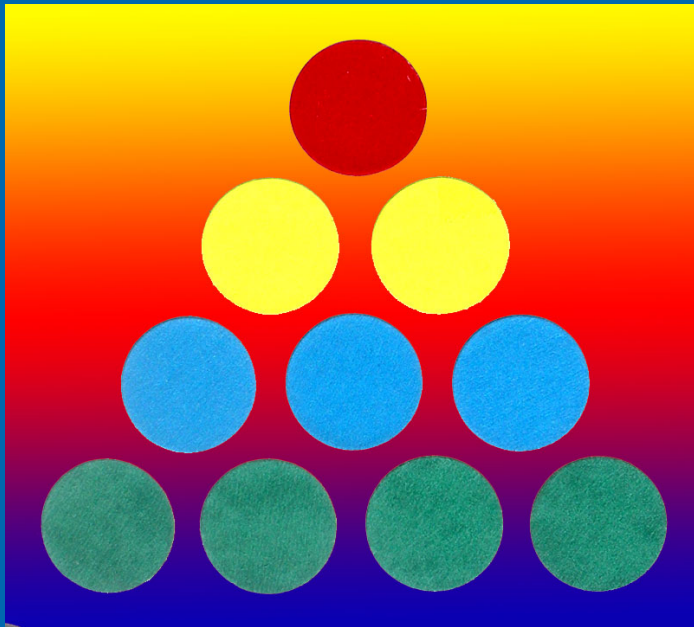
Note the 10 Golden Triangles (base = 1, two sides = $\Phi = 1.618...$). When the side of a regular (inscribed) pentagon is traced along the radius of the circle, the radius is divided into the Golden Section (side BE traced along BK to point J).

StarWheel #76 by Aya. → "Golden Chalice". Keyword: Quint-Essence

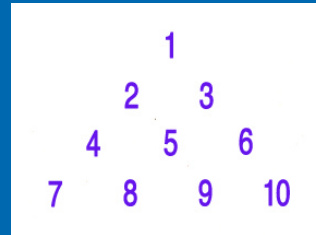


← A great Wolfram Math demonstration

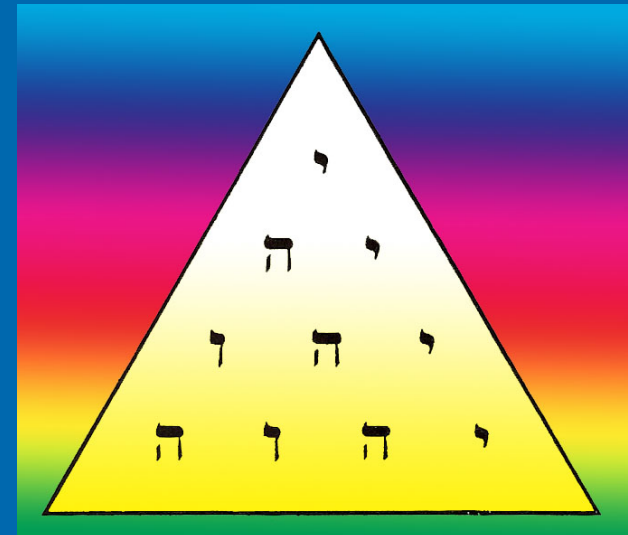
[//demonstrations.wolfram.com/PentagonSpirals](http://demonstrations.wolfram.com/PentagonSpirals)



SG202.5.3.3 The Decad - Revisiting the Tetraktys



↑ The 10-fold Tetraktys displaying all 10 numbers 1 - 10. Note the central position of 5.



↑ By formatting the 4 letters of the Hebrew Divine Name (I H V H) into a Tetraktys, the 72 powers of the Name are manifested.

$$\begin{aligned} \text{I} &= 10 &= 10 \\ \text{H I} &= 5 + 10 &= 15 \\ \text{V H I} &= 6 + 5 + 10 &= 21 \\ \text{H V H I} &= 5 + 6 + 5 + 10 &= 26 \\ \mathbf{10 + 15 + 21 + 26} &= \mathbf{72} \end{aligned}$$

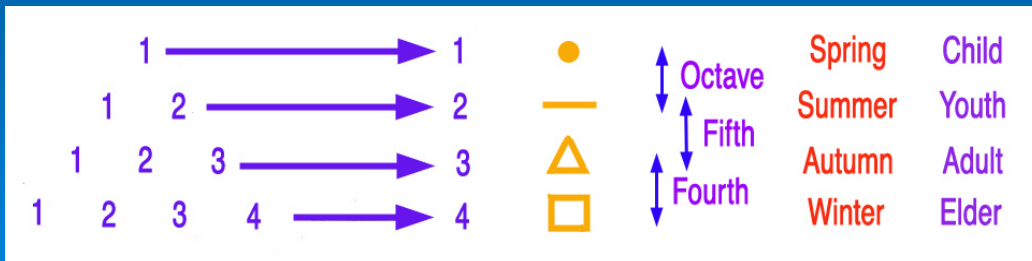
As a triangular number, the Tetraktys is associated with the pyramid: 1 occupies the capstone position of the 10 numbers Tetraktys.

“The Tetraktys is outlining the entire nature of the universe”.

Theon of Smyrna. (c. 70 – c. 135)
Mathematics Useful to Understand Plato.

We already met the *Tetraktys*, a metaphor developed by the Pythagorean School, for the ten whole integers. This symbol was so sacred that oaths were administered upon it. [◆SG202.1.5.6]

In Greek *gematria*, TETRAKTYS (Tetraktus) = 1626 (Greek alphabet gematria ◆SG202.1.5), the same number as PANTI EN KOSMO (panti en kosmo) meaning “Everything in the universe”. Thus gematria reinforces the symbolism of “wholeness” expressed by the Decad.



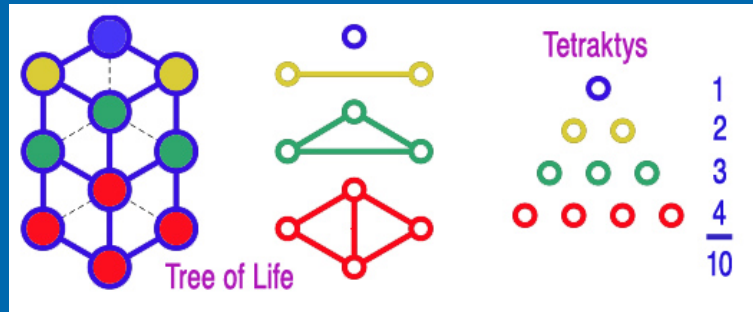
↑ The 4-fold Tetraktys as the Mystical Tetrad
It came to symbolize many quaternities: elements, music chords, dimensions...

SG202.5.3.4 The Decad - The Tree of Life

The Decad/Tetraktys is also directly linked with the Kabbalistic Tree of Life. The Tree of Life is a map of how to navigate the Decad: 1 to 10.

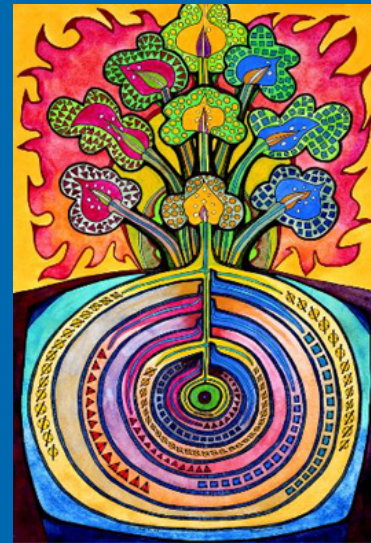
The tradition of enumerating 10 is stated in the Sefer Yetzirah:

*"Ten sephiroth of nothingness,
ten and not nine, ten and not eleven".*

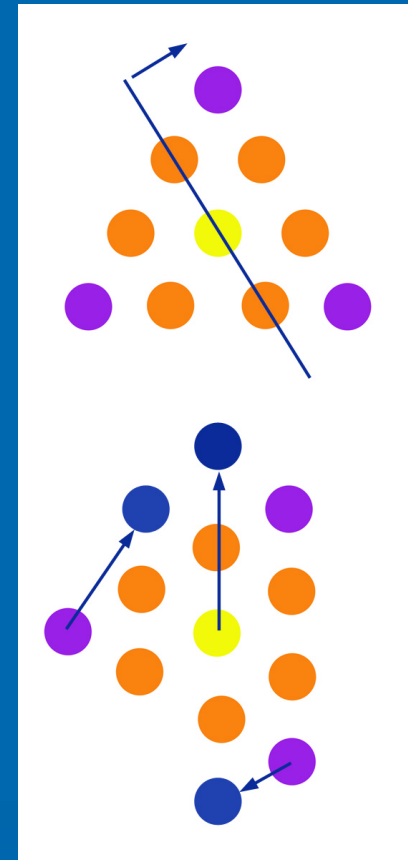


1	KETHER	Crown	Infinite Light
2	CHOKMAH	Wisdom	Revelation
3	BINAH	Understanding	Creation
4	CHESED	Mercy	Kindness
5	GEBURAH	Strength	Severity
6	TIPHARETH	Beauty	Balance
7	HOD	Splendor	Surrender
8	NETZACH	Victory	Determination
9	YESOD	Foundation	Presence
10	MALKUTH	Kingdom	Fulfillment

By rotating the Tetraktys with the hexagon → (orange) in a vertical alignment + moving 3 dots (2 blue + 1 yellow) as indicated by arrows, one obtains a tree of Life diagram.



www.kosmic-kabbalah.com



← The Tree of Life with the 22 connecting “paths” between the number nodes (Sephira) and the 3 “pillars”:

- Left (blue) - Pillar of Severity.
- Center (Yellow) - Pillar of Mildness.
- Right (Red); Pillar of Mercy.

Note that the two interlaced hexagons form a rhombus (and a Vesica) if we mark the “hidden Sephiroth” Da’at.

SG202.5.3.5 The Decad - The Ten Bulls

In the traditional Zen teaching of the Ten Bulls, the images represent 10 stages of Zen realization or enlightenment. The “bull” symbolizes the Buddha-nature (the Ulti-mate) to be sought, glimpsed, faced, tamed... and finally fully integrated.

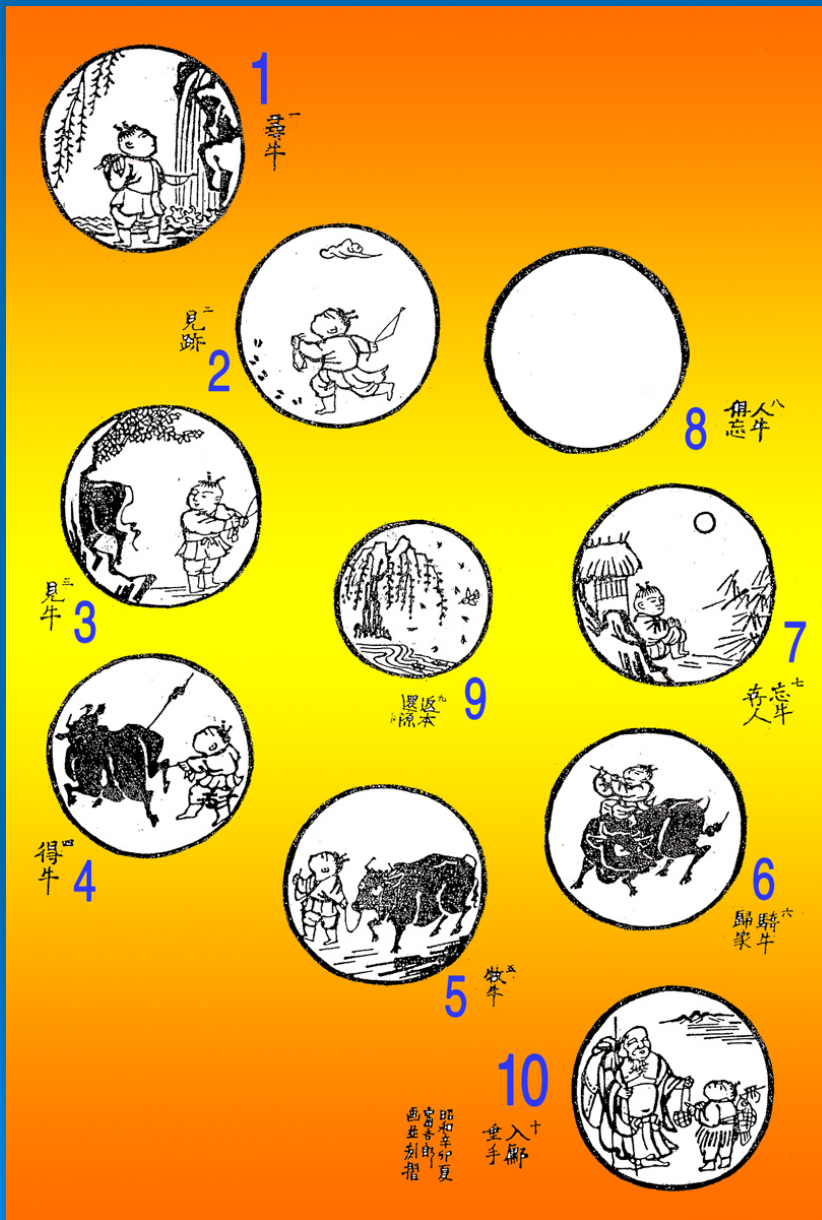
The 10 descriptions

1. In Search of the Bull (aimless searching, only the sound of cicadas)
2. Discovery of the Footprints (a path to follow)
3. Perceiving the Bull (but only its rear, not its head)
4. Catching the Bull (a great struggle, the bull repeatedly escapes, discipline required)
5. Taming the Bull (less straying, less discipline, bull becomes gentle and obedient)
6. Riding the Bull Home (great joy)
7. The Bull Transcended (once home, the bull is forgotten, discipline's whip is idle; stillness)
8. Both Bull and Self Transcended (all forgotten and empty)
9. Reaching the Source (unconcerned with or without; the sound of cicadas)
10. Return to Society (crowded marketplace; spreading enlightenment by mingling with humankind)

The last picture / Stage 10 reads:

*Barefoot and naked of breast,
I mingle with the people of the world.
My clothes are ragged and dust-laden,
And I am ever blissful.
I use no magic to extend my life.
Now, before me,
The dead trees become alive.*

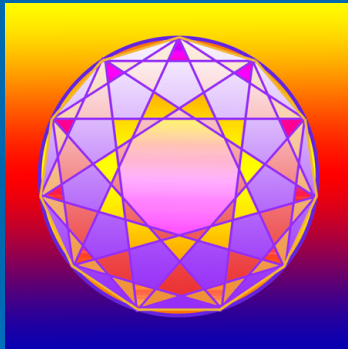
Comment: Inside my gate, a thousand sages do not see me. The beauty of my garden is invisible. Why should one search for the footprints of the patriarchs? I go to the market place with my wine bottle and return home with my staff. I visit the wine shop and the market, and everyone I look upon becomes enlightened.



ELEVEN- ENDECAD (Initiation & New Beginning)

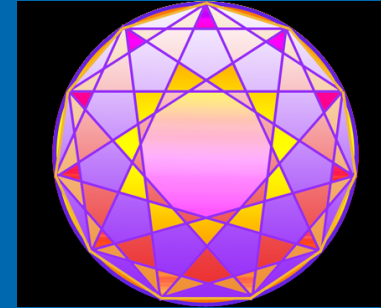
(Endecagon / Endecagram - 32° - 147°)

Double Monad
Mute Number
Psychic Insight
Illumination
Greatness
Invisible Doorway
Charisma
Spirit Power
Activation
Second Wave
Overlap Zone
Dream Manifestation



World War I ended with an Armistice on November 11, 1918, which went into effect at 11:00 am - the 11th hour on the 11th day of the 11th month of the year.

11



Standing between two important round numbers (10 and 12), 11 has been traditionally pushed out of the limelight and even considered with mistrust as an un-auspicious, un-familiar number that transgresses the decimal set (1-10).

Yet 11 is **DOUBLE UNITY**, double Oneness. 11 is the first of the special family of numbers with repeated digits, called *master numbers* in numerology. The master numbers can be double-digit: 11, 22, 33... or triple-digit: 111, 222, 333... The emphasis on a repeated integer brings more power to that number principle.

11 Can be perceived (and used) as a **DOORWAY**, a crack between an old and a new cycle: the world of yesterday and the world of expanded consciousness dawning on humanity. One can slide through, in between the two “1” as the two columns at the entrance of a temple.

When 11 shows up, an opportunity opens up for direct, intuitive contact with more subtle realms of reality. The 11th hour is a time to reflect on our life’s higher purpose and to expand our psychic awareness.

11 is the signal of a **NEW BEGINNING** and the glimpse of a Greater Reality. 11 is a gift of intuitive inspiration and spirit revelation.

In the new global culture, the appearance of 11: 11 has become a “wake-up” call, a transmission code from spirit levels.

*“When I see the number 11:11,
I pray for sick children and world peace.”
Uri Geller.*

SG202.5.4.2 The 11:11 Prompting

“11:11” has become a global culture icon, synchronistically showing up in many people’s lives at times of heightened energy or accelerated changes as a signal of “PAY ATTENTION!”

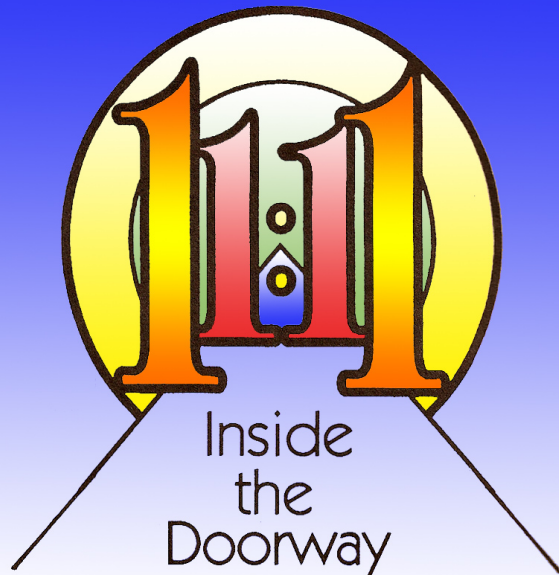
“At first, it seems like a mere coincidence; then it becomes uncanny. *‘I started up my car at exactly 11:11.’ ‘Why do I always wake up at 11:11?’* Finally, it becomes undeniable: *‘All my clocks froze at 11:11.’* Even schoolchildren have a knowing that when they see 11:11, it’s time to ‘make a wish.’”

In the words of Solara, the organizer of the 11:11 Doorway world celebration in 1992:

“11:11 is a wake-up call you sent to yourself...”

A greater reality is inserted in our everyday life.

11:11 is a pre-encoded trigger placed into our memory banks prior to our descent into matter”



↑ On November 11, 1992, 500 people celebrated the opening of the 11:11 doorway, in the Temple of the *Mykerinos* Pyramid, Giza, Egypt. The same event was celebrated at other sacred sites around the world.



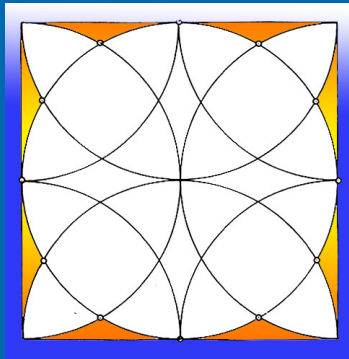
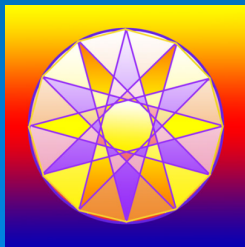
www.nvisible.com

← StarWheel #37
“11:11”.

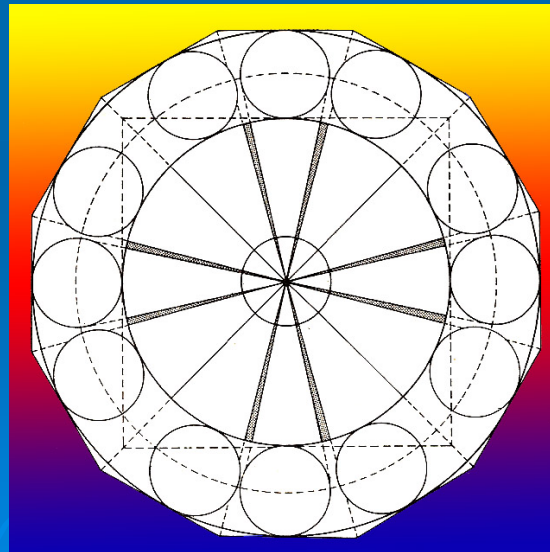
**TWELVE - DODECAD
(Universal Order
& Cyclic Perfection)**

(Dodecagon / Dodecagram - 30° - 150°)

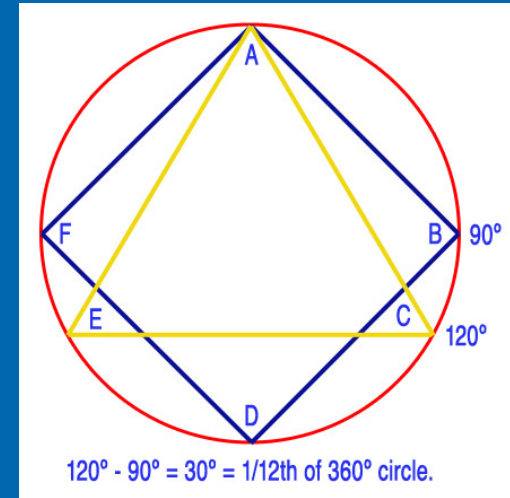
- 12 astrological signs
- 12 Chinese zodiac signs
- 12 hours - Egyptian Duat
- 12 Gods / Goddesses
- 12 ordeals of Gilgamesh
- 12 Labors of Heracles
- 12 Nidanas - Causes of reincarnation
- 12 tribes Israel
- 12 apostles / disciples / followers
- 12 dorsal vertebrae
- 12 cranial nerves
- 12 pairs ribs
- 12 meridians
- 12-faced dodecahedron
- 12 gates heavenly Jerusalem
- 12 provinces / states / regions
- 12 nations / tribes / clans
- 12 notes chromatic scale
- 12 hues in color wheel
- 12 names of Sun god Surya
- 12 members of jury
- 12 inches in 1 foot
- 12 stars in flag Europe
- 12 pence in a shilling
- 12 tables Roman Law
- 12 face cards in card deck



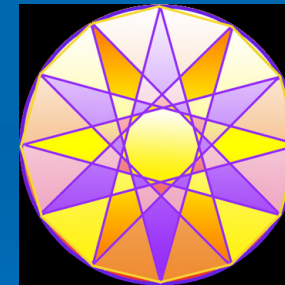
↑ The traditional and simplest way to divide a circle into 12 equal parts.
Step 1: Trace a circle.
Step 2: with the same radius r , trace 4 half-circles centered on the 4 directions.



**SG202.5.5.1 The
Dodecad (1)**



↑ Another construction of 12 parts.
Step 1: Trace a “dynamic square” (upright) and an equilateral triangle in a circle.
Step 2: With compass, measure BC and report it 12 times around the circle.



← John Michell’s reconstruction of Plato’s ideal city of Magnesia, a 12-tribe state. The center circle is the city with the acropolis. The second circle is the area of cultivated land with radial roads separating the 12 tribes. Around the outside are hills with temples. This is the mandala-plan setting the archetypal pattern for ancient 12-tribes communities.

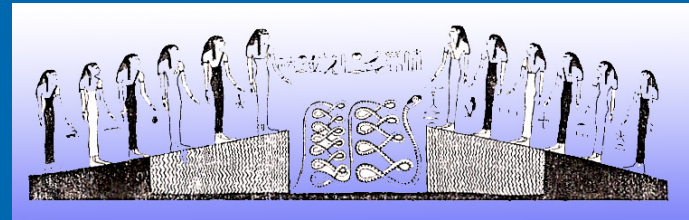
SG202.5.5.2 The Dodecad (2)

Traditionally, 12 was seen as the structure of the heavens with the 12 constellations organized in early zodiacal wheels. 12 was also exemplified by the dodecahedron, conceived by ancient Greeks as the 3D geometry of the earth and of the celestial sphere.

By mirroring in all the aspects of their culture the 12-fold harmony of the heavens, ancient people would ensure the establishment of celestial order in earth civilizations.

Mathematically, because 12 has so many factors (1, 2, 3, 4, and 6), it became the natural and almost universal standard of measurement for sacred space & time as well as volumes & weights. As an archetypal principle, the Dodecad, by digital reduction, unites the Monad and the Dyad into the Triad: $1 + 2 = 3$.

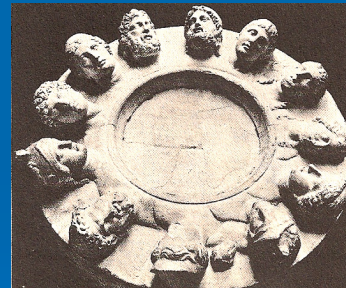
12 is the number of pitch classes in an octave, not counting the duplicated (octave) pitch. Also, the total number of major keys, (not counting enharmonic equivalents) and the total number of minor keys. This applies only to twelve tone equal temperament.



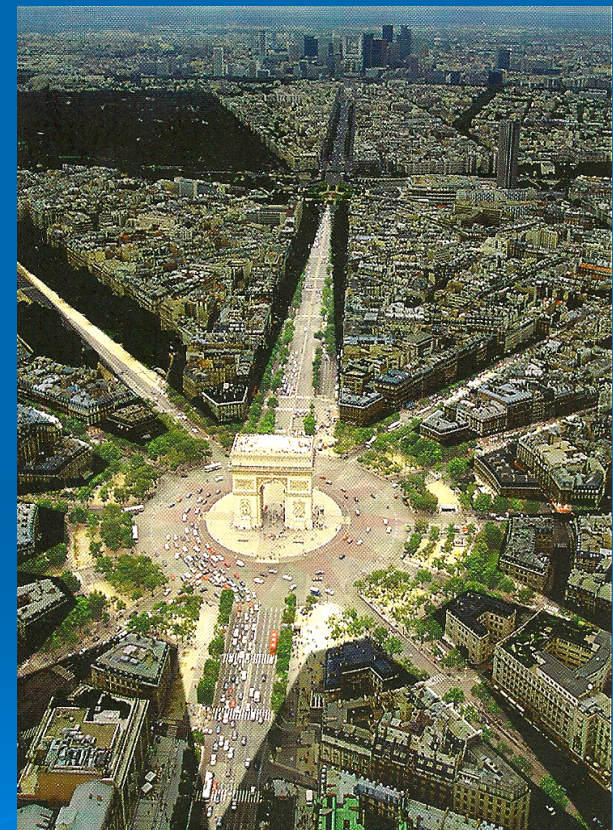
↑ The 12 night Goddesses, in Egypt.



↑ 12 winds influence the world.
Map of the earth by Albrecht Dürer. 1515.



↑ The 12 Greek / Roman Gods & Goddesses.
A 12-god pantheon is found in many religious traditions:
12 Adityas, 12 Jayas,
12 Kami, 12 Akhtars,
12 Elders,
12 disciples, 12 Knights,
12 Mandarins...



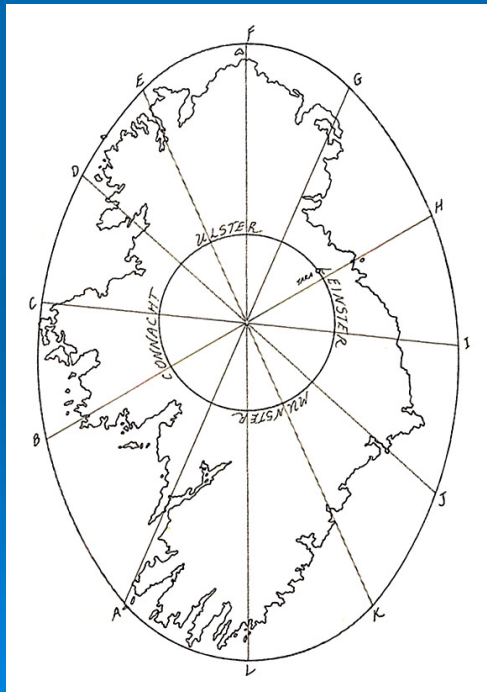
↑ "Place de l'Etoile". Paris, France.
12 avenues converge to "L'Arc de Triomphe".

SG202.5.5.3 The 12-Tribe Nations

In their ground-breaking book *“Twelve-Tribe Nations and the Science of enchanting the Landscape”* (1991), John Michell & Christine Rhone survey the universal tradition of the 12-fold Cosmological Wheel throughout history. *“As an archetypal pattern, it haunts the imagination, occurs spontaneously to the idealistic mind and is always a potential source of inspiration and renaissance.”*

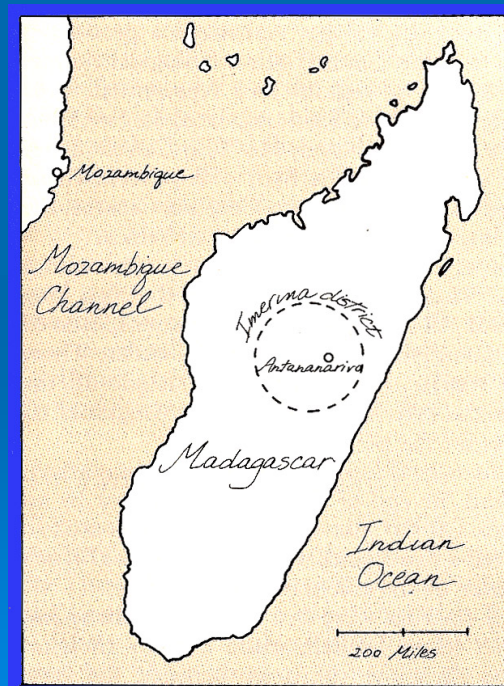
The pattern Michell & Rhone investigated is the “12-sided foundation plan of civilized order” (12 around a 13th) *“which philosophers have acclaimed as providing the best possible world-view for societies and individuals alike.”* The beauty of “12” is that it is all-inclusive: the Unity (at center as 1 or 13), the dualities of left/right and above/below (as 6 x 2), a variety of trinities, the 4 directions of solstices & equinoxes and their inter-directions, the 5 sacred mountains... are all enfolded within the harmonic embrace of the zodiacal 12.

The idea behind it is *“to create and maintain a perfectly balanced human order in harmony with the heavenly order, where life is experienced on a high level of spiritual intensity... The ancient philosophers understood the structure of number to be analogous with the structure of creation, and they realized that number is basically duodecimal, being naturally governed by the number 12... The 12-fold structure of theologies, calendars, societies and landscapes extended to myth and music... Through their science, they cast a spell over whole countries and spread a golden-age air of enchantment across many generations”*. (Michell & Rhone).



→ In traditional Madagascar (Malagasy), under the responsibility of the local Feng Shui practitioners (“Mpanando”), the capital city (Antananarivo) and the whole country were divided into 4 quarters while the people were subdivided into 12 tribes, each with its king and each corresponding to a zodiacal sign and month of the year. On every scale, the 12-fold pattern was apparent. Thus, the traditional Malagasy house was divided into 12 parts, each placed under one of the 12 constellations and daily activities arranged accordingly.

← The sacred divisions of Ireland under the solar rule of a high king. The whole of Ireland was united under this 12-fold pattern, following the lay-out of important rivers and forming an overall oval geometry (“egg”). At the Hill of Uisnech stood the pillar marking the geographical center of Ireland.

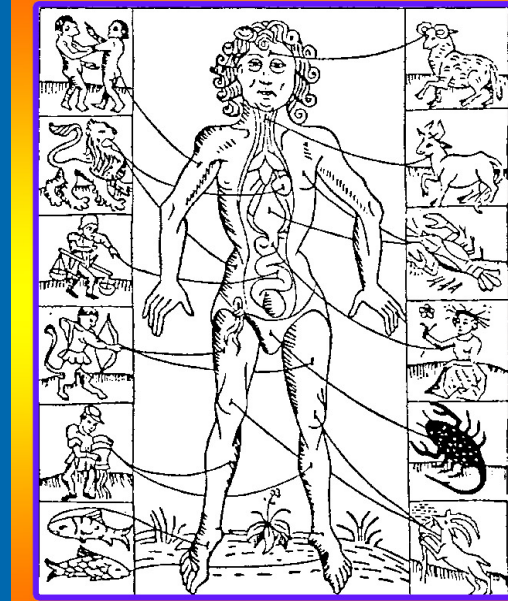
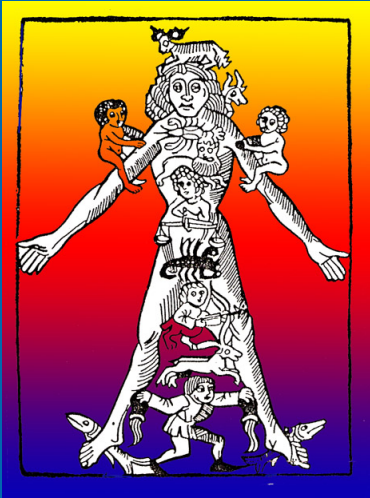


SG202.5.5.4 The Zodiac Body

The Zodiac Man or *homo signorum* was used in anatomical diagrams dating from ancient times to the later medieval period.

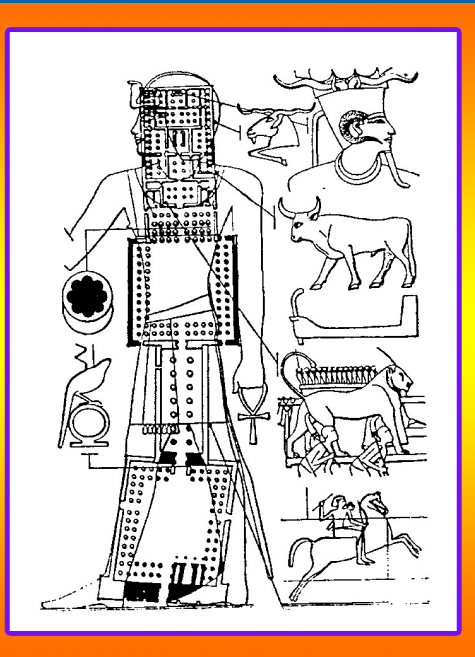
In the tradition of Medical Astrology, every part of the body & organ is linked with an astrological sign and their correspondences with the planets, Sun & Moon.

Man/Woman was understood as a micro-cosmic image.



↑ Woodcut. 1702 Almanac.

- Aries - the head
- Taurus - the neck and throat
- Gemini - the lungs, arms, and shoulders
- Cancer - the chest, breasts, and stomach
- Leo - the heart and upper back
- Virgo - the abdomen + digestive system
- Libra - the kidneys and lumbar region
- Scorpio - the genitals
- Sagittarius - the hips and thighs
- Capricorn - the knees and bones
- Aquarius - the calves, shins, and ankles
- Pisces - the feet



↑ The Zodiac mapped on the Temple of Luxor. Egypt.

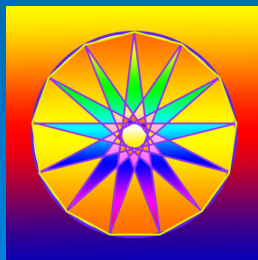


↑ Zodiacal Man.

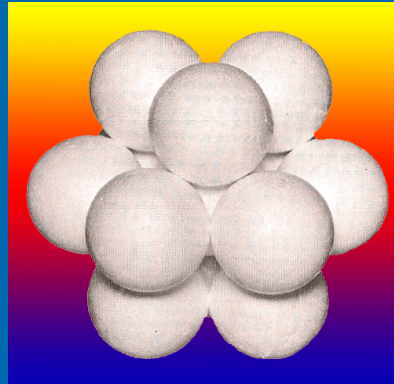
Les Tres Riches Heures du Duc de Berry. 15th c.

THIRTEEN - TRIDECAD
(Purification & Transcendence)
(Tridecagon / Tridecagram ~ 27° ~ 333°)

- 13 Archimedean Solids
- 13 nodes of Metatron's Cube
 - 13 knots rope
 - 13 lunations
 - 13 constellations
 - 13 gates female body
 - 13 crystal skulls
 - 13 cards in deck
 - 13 united states USA
 - 13 meals / desserts
- 13 books of Euclid's Elements
 - 13 tribes Israel
 - 13 strings Koto
 - 12 brothers + 1 sister
 - 12 disciples + 1 leader
- 12 crew members + 1 captain
 - 13 heavenly spheres
 - 13 heavenly fountains
 - 13 gates of mercy
 - 13 rivers of balsam
 - 13 years Bar Mitzvah
- 13 years cycle of locust swarm
 - 13 a baker's dozen
 - 13 on US one \$ bill

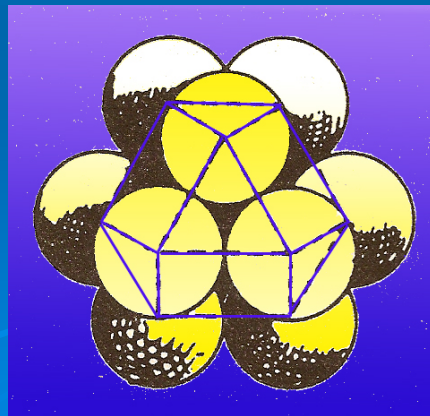


SG202.5.6.1 The Tridecad (1)



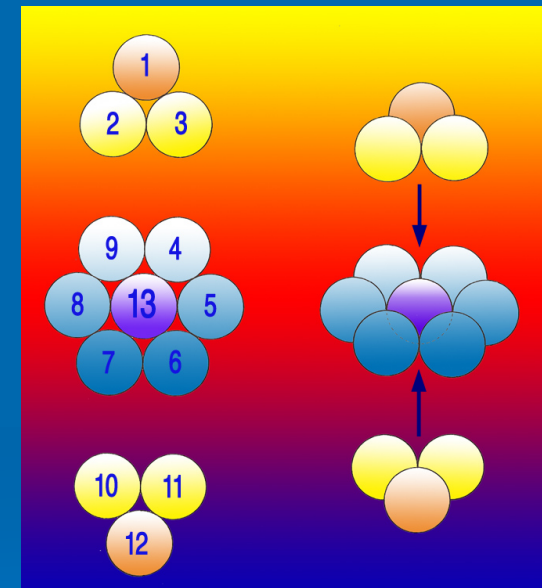
↑ The 12 + 1 model is an archetypal geometry of efficient grouping (close-packing): the central sphere touches all 12 surrounding spheres (components, disciples, satellites...)

↓ The closest packing of equal spheres (12) around a nucleus of equal size (1 or 13) creates an Archimedean Solid:
the Cuboctahedron or Dymaxion



← Close-packing of 12 spheres:

In 2D, 6 spheres are perfectly enclosing a 7th center sphere. In 3D, 12 spheres are perfectly packed around a 13th center sphere, so that each sphere touches 4 neighbors in addition to the central sphere.



↑ We can see here that numbers 7 and 13 have a special "hub" function.
 7 can center a cluster of 6 and 13 a cluster of 12.

SG202.5.6.2 Ambivalent 13

Just like 11 exceeds or “transgresses” the “closed” family system of the Decad, 13 may also seem to transgress the secure 12-fold system of universal order. 11 and 13 are risk-takers: they go beyond accepted security, they probe into the unknown... and therefore they inspire ambivalent feelings...

On the Unlucky Side

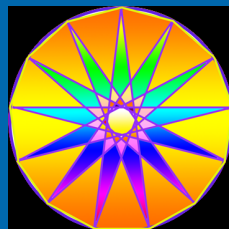
In the case of the emotional connotations of the number 13 in our current culture, there is still a prevalent feeling of aversion or even fear. This has even been given a name: “*Triskaidekaphobia*” (Greek *tris* = 3, *kai* = and, *deka* = 10 + *phobia* = fear) is fear of the number 13.

It is related to a specific fear of Friday the 13th, called “*Paraskevidekatriaphobia*” or “*Friggatriskaidekaphobia*”.

Historically, the aversion for 13 is actually recent and mostly confined to the western culture. It seems to originate with some Greek tales of “doomed 13th” and later the story of the Last Supper which the Christian church turned into the “evil 13” used to hunt “witches” etc... Friday the 13th is also associated with the condemnation of the Knight Templars on Friday, October 13th, 1307. In the West, 13 seems to have been demonized by church politicians to disempower an ancient archetype.

It is now a fact of our culture that, on the 13th of the month, commerce is reduced. And one hesitates to invite 13 guests for dinner: even the regal Napoleon and great men like J. Paul Getty or Franklin D. Roosevelt were afraid of dining with 13 people at their table.

Moreover, some hotels avoid the number 13 on their rooms and 13 is sometimes skipped in numbering floors, stairs or stages of a process...



*“Luck” and
“unluck”
reflect
the level
of conscious
evolution
and spirit
empowerment.*



↑ Tarot card #13

On the Lucky Side

In ancient cultures who understood number symbolism and its wisdom, 13 was actually seen as an auspicious number: the archetypal & sacred “12 + 1” or the “center of 12”. 13 was a power number central to ancient traditions because it was a geometrical pattern which could be seen in man, nature and the heavens.

In Babylonia & Chaldea, Classical & Gnostic antiquity, early Middle Age, the Hebrew tradition and among the Maya (see next page), 13 was regarded as a positive & auspicious number, in connection with the phases of the moon, the calendar, the heavenly spheres and the mysteries of spirit. There are 13 lunar cycles in a solar year, and the moon travels 13 degrees across the sky every day.

In the Northern European tradition, the 13th rune (“*Eiwaz*”) represents a turning point between light and dark, life & death, paradise & the underworld. The 13th card of the Tarot deck is “*Death*” and yet also “*Rebirth*”. 13 was understood as a power number, a magical transition, a bridge leading the initiates to secret knowledge beyond the phenomenal world.

The Chinese also have 13 as a lucky number. Pronounced *shi san* in Mandarin, 13 can mean 'definitely vibrant' or 'assured growth'.



Rune #13 →

SG202.5.6.3 The 13 Moons Calendar (1)

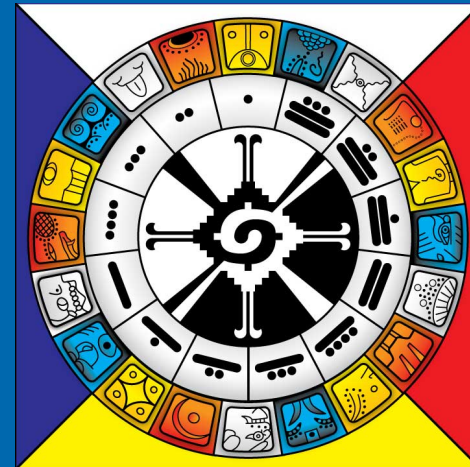
The world's current official calendar is the *Gregorian Calendar* with its 12 unevenly numbered months (28, 29, 30 and 31 days) that do not correspond to each other, the length of the week or the cycles of organic nature. Interestingly enough, it was named after pope Gregory XIII (13 in Roman numerals), as if to point to the "center of 12" or 13 hidden beyond 12.

In contrast, the *13 Moons Calendar* is an ancient, universal and harmonic measure of the year. All over the world, the 13 Moons calendar has been the traditional organizing principle of life and the measure of time. The Egyptians, Essenes, Druids, Maya, Inca, Chinese, Polynesians and many American Indian tribes all used a 13-month, 28-day calendar. The Lakota kept a 13-moon, 28-day count based on the "keya", or turtle, since the turtle has 13 scales on its back.

The 13 Moons calendar has been formally proposed as a preferred alternative to the Gregorian calendar since 1849. The League of Nations had scheduled to change the world official calendar in 1933 to a 13-month calendar, based on its logic and regularity. That change was blocked by religious objection.

Pioneered by the late Jose Arguelles, a new global wave of awareness is focusing on transcending the old paradigm "12-60" calendar into the more natural 13 Moons calendar.

The Maya had a calendar based on a combination of 13 numbers and 20 day glyphs forming a 13 x 20 = 260 time matrix.



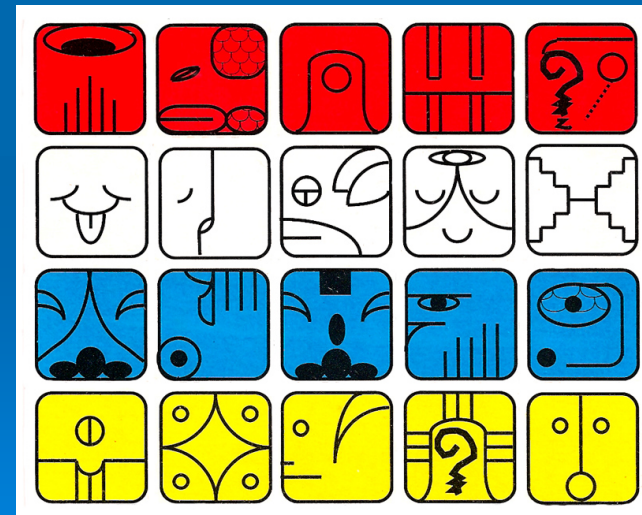
← The 20 Mayan Day Glyphs and the 13 Tones in the new Dreamspell Time Calendar. (Art by www.sidart.net)



13moon.com
lawoftime.org

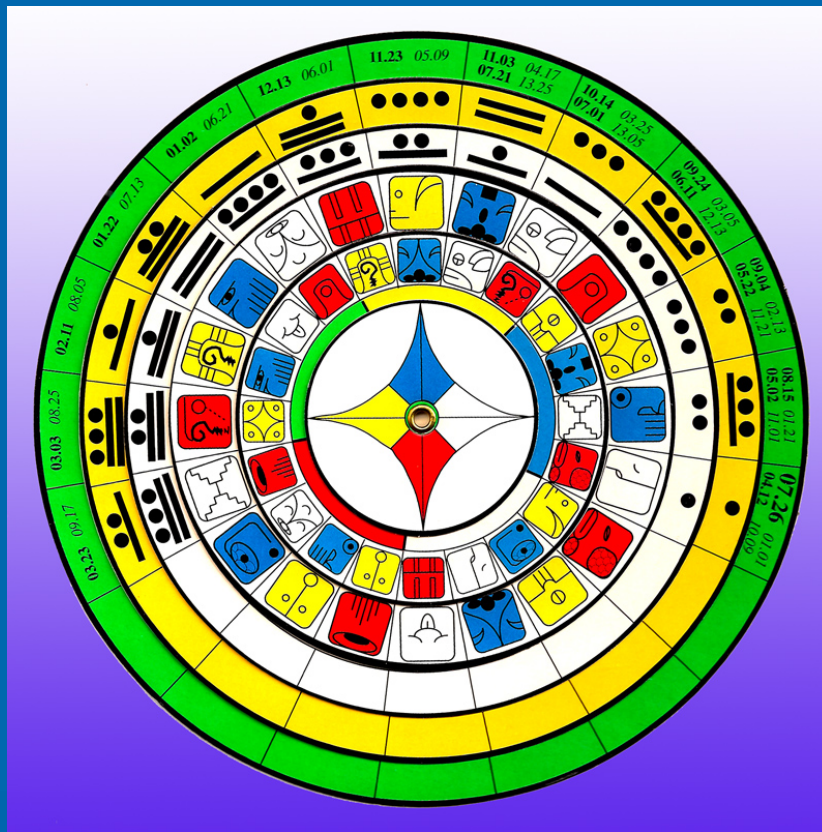


↑ The traditional 20 Maya Glyphs



↑ The 20 Glyphs in DreamSpell.

← The 13 Moons Natural Time Calendar published by SkyTime.



↑ DreamSpell's Galactic Harmonic Compass

The 13-moon calendar is in harmony with natural cycles. In the 52 weeks it takes the Earth to orbit the Sun once, the Moon has orbited the Earth 13 times (x 4 weeks). The 28-day month is the average measure of the *synodic cycle* of 29.5 days (new moon to new moon) and the *sidereal cycle* (when the moon reappears at the same place in the sky): $13 \times 28 = 364$.

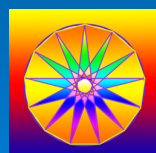
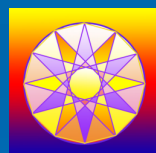
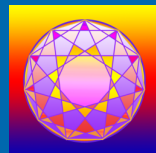
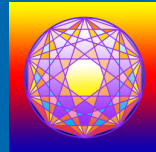
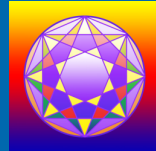
The 365th day (always July 25th) is called the "Day out of Time", a global festival day, internationally celebrated, promoting Peace, Celebration of Life, Community Art and the Spirit of Oneness.

SG202.5.6.4 The 13 Moons Calendar (2)

☰	1	21	41	61	81	101	121	141	161	181	201	221	241
☷	2	22	42	62	82	102	122	142	162	182	202	222	242
☱	3	23	43	63	83	103	123	143	163	183	203	223	243
☴	4	24	44	64	84	104	124	144	164	184	204	224	244
☶	5	25	45	65	85	105	125	145	165	185	205	225	245
☳	6	26	46	66	86	106	126	146	166	186	206	226	246
☽	7	27	47	67	87	107	127	147	167	187	207	227	247
☹	8	28	48	68	88	108	128	148	168	188	208	228	248
☺	9	29	49	69	89	109	129	149	169	189	209	229	249
☰	10	30	50	70	90	110	130	150	170	190	210	230	250
☷	11	31	51	71	91	111	131	151	171	191	211	231	251
☱	12	32	52	72	92	112	132	152	172	192	212	232	252
☴	13	33	53	73	93	113	133	153	173	193	213	233	253
☶	14	34	54	74	94	114	134	154	174	194	214	234	254
☳	15	35	55	75	95	115	135	155	175	195	215	235	255
☽	16	36	56	76	96	116	136	156	176	196	216	236	256
☹	17	37	57	77	97	117	137	157	177	197	217	237	257
☺	18	38	58	78	98	118	138	158	178	198	218	238	258
☰	19	39	59	79	99	119	139	159	179	199	219	239	259
☷	20	40	60	80	100	120	140	160	180	200	220	240	260

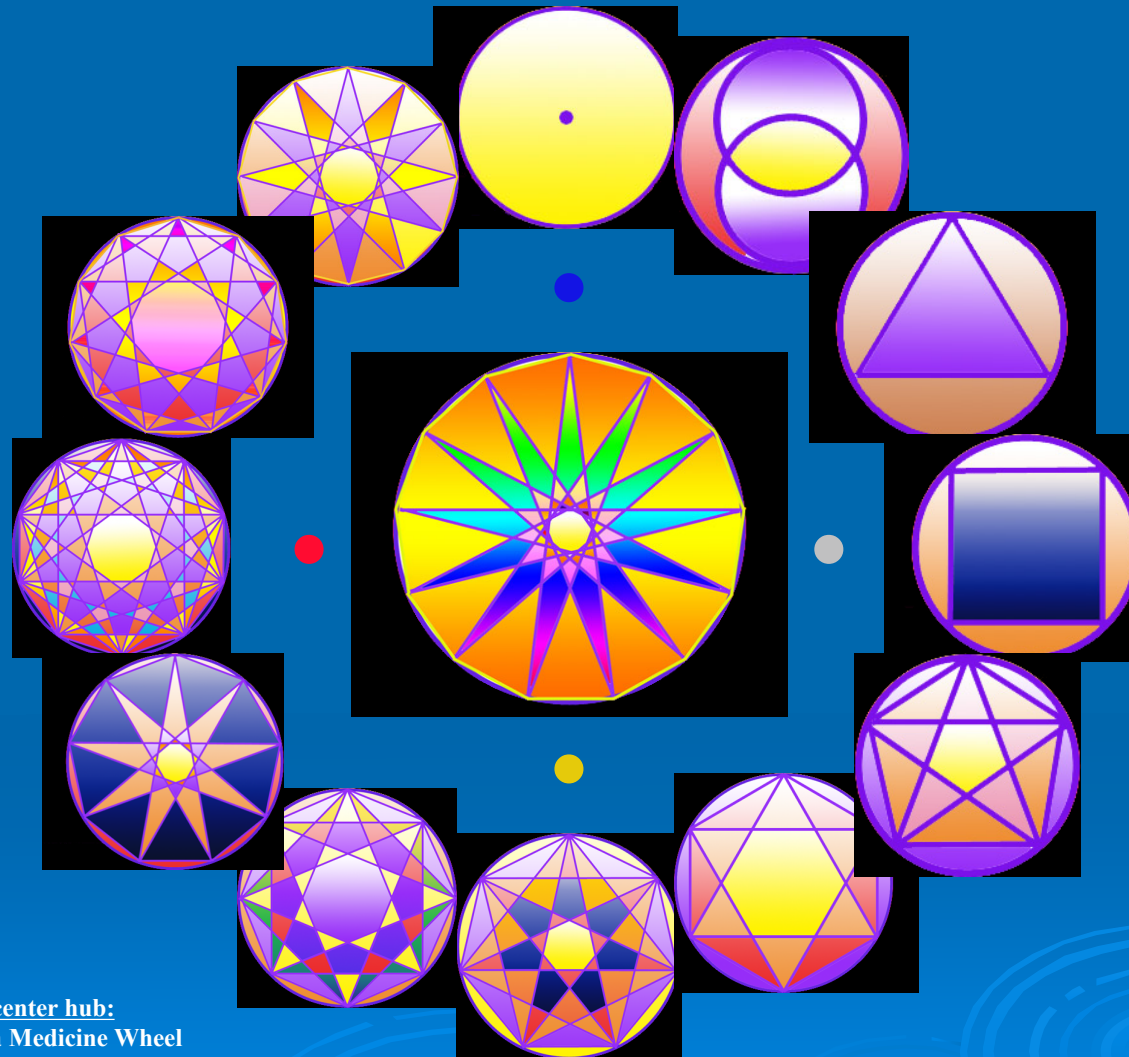
↑ The Maya Time Calendar Matrix of 260 (13 x 20), traditionally called the *Tzolkin*.

SG202.5.7 Numbers 8 - 13: Summary



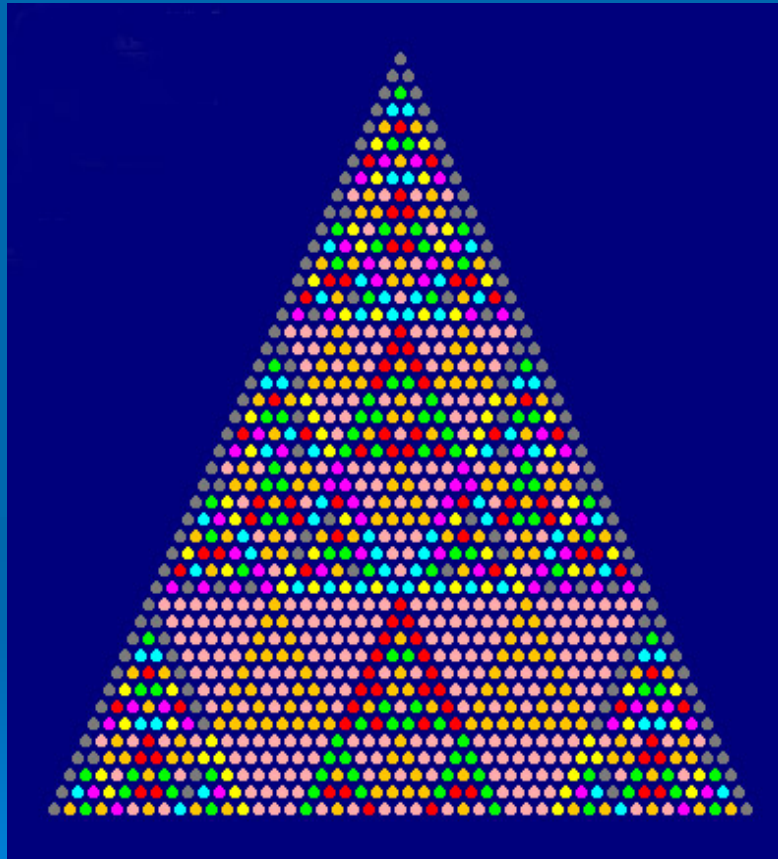
	PRINCIPLE	EXPRESSION	DYNAMICS
8	Octad	Octagon/Star	Renewal & Auspiciousness
9	Ennead	Nonagon/Star	Completion & Fulfillment
10	Decad	Decagon/Star	Wholeness & Return Home
11	Endecad	Endecagon/Star	Initiation & New Beginning
12	Duodecad	Dodecagon/Star	Universal Order & Cyclic Perfection
13	Tridecad	Tridecagon/Star	Purification & Transcendence

SG202.5.8 The Sacred Circle



12 around a center hub:
This is the Mandala Medicine Wheel
of all sacred traditions.

SG202.6 Chapter 6. Canonic Numbers



This chapter references various sources of “canonic” numbers i.e. numbers or number series that tend to re-occur as numerical “nodes” in ancient traditions around the world.

This is a form of “number archaeology”: gathering data that eventually correlate into a meaningful matrix-map and can provide new insights as to larger patterns of symmetry or fractal scaling in the number field and/or an upcoming unified field understanding of the universe.

We are offering here various touches from different sources, traditions and researches in the hope of increasing the emergence of number pattern correlations and thus inspire a larger understanding of Sacred Geometry.

← *Note: see the Triple Triangle (point-to-point triquetra) pattern.*

SG202.6.1.1 An Ancient Canon of Harmony (1)

In this chapter, we will glance upon some of the same reoccurring numbers that are to be found all over the world in mythologies, legends, folklore, holy writings & sacred sites, musical & measurement systems... These numbers have been described as belonging to a lost “Ancient Canon of Numbers” or integrated system of knowledge. We have already encountered this concept [[◆SG101.3.3](#) and [SG102.3.3.3](#)]. Plato is one of the most explicit written sources we have.

In the 20th century, one of the pioneers who re-discovered this Canon is John Michell (1933 - 2009). John Michell opened the eyes of a whole generation to the rich inheritance of wisdom and science offered by ancient traditional cultures. In his timely “*Dimensions of Paradise*” (1988, 2001), he explains:

“At some very early period, by a process quite beyond explanation, certain groups of numbers were brought together and codified. Thus was created that numerical standard, or canon of proportion, which was at the root of all ancient cultures and was everywhere attributed to some form of miraculous revelation. It was taken to be the nucleus and activating principle of number generally, a summary of all the types of progressions and relationships which occur within the field of number and thus a faithful image of the numerically created universe.”

Ancient traditions view the universe in terms of a number structure couched in an overall cosmological theme of universality. ALL IS NUMBER, as per the Pythagorean motto. But which numbers exactly? This is the question the study of the ancient Canon is now answering.

“In the known civilizations of antiquity, as China, Babylon and Egypt, the Canon of Number was venerated as the source of all knowledge and a guide to rightful conduct. Its influence extended from art and music to affairs of state. Every branch of science expressed its theories and observations in terms of that same small group of numbers... One numerical code has fashioned the whole of ancient mathematics, music, astronomy, chronology, metrology and every variety of craft. It has left its mark on every relic and tradition of ancient cultures.”

Note: this Canon of Numbers does conform to many natural phenomena, at micro and macro scales, displaying patterns of proportions known as Sacred Geometry.

Sacred Geometry is being reborn from the convergence of the new discoveries of ancient numerical codes, the underlying Phi-Fibo standard of super-conductive structural ratios extensively found in all orders of nature, and the laws of harmony or musical harmonic scales establishing the most efficient sharing of resonance or interconnectedness in the universal quantum orchestra.



“As Above so Below”

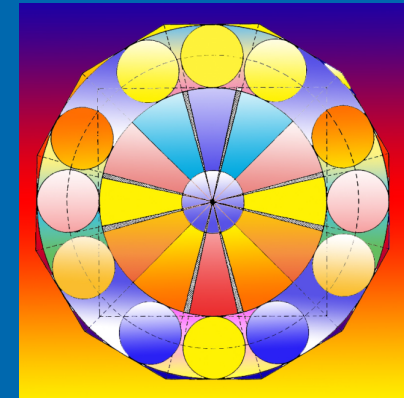
SG202.6.1.2 An Ancient Canon of Harmony (2)

John Michell frankly admits that he is pursuing the “legendary key to universal knowledge alluded to in esoteric traditions and early text”...

“(The) point of departure was Plato’s statement in the Laws that the Egyptian priests possessed a canon of lawful proportions and harmonies, by means of which their civilized standards had been preserved uncorrupted for literally thousands of years. The discovery and maintenance of true cultural standards was the main theme of Plato’s own writings.

His scheme for a well-governed city, described in his Laws, was based on a certain numerical formula, often referred to but specified by only one of its components, the number 5040...

In all his cosmological demonstrations Plato used the same set of numbers and similar geometrical diagrams, applying them to such apparently different things as music and the order of the planets, and thus illustrating his belief that number is the ‘natural bound’ which holds together the entire universe.”



↑ The plan of Plato’s Magnesia according to John Michell

John Michell found that the ground plan of Plato’s ideal city of Magnesia consists of the same combined shapes and numbers as the Stonehenge plan, laid down some 1,500 years earlier. The units of metrology, all over the world, are found to derive from and represent certain basic standards pointing to a global unified knowledge in the remote past, beyond what we know of “prehistory”. The standards found reflect the actual dimensions of the earth and the solar system and this knowledge was either gathered over many millennia of prehistoric civilized/scientific observations or received by direct revelation/contact.

John Michell justifies the quest for the ancient and universal canon of knowledge with these strong words:

“To artists, architects and musicians the study of number and proportion has been of traditional interest, and when the current vogue for novelty and individualism has run its course, it will become so again. With scientists of all disciplines the case is similar. Bereft of guidance by any common philosophy, their researches and products are determined by the whims of commerce, militarism, national pride and similar vanities; and the world of scholarship is likewise dominated by faddish intellectualism...

At such periods of philosophical anarchy, says Plato in the Republic, when there is no common means of distinguishing between beneficial and destructive products, popular demand arises for a standard of judgment. This usually answered by some tyrant with his own prescription for standards. The demand, of course, is for an objective standard, one that is rooted in nature and reflects no particular theory or ideology.

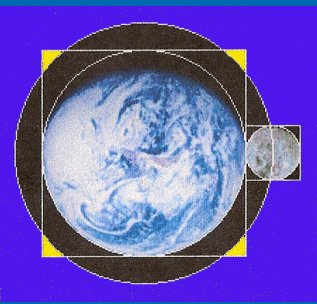
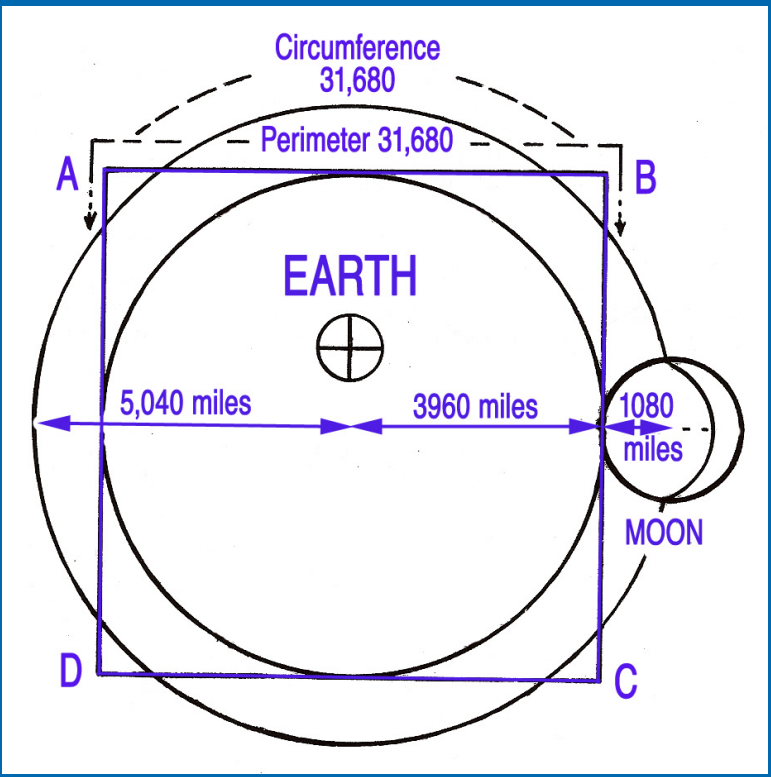
With this consideration begins the quest for the venerable cosmic standard or unified world-image which is numerically structured to represent in essence the entire universe.”

John Michell. *The Dimensions of Paradise.*

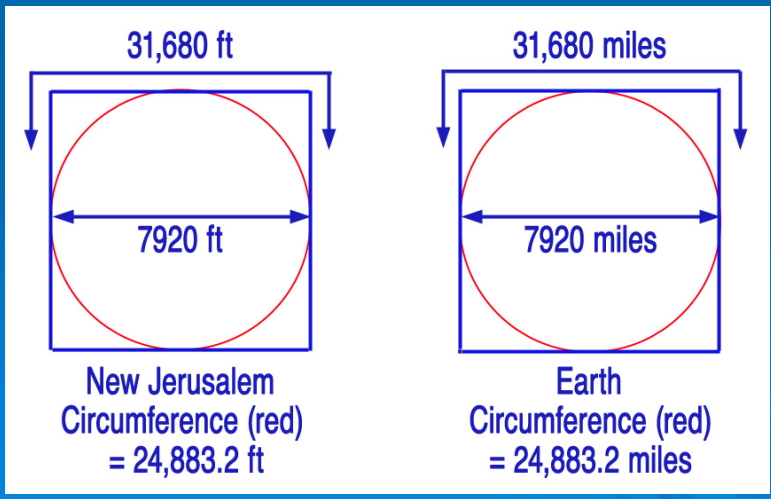


John Michell →
(1933-2009)

“Look behind the chaos of our existence and you see order. It is not utopian, fascist or like any kind of man-made order, but divine and perfect, and it existed before time. Socrates called it the ‘heavenly pattern’ which anyone can discover, and once they have found it they can establish it in themselves.”



SG202.6.2.1 The New Jerusalem Matrix (1) Sources



St John's New Jerusalem
Diameter = 7920 ft
Perimeter of square = 31,680 ft

St Mary's Chapel, Glastonbury
Diameter = 79.2 ft Perimeter square = 316.8 ft
Diameter inner circle = 21.6 ft

Stonehenge
Diameter bluestone circle = 79.2 ft
Perimeters outer Sarsen circle & square = 316.8 ft
Diameter inner horseshoe = 39.6 ft

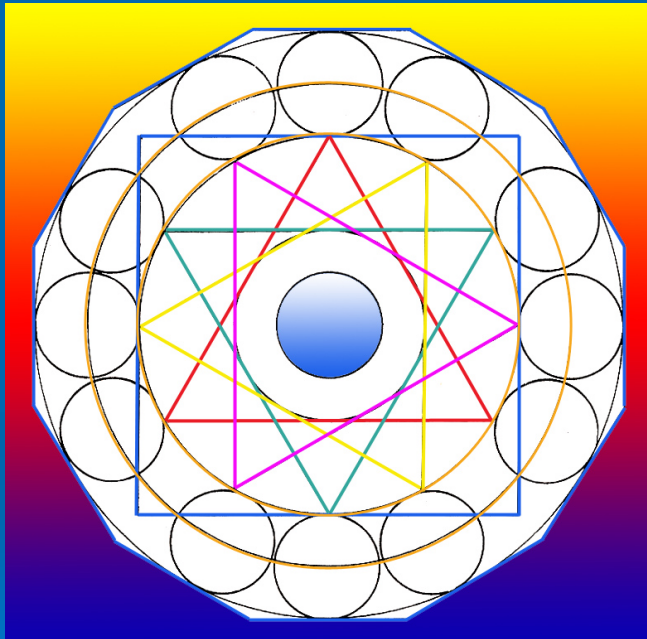
Earth and Moon
Diameter inner circle (Earth) = 7920 miles
Perimeters outer circle & square = 31,680 miles
Diameter small circle (Moon) = 2160 miles

(Diagrams & data: John Michell. *Dimensions of Paradise*.)

SG202.6.2.2 The New Jerusalem Matrix (2)

The New Jerusalem diagram is a geometric meta-matrix, put together by John Michell, to synthesize archeological, astronomical and philosophical data displaying, in one elegant map, the archetypal pattern of “Heaven on Earth”.

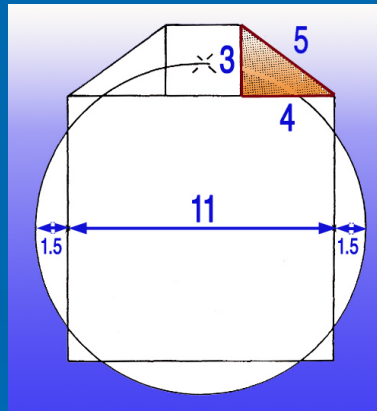
“It would be easy to conclude that the New Jerusalem diagram was modeled on the earth-moon relationship in some remote age when the dimensions of the solar system were reckoned more accurately than was possible in early historical times. Yet the traditional code of number set out in the New Jerusalem expresses the organization of so many different categories of natural phenomena, including the inherent framework of number itself, that one must be wary in ascribing origins. As one pursues these studies, the world of appearances fades away, its diverse manifestations dissolve into shadows and behind them the mind’s eye discerns the reality which sustains their illusions. It is a reality formed by the interplay of creative forces which can most adequately be likened to a pattern of numbers.”



↑ The meta-matrix of the “new Jerusalem” is based on the foundation of the Squared Circle, a Sacred Geometry practice and philosophical ideal. [◆SG302] This diagram can accommodate many other figures of archetypal symbols and cosmological mandalas from around the world.

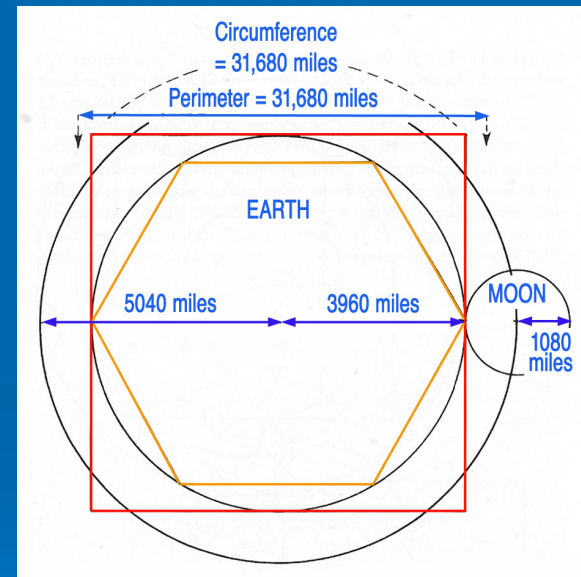


Visualize in 3D the spinning Star-Tetras.



↑ The Squared Circle can be constructed with the classical 3-4-5 Pythagorean triangle.

Multiplied by 720, these base numbers are raised to the dimensions of the New Jerusalem Matrix.



↑ In the diagram, the Earth and the Moon are contiguous. But, interestingly enough, their actual mean distance (237,600 miles) is accounted for by the hexagon inscribed within the circle of the earth and measuring round its 6 sides 23,760 miles.

SG202.6.3.1 The Hindu Time Cycles (1)

The Hindu time-cycles involve staggering numbers and are a rich source of “Canonic Numbers” (“72 Tribe”). From the first chapter of *Surya-Siddhanta*, the most revered authoritative source of Hindu astronomy, we have the following passage, transcribed into the left table below:

“... That which begins with respirations (*prana*) is called real... Six respirations make a *vinadi*, sixty of these a *nadi*. And sixty nadis make a *sidereal day* and night. Of thirty of these sidereal days is composed a month; a civil (*savana*) month consists of as many sunrises. A lunar month, of as many lunar days (*tithi*); a solar (*saura*) month is determined by the entrance of the Sun into a sign of the zodiac; twelve months make a year. This is called a **day of the gods**. The day and night of the gods and of the demons are mutually opposed to one another. Six times sixty of them are a year of the gods, and likewise to the demons. Twelve thousand of these divine years are denominated a *chatur-yuga*; of ten-thousand times four hundred and thirty two solar years is composed that *chatur-yuga*, with its dawn and twilight. The difference of the *krita-yuga* and the other *yugas*, as measured by the difference in the number of the feet of virtue in each is as follows: the tenth part of a *chatur-yuga*, multiplied successively by four, three, two, and one, gives the length of the *krita* and the other *yugas*: the sixth part of each belongs to its dawn and twilight. One and seventy *chatur-yugas* make a *manu*; at its end is a twilight which has the number of years of a *krita-yuga*, and which is a deluge. In a *kalpa* are reckoned fourteen *manus* with their respective twilights; at the commencement of the *kalpa* is a fifteenth dawn, having the length of a *krita-yuga*. The *kalpa*, thus composed of a thousand *chatur-yugas*, and which brings about the destruction of all that exists, is a day of Brahma; his night is of the same length. His extreme age is a hundred, according to this valuation of a day and a night. The half of his life is past; of the remainder, this is the first *kalpa*. And of this *kalpa*, six *manus* are past, with their respective twilights; and of the *Manu* son of *Vivasvat*, twenty seven *chatur-yugas* are past. Of the present, the twenty eighth *chatur-yuga*, this *krita-yuga* is past...”

1 p(a)rana	1 breath	4 seconds
6 pranas	1 vinadi	24 seconds
60 vinadis	1 nadi	1,440 seconds
60 nadis	1 day	86,400 s
30 days	1 month	2,592,000 s
12 months	1 year = 1 Day of Gods	360 days
360 Days Gods	1 Year Gods	360 years
12,000 Years of Gods	1 Chatur Yuga (Maha Yuga)	4,320,000 years

From
one
breath
to one
life...

1 Maha Yuga	(4 Yugas)	4,320,000 years
1,000 Maha Yugas	1 Day Brahma (Kalpa)	4,320,000,000 years = 4.32 billion years
2 Kalpas	1 Day + 1 Night Brahma	8,640,000,000 y = 8.64 billion years
1 Year of Brahma	720 Kalpas	3,110,400,000,000 y = 3.1104 trillion years
1 Life Brahma	72,000 Kalpas	311,040,000,000,000 y = 311.04 trillion years

Current estimates: Age of the earth = ~4.5 billion years old.
Age of the universe = ~14 billion years old.

SG202.6.2.2 The Hindu Time Cycles (2)

Period	Character	Years (Gods)	Years (Sidereal)
Satya Dawn	Golden Age	400	144,000
Satya Yuga	-	4,000	1,440,000
Satya Twilight	-	400	144,000
<i>Total</i>	-	4,800	<u>1,728,000</u>
Treta Dawn	Silver Age	300	108,000
Treta Yuga	-	3,000	1,080,000
Treta Twilight	-	300	108,000
<i>Total</i>	-	3,600	<u>1,296,000</u>
Dvapara Dawn	Bronze Age	200	72,000
Dvapara Yuga	-	2,000	720,000
Dvapara Twilight	-	200	72,000
<i>Total</i>	-	2,400	<u>864,000</u>
Kali Dawn	Iron Age	100	36,000
Kali Yuga	-	1,000	360,000
Kali Twilight	-	100	36,000
<i>Total</i>	-	1,200	<u>432,000</u>
<i>Grand Total</i>	-	12,000	<u>4,320,000</u>

This table shows the traditional Puranic model for the Hindu World Ages (*Yugas*). This is a break down of the entry for *Maha Yuga* (or *Chatur Yuga*) from the table on the preceding page.

A cycle of 4 world ages (*Maha / Chatur Yuga*) lasts for 12,000 Divine Years (or *Years of the Gods*) = 4,320,000 sidereal years.

Note that the sidereal years numbers are all multiples of “72” and are all digital-rooted in “9”.

[After
[//web.nickshanks.com](http://web.nickshanks.com)]

SG202.6.4 Master Numbers & Repdigits

In various numerologies, repeated numbers are called “Master Numbers” and are given much attention as “power numbers”. The main Master Numbers are the double-digit 11 to 99 and the triplets from 111 to 999. Master numbers are rooted in the single-digit parent number and multiply its essential original energy.

In mathematics, this is called a “*repdigit*”. A *repdigit* is a natural number composed of repeated instances of the same digit, most often in the decimal numeral system. Examples are 11, 666, 4444, 77777, and 999999. All repdigits are *palindromic* numbers and are multiples of *repunits* (a number that contains only the digit 1). Palindromic numbers are symmetrical numbers (like 17471) that remains the same when all digits are reversed. Buckminster Fuller, in his *Synergetics*, called palindromic numbers “*Sheherazade Numbers*”, thus acknowledging a bit of their fairy tale / magical properties.

111	3	3
222	6	6
333	9	9
444	12	3
555	15	6
666	18	9
777	21	3
888	24	6
999	27	9
4995	135	54

↑ Note the 3-6-9
Digital Pulse



↑ The UN flag has
a circle with 32 + 1 parts.

111	1 + 1 + 1	3	3 x 37 = 111
222	2 + 2 + 2	6	6 x 37 = 222
333	3 + 3 + 3	9	9 x 37 = 333
444	4 + 4 + 4	12	12 x 37 = 444
555	5 + 5 + 5	15	15 x 37 = 555
666	6 + 6 + 6	18	18 x 37 = 666
777	7 + 7 + 7	21	21 x 37 = 777
888	8 + 8 + 8	24	24 x 37 = 888
999	9 + 9 + 9	27	27 x 37 = 999

↑ The “37 harmonic” in the triple Master Numbers

6	32	3	34	35	1
7	11	27	28	8	30
19	14	16	15	23	24
18	20	22	21	17	13
25	29	10	9	26	12
36	5	33	4	2	31

← The 6 x 6 Magic Square
of the Sun has a magical
constant of 111 (sum of rows,
columns and diagonals) and
the sum of its 36 numbers =
666.

The 3 main double-digit Master Numbers are:

11 - A breakthrough number of Inspiration, Intuition & New Beginning. [◆SG202.5.4]

22 - Considered to be a most powerful/successful number. Sometimes called the “Master Builder”.

22 (11 + 11 = 22 = 2 + 2 = 4) combines the inspirational qualities of 11 with the practical groundedness of 4. 22 channels high ideals into manifestation and takes on goals of service on a global scale, rather than just personal ego ambitions. 22 flags achievement.

- 22 letters in Hebrew alphabet + 22 paths in Tree of Life.
- 22 chapters of Revelation.
- 22 / 7 is the traditional approximation of π (Pi).
- 22 is a pentagonal and a centered heptagonal number.
- 22 Major Arcana in the Tarot deck. 22 or Zero is the Fool.

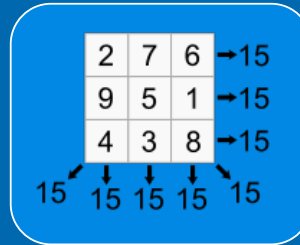
33 - Also called the “Master Teacher”, 33 combines the 11 and 22 (11 + 22 = 33 = 3 + 3 = 6) to aim at higher synthesis, spiritual completion and universal nurturing. The strong determination inherent in 33 stems from clear inner guidance.

- 33 degrees in Freemasonry.
- 32 segments + 1 center circle on UN flag.

SG202.6.5 Numbers in Magic Squares

A Square or matrix of $n \times n$ numbers is said to be “magic” when the sum of numbers in all rows, all columns and both diagonals is equal to a “magic constant” M. Each of the traditional 7 magic squares is associated with a planetary “Spirit & Intelligence”. The closer the planet is to earth, the larger the square.

Magic Squares were “formulas” to tune into natural frequencies and to inter-relate the main numbers & ratios of the traditional Canon of Sacred Geometry.



Magic Square Name	Magic Constant M	Sum all digits
Saturn	15	45
Jupiter	34	136
Mars	65	325
Sun	111	666
Mercury	175	1225
Venus	260	2080
Moon	369	3321

Saturn=15						
4	9	2				
3	5	7				
8	1	6				

Jupiter=34				
4	14	15	1	
9	7	6	12	
5	11	10	8	
16	2	3	13	

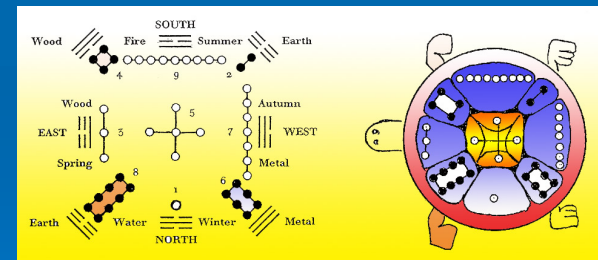
Mars=65				
11	24	7	20	3
4	12	25	8	16
17	5	13	21	9
10	18	1	14	22
23	6	19	2	15

Sol=111					
6	32	3	34	35	1
7	11	27	28	8	30
19	14	16	15	23	24
18	20	22	21	17	13
25	29	10	9	26	12
36	5	33	4	2	31

Venus=175						
22	47	16	41	10	35	4
5	23	48	17	42	11	29
30	6	24	49	18	36	12
13	31	7	25	43	19	37
38	14	32	1	26	44	20
21	39	8	33	2	27	45
46	15	40	9	34	3	28

Mercury=260							
8	58	59	5	4	62	63	1
49	15	14	52	53	11	10	56
41	23	22	44	45	19	18	48
32	34	35	29	28	38	39	25
40	26	27	37	36	30	31	33
17	47	46	20	21	43	42	24
9	55	54	12	13	51	50	16
64	2	3	61	60	6	7	57

Luna=369								
37	78	29	70	21	62	13	54	5
6	38	79	30	71	22	63	14	46
47	7	39	80	31	72	23	55	15
16	48	8	40	81	32	64	24	56
57	17	49	9	41	73	33	65	25
26	58	18	50	1	42	74	34	66
67	27	59	10	51	2	43	75	35
36	68	19	60	11	52	3	44	76
77	28	69	20	61	12	53	4	45



↑ The “Lo Shu” (Writing of the river Lo) is the Chinese equivalent to the Magic Square of Saturn.

[♦ Magic Squares will be studied in SG302]

SG202.6.6 The “World Soul” Numbers

Among the various mathematical allegories offered by Plato, one of the most explicit is the exposition of the “World Soul” (*Timaeus* 35, 36).

The World Soul is said to be a mixture of the Same, the Other and the Essence.

This mixture was portioned off in the following way: 1 - 2 - 3 - 4 - 9 - 8 - 27.

This is recognizable as the squares of 2 and 3 or 1 - 2 - 4 - 8 and 1 - 3 - 9 - 27, also known as the “Lambda”, basis of the musical scale. [◆SG102.2.8.1](#)

Plato says the Creator went on to fill up the gaps in the series by cutting off further portions of the Soul material so as to provide two means between each successive pair of terms. The two means are the Arithmetic Mean $[(A + B)/2]$ and the Harmonic Mean $[2AB / (A + B)]$. In keeping with the principle of using integers only, the base numbers have to be multiplied by 6.

So we have two series of 10 numbers:

6 - 8 - 9 - 12 - 16 - 18 - 24 - 32 - 36 - 48

6 - 9 - 12 - 18 - 27 - 36 - 54 - 81 - 108 - 162

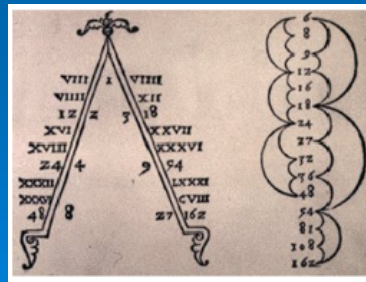
The next instruction is to divide the 4:3 intervals (fourth) into 9:8 intervals (tone).

When the appropriate multiplication and filling in is applied, we obtain the full range of numbers constituting the World Soul, a list of 35 terms (see right) whose sum = 108,551.

Most of these numbers have been accepted by all authorities, although disagreements exist as to the exact number of terms and overall aggregate number.



↑ Medieval manuscript of the *Timaeus*
(Calcidius Latin translation)



↑ The “Lambda”.
Theorica Musica. 1492.
R. Lawlor. *Sacred Geometry*. 1982.

A	384	768	1536	3072	
B	432	864	1728	3456	6912
C	486	972	1944	3888	7776
D	512	1024	2048		
E			2187	4374	8748
F	576	1152	2304	4608	9216
G	648	1296	2592	5148	10,386
H	729	1458	2916	5832	
I				6561	

↑ The 35 recognized numbers of the World Soul.

- They all form musical ratios based on whole integers: 3:2, 9:8, 256:243.
- In each row, numbers are doubling to the right.
- Except for rows A & D, these numbers all have a digital root of “9”.
- The numbers in orange belong to the “72 Tribe”: one of their factors is 72.
- Except for rows A & D, others have sub-multiples of 72 as factors.
- These numbers call for 3D animation!!!

“In accordance with the Pythagorean principle of the primacy of Number, Plato depicted the essence of the universe, its Soul, as a numerical proportion discovered in music, geometry and the philosophical study of nature.”

John Michell

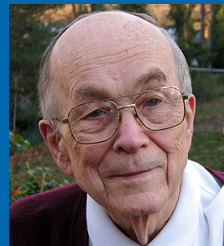
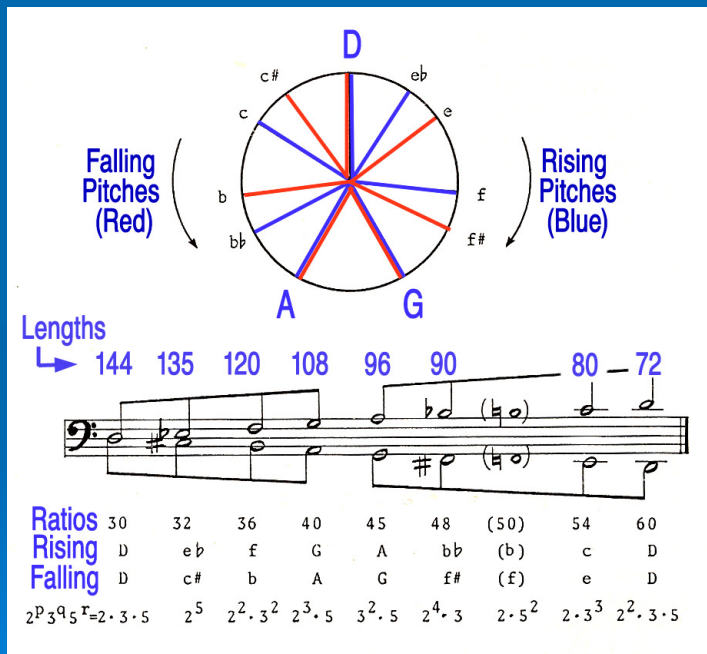
SG202.6.7 Canonic Numbers as Music Scales

We can only take a brief look here at the foundational importance of sound and music in the vast corpus of “Canonic Numbers” left by sacred traditions. Ancient seers and sages were perceiving and co-playing the universe as an exquisitely tuned music orchestra, well conscious of the sacred wedding light-sound.

We have already seen how the Pythagorean cosmology and the Platonic mathematics were based on musical ratios made plainly visible & audible as harmonic divisions on the monochord. [◆SG102 + SG201] We have also briefly touched upon Chinese & Indian music systems & instruments. It so happens that in other cultures as well (Babylon, Egypt, Greece, Palestine...), the same numbers defining musical ratios & frequencies re-occur with an invariance and a convergence that is remarkable and points to a lost universal wisdom of numbers seen as musical tones & scales.

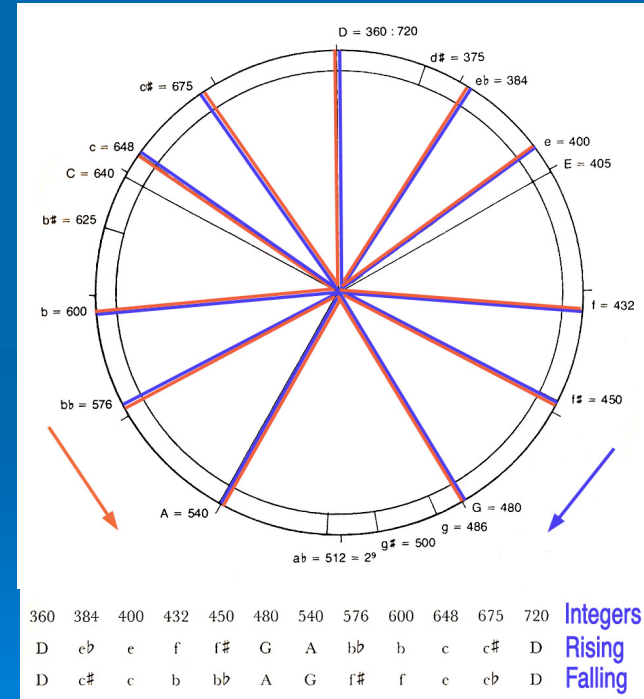
Ernest G. McClain, in his “*Myth of Invariance*”, is one of the scholars who opened up for us vast vistas of understanding in the quest of recovering an ancient, primordial science of mathematical music. McClain studied the Rigveda in that perspective.

The Rigveda (1700–1100 BC), an ancient Indian sacred collection of Vedic Sanskrit hymns, is replete with numerical & geometrical allegories. The hymns use numbers poetically, distinguishing sets by classes of gods and demons and describing arithmetical & musical ratios with sexual & spatial metaphors. Yet everything is precisely counted. Below are two musical interpretations of the Rigveda by Ernest McClain.



↑ Ernest McClain

“After more than three decades of work in this area it seems plausible to propose that most of the numerology in ancient mythology is musically inspired and disciplined.”



↑ A “Tonal Calendar” interpretation of the Rigveda’s Hymn 1.164 “*Vision in Long Darkness*”. Here we have a chromatic scale within a double octave 720 : 360.

↑ A “Tone-Mandala” transposition of the Rigveda’s “*Single wheeled Chariot of the Sun*” as a diatonic scale and its reciprocal.

(Ernest McClain. *The Myth of Invariance*. 1976.)

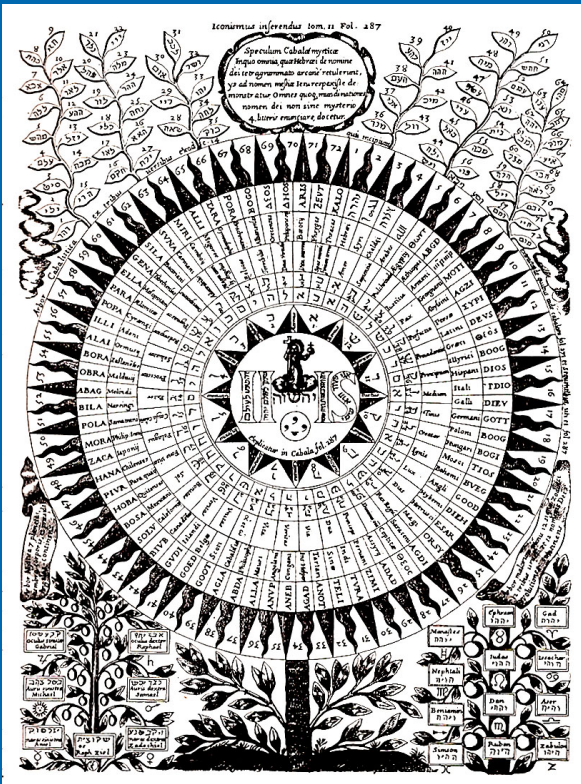
SG202.6.9.1 The “72” Tribe (1)

Among “canonic” numbers, the most prominent seems to be “72” and its “tribe” or multiples and sub-multiples.

The “72 Tribe” numbers are pivotal numbers in traditional cosmologies, mythologies and ancient religious & philosophical systems. These numbers appear in the dimensions & distances of the earth, sun and moon, in the measurements of many actual or ideal sacred sites & architectures, and in music theory & scales. Later, through Gematria, many of these numbers found their way into early Christianity.

The “72 Tribe” numbers seem to coordinate different numerical series & orders and appear as if they are structuring the whole number field itself.

The next page gives tables of sub-multiples & multiples of showing (in orange) numbers significant in the traditional Canon.



↑ The 72 Names of God in 72 languages.

Above the circle are the 72 powers of God according to the Hebrew Kabbalah. Below the circle are the Tree of the Planets (left) and the Tree of the Zodiac (right) with the associated Tribes of Israel.



↑ A “72 hours” public meditation

- 72 = sum of four consecutive primes (13 + 17 + 19 + 23), as well as the sum of six consecutive primes (5 + 7 + 11 + 13 + 17 + 19).
- 72° = two base angles of the Golden Triangle
- 72 = atomic number of hafnium
- 72° Fahrenheit is considered to be room temperature
- 72 = average number of heartbeats per minute for a resting adult
- 72% of water in the human body
- 72 hours = life duration of the ovule
- 1/72nd = mass of the Moon / mass of Earth
- 72 times = volume of Saturn / volume of Earth
- 72 years = axis of the earth moves one degree compared to stars (precession)
- 72 = degrees of Jacob's ladder, according to the Zohar.
- 72 = disciples of Confucius.
- 72 = evil accomplices of Set who enclosed Osiris in a coffin
- 72 Immortals in Taoism
- 72 = conventional number of scholars translating the Septuagint
- 72 Hz = loud tone making light objects vibrate
- 72 hours = number of hours in 3 days
- 72 hours kits for emergencies
- 72 dpi = website resolution

SG202.6.9.2 The “72” Tribe (2)

Multiples of 18 through 1,008

$18 = 9 \times 2$
 $36 = 18 \times 2$
 $54 = 18 \times 3$
 $72 = 18 \times 4$
 $90 = 18 \times 5$
 $108 = 18 \times 6$
 $126 = 18 \times 7$
 $144 = 18 \times 8$
 $162 = 18 \times 9$
 $180 = 18 \times 10$
 $198 = 18 \times 11$
 $216 = 18 \times 12$
 $234 = 18 \times 13$
 $252 = 18 \times 14$
 $270 = 18 \times 15$
 $288 = 18 \times 16$
 $310 = 18 \times 17$
 $324 = 18 \times 18$
 $360 = 18 \times 20$
 $432 = 18 \times 24$
 $504 = 18 \times 28$
 $594 = 18 \times 33$
 $648 = 18 \times 36$
 $666 = 18 \times 37$
 $720 = 18 \times 40$
 $810 = 18 \times 45$
 $1224 = 18 \times 68$
 $1746 = 18 \times 97$

Multiples of 36 through 1,008

$36 = 18 \times 2$
 $72 = 36 \times 2$
 $108 = 36 \times 3$
 $144 = 36 \times 4$
 $180 = 36 \times 5$
 $216 = 36 \times 6$
 $252 = 36 \times 7$
 $288 = 36 \times 8$
 $324 = 36 \times 9$
 $360 = 36 \times 10$
 $396 = 36 \times 11$
 $432 = 36 \times 12$
 $468 = 36 \times 13$
 $504 = 36 \times 14$
 $540 = 36 \times 15$
 $576 = 36 \times 16$
 $612 = 36 \times 17$
 $648 = 36 \times 18$
 $684 = 36 \times 19$
 $720 = 36 \times 20$
 $756 = 36 \times 21$
 $792 = 36 \times 22$
 $828 = 36 \times 23$
 $864 = 36 \times 24$
 $900 = 36 \times 25$
 $936 = 36 \times 26$
 $972 = 36 \times 27$
 $1008 = 36 \times 28$

Multiples of 72 through 2,160

$72 = 36 \times 2$
 $144 = 72 \times 2$
 $216 = 72 \times 3$
 $288 = 72 \times 4$
 $360 = 72 \times 5$
 $432 = 72 \times 6$
 $504 = 72 \times 7$
 $576 = 72 \times 8$
 $648 = 72 \times 9$
 $720 = 72 \times 10$
 $792 = 72 \times 11$
 $864 = 72 \times 12$
 $936 = 72 \times 13$
 $1008 = 72 \times 14$
 $1080 = 72 \times 15$
 $1152 = 72 \times 16$
 $1224 = 72 \times 17$
 $1296 = 72 \times 18$
 $1368 = 72 \times 19$
 $1440 = 72 \times 20$
 $1512 = 72 \times 21$
 $1584 = 72 \times 22$
 $1656 = 72 \times 23$
 $1728 = 72 \times 24$
 $1800 = 72 \times 25$
 $1872 = 72 \times 26$
 $1944 = 72 \times 27$
 $2016 = 72 \times 28$
 $2088 = 72 \times 29$
 $2160 = 72 \times 30$

Multiples of 72 through 3,960...

$2232 = 72 \times 31$
 $2304 = 72 \times 32$
 $2376 = 72 \times 33$
 $2448 = 72 \times 34$
 $2520 = 72 \times 35$
 $2592 = 72 \times 36$
 $2664 = 72 \times 37$
 $2736 = 72 \times 38$
 $2808 = 72 \times 39$
 $2880 = 72 \times 40$
 $3024 = 72 \times 42$
 $3168 = 72 \times 44$
 $3456 = 72 \times 48$
 $3528 = 72 \times 49$
 $3600 = 72 \times 50$
 $3888 = 72 \times 54$
 $3960 = 72 \times 55$
 $4320 = 72 \times 60$
 $5040 = 72 \times 70$
 $5760 = 72 \times 80$
 $6480 = 72 \times 90$
 $7200 = 72 \times 100$
 $7920 = 72 \times 110$
 $10368 = 72 \times 144$
 $12960 = 72 \times 180$
 $14256 = 72 \times 198$
 $14400 = 72 \times 200$
 $15552 = 72 \times 216$
 $18144 = 72 \times 252$
 $19940 = 72 \times 270$

Higher multiples of 72

$20,736 = 72 \times 288 = 12^4$
 $25,920 = 72 \times 360$ (precession)
 $40,320 = 72 \times 560 = 8!$
 $108,864 = 72^2 \times 21$
 $114,048 = 72^2 \times 22$
 $144,000 = 72 \times 2000$
 $248,832 = 72^2 \times 48 = 12^5$
 $362,880 = 72 \times 5040 = 9!$
 $864,000 = 72 \times 12,000$
 $39,916,800 = 72^2 \times 7700 = 11!$

*Suppose you
meet a
cosmic faery,
do you have
72 wishes?*

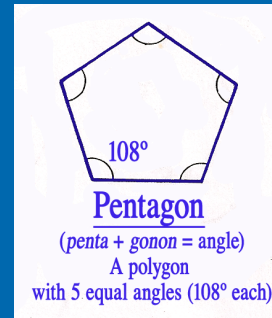
*Note: many of the number
values relationships oscillate
around or average to Phi,
the Golden Ratio.*

108 is a number of SACREDNESS in just about all spiritual traditions
 Why? What could be the basis of this quality embodied by 108?

SG202.6.10 Number 108

To be sure, 108 comes up in some ratios of distances in the solar system, but these may just be “local” conditions. The main foundation we can find seems to be in the geometrical fact that the inner angle of the pentagon = 108° and therefore the “sacredness” of 108 is directly linked with the Golden Ratio. [◆SG106.1.2].

- $2 \sin (108 / 2) = 1.6180339\dots =$ Golden Ratio Φ
- 108 is an abundant number with 12 divisors
- 108 is the hyperfactorial of 3: $1^1 \times 2^2 \times 3^3 = 108$
- 108 = 12 x 9, two completion numbers
- 108 = atomic number of Silver (107.86), the metal of the Moon
- 108 x Sun diameter = ~ distance Earth - Sun
- ^a 108 x Moon diameter = ~ distance Earth - Moon
- 108 x Earth diameter = diameter Sun
- 108 figurations of Buddha on each face (= 432 statues). Borobudur, Java.
- 108 Brahmins invited to the naming ceremony at the birth of the Buddha
- 108 stone statues on each of the 5 avenues (= 540 statues). Angkor.
- 108 towers of Pnomh-Bakheng temple, Angkor.
- 108 volumes of *Kanjur*, Tibetan Buddhist Canon
- 108 finger-breaths (= 9 spans of 12) in Buddhist canonic art
- 108 beads in Hindu *mala* for 108 chantings of a mantra
- 108 *Gopis* = number of cow-herd girls Krishna dances with
- 108 = number of names of Hindu deities. 108 names of Durga
- 108 = movements in Tibetan Yoga (Trul Khor)
- 108 = 12 x 9 = 12 *Rashis* (Zodiacs) and 9 Planets (Navagrahas) in Hindu astrology
- 108 quarters (*padas*) in the 27 Lunar mansions or *Nakshatras*. $27 \times 4 = 108$
- 108 dance poses when Shiva *Nataraja* dances his cosmic dance
- 108 beads of the *juzu* (ring of prayer beads) worn by Zen priests around their wrists
- 108 = total of energy lines converging to form the heart chakra
- 108 Holy temples of Vishnu (*Divya Desams*)
- 108 *marmas* (minor chakras) in human subtle body
- 108 = points of intersection in Sri Yantra (54 masculine + 54 feminine points = 108)
- 108 pressure points in human body, according to Ayurveda & Chinese Martial Arts
- 108 long moves in traditional Taijiquan
- 108 sacred stars in Chinese astrology and Taoist philosophy
- 108 stars of destiny in Suikoden game
- 108 suitors coveting Penelope, wife of Odysseus, in Homer’s Odyssey

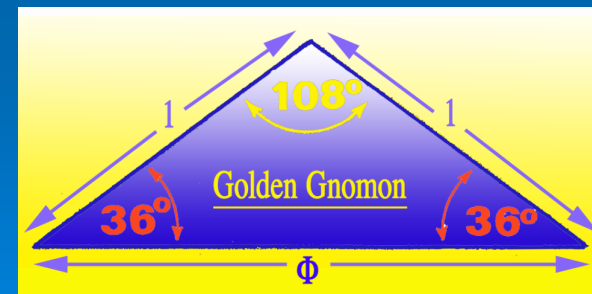


$$\begin{aligned} 108 \\ &= 1 + 8 \\ &= 9 \end{aligned}$$



↑ Buddhist *Japa Mala* made from Tulasi wood. It comprises 108 beads in total + the head bead.

Beginning just before midnight on New Year's Eve, bells in Buddhist temples are rung 108 times to announce the passing of the old year and the coming of the new. It is said that humans are beset by 108 ills or earthly passions and that each stroke of the gong dispels one.

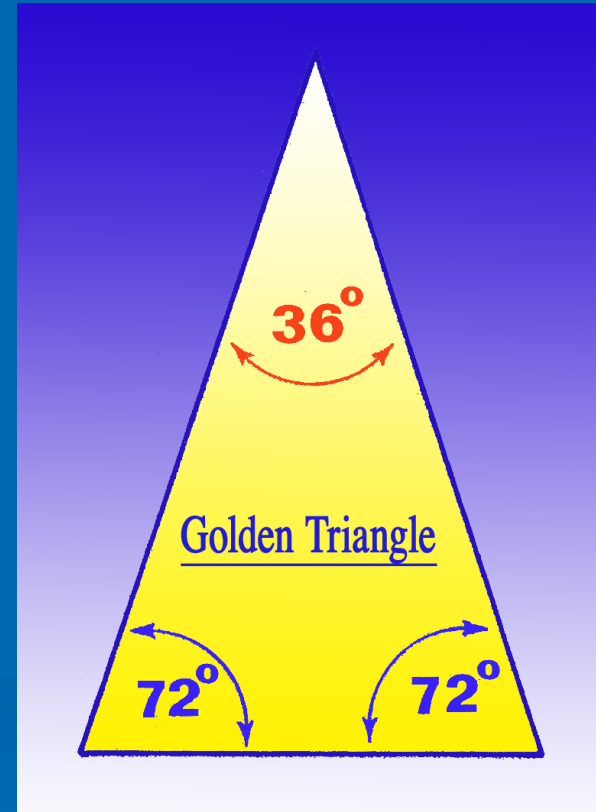


↑ The inner angle of pentagon (108°) forms a Golden Gnomon triangle (sides = 1, base = Φ)

Some Mathematical, Geometrical
& Numerical Properties

SG202.6.11.1 Number 144 (1)

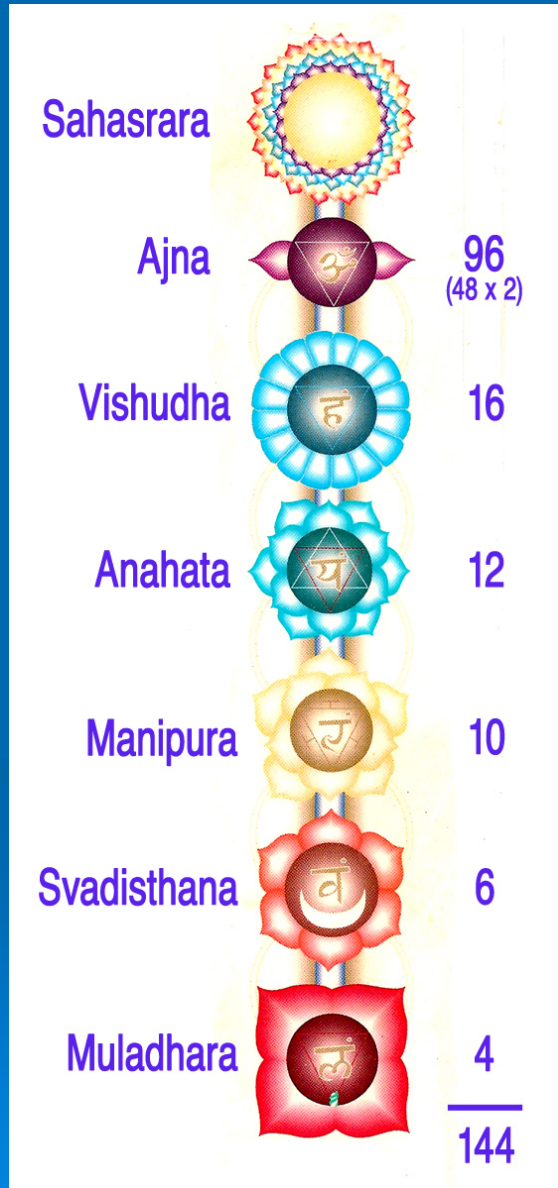
- 14,400 = $1^2 \times 2^2 \times 3^2 \times 4^2 \times 5^2$
- $144^5 = 27^5 + 84^5 + 110^5 + 133^5$
- 144° = inner angle of decagon (decagon is DNA geometry)
- 144 / PHI (1.618...) = 88.998 = ~ 89 (previous Fibonacci number)
- 144 = 12th term in the Fibonacci Series: 1-1-2-3-5-8-13-21-34-55-89-144
- 1440° = sum of 10 inner angles of decagon
- 144 = $12 \times 12 = 12^2$ (bottom right of multiplication table 1-12)
- 144 square inches = 1 square foot
- 144 by gematria = $1 + 4 + 4 = 9$ (Completion Number)
- 144° = sum of two base angles of Golden Triangle ($72^\circ + 72^\circ + 36^\circ$)
- 1440° = sum of octagon vertex angles ($60^\circ \times 4 = 240^\circ$) multiplied by 6 vertices
- 144 = sum of edges + faces of the 5 Platonic Solids + triangle (1 face, 3 edges)
- 14,400 = sum of angles around vertices + number vertices for all Platonic Solids
- 14,400° = sum of angles around all vertices 2-frequency icosahedron
- 144 = number at which Golden Ratio Phi stabilizes at 3 digits (ceases alternation)
- 144 = key number in Earth Matrix Code (Carl Munck)
- 144 = harmonic of light at each pole (Bruce Cathie) - 288 = polar light harmonic
- 144 x 72 = 10,368 = last term of Plato's World-Soul harmonic series
- 144 x 2.5 = 360 144 = 360 - (144 x 1.5) = (144 x 3.5) - 360
- 144 and its multiples are all "Canonic Numbers": 216 - 288 - 360 - 432 - 504...
- 144 / 5 = 28.8 = 2 x 14.4
- 144,000 - 144 = 666 x 6³
- In 144 years, Sun moves 2 degrees in precessional cycle (25,920 / 360° = 72 years)
- ~14 = "limit of Chandrasekhar" for white dwarf stars



↑ The Golden Triangle, one of the two Penta-Modules [◆SG106.2], has 2 base angles of 72° each = 144°. The Golden Triangle base length is unit 1, while the sides are PHI = 1.618...

$$144 = 72 \times 2 = 48 \times 3 = 36 \times 4 = 24 \times 6 = 18 \times 8 = 16 \times 9 = 12 \times 12$$

SG202.6.11.2 Number 144 (2)



$$144 = 1 + 4 + 4 = 9$$

Some Symbolic, Cultural & Traditional Clues:

144,000 = key number in Mayan progression of time cycles:
1 - 20 - 320 - 7,200 - 144,000

144,000 kin = 1 Baktun (mayan count) = 400 years of 360 days (kin)

"144,000 sealed of all the tribes of Israel" (Revelation 7)

"144,000 which were redeemed" (Revelation 14)

144,000 = traditional number of stones outer casing Great Pyramid

14,400 royal cubits = circumference of sphere/circle inscribed in cube New Jerusalem with 7920 feet diameter. (1 royal cubit = 1,728 feet)

14,400 = 120 x 120 cubits = ark of Gilgamesh (Mesopotamian Noah)

1440 seconds = 1 nadi = 60 Hindu "vinadi" = 360 breaths = 24 minutes

1440 = gematria of O OIKOS KURIOU (House of the Lord)

1440 acres = 7920 feet = New Jerusalem side (7920 miles diameter earth)

1440 = 12 "hides" of 120 acres each in Glastonbury (43,560 sq feet = 1 acre)

144 = 48 (sum of petals of first 5 chakras) + 96 (petals of 6th chakra = 48 x 2)

144° = Bi-Quintile aspect in astrology (2/5 of 360°)

144 = New Jerusalem 12 gates with 12 angels

144 x 220 = 31,680 feet = perimeter New Jerusalem

144th day Dreamspell 13-20 time calendar: Tone 1 magnetic / Yellow Seed

144 cards of muslim Tarot

144 cards Chinese mah-jong game

144 mandalas StarWheel Vision

144 = number of the "Receptive" in Yi Ching. "Creative" number = 216.

216 / 144 = 3/2 (musical fifth)

144 feet Palatine Chapel in Aachen

144 facets in Holy Grail emerald

144 x 35 = 5040 = rings of Plato's ideal city (Laws 5)

144 x 220 = 31,680 = circumference Plato's ideal city

144° = angle decagon layout "Perpetual Choir" circle, England.

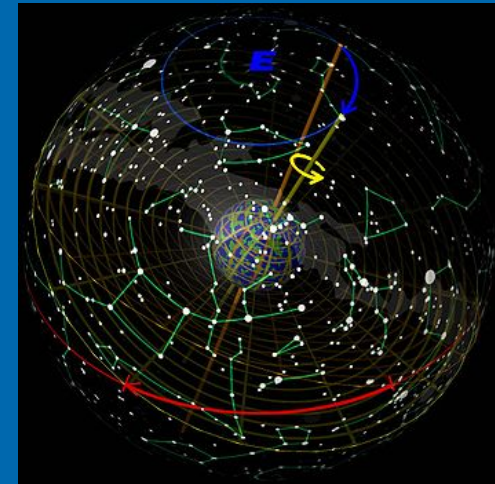
144 kinds of atoms = Rosicrucian view of the univers

SG202.6.12 Number 432

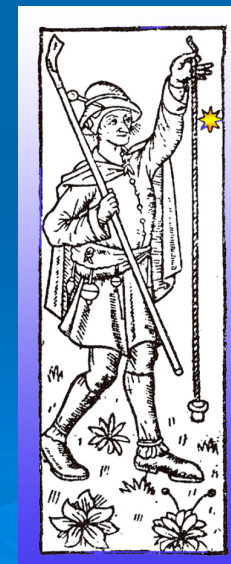
432 (and its multiples) is a number figuring prominently in stories & mythologies about the Cycles of time, around the world. 432 is a “founding member” of the “72 Tribe”. It is connected with the Pole star.

- $432 = 72 \times 6$
- $4320 = 360 \times 12$
- $432 \times 60 = 25,920$ years = Precession of equinoxes
- $432,000 =$ radius of the Sun $= 6^3 \times 2,000$. $432,000 \times 2 = 864,000$ mile = diameter of the Sun
- $4320 / 2 = 2160 =$ diameter of the Moon $= 6^3 \times 10$
- $432 \times 2005 = 866,160$ miles = sum of diameters Sun and Moon
- $43,200 \times 2 = 86,400$ beats per day = heart beats of a healthy, athletic adult at rest: 60 beats per minute, $60 \times 60 \times 24 = 86,400$
- $432,000$ years = total span of the reigns of the antediluvian kings of Babylon. Berossus, a priest of Bel in Babylon, about 260 B.C. translated into Greek the standard Babylonian reference work on Astrology and Astronomy. He compiled a list of ancient kings based on archives in the Temple of Marduk, which were themselves copies of ancient inscriptions.
- $432,000$ years = Babylonian Great Year, according to Berossus
- $432,000$ years = duration of Kali-Yuga (Iron Age) $= 6^3 \times 2,000$
- $432,000 \times 2 = 864,000$ years = duration of Dvapara Yuga $= 6^3 \times 4,000$
- $432,000 \times 3 = 1,296,000$ years = duration of Treta Yuga $= 6^4 \times 1,000$
- $432,000 \times 4 = 1,728,000$ years = duration of Krita Yuga $= 12^3 \times 1,000$
- $432,000$ syllables in the Rigveda
- 432 Buddha statues in Borobudur, Java. 108 statues per each of 4 sides.
- $432,000 =$ numbers of warriors in Valhalla, the hall of slain heroes of Viking myth, was ruled by the king of the gods, Odin, in the realm of the gods, Asgard. The hall had 540 doors, through each of which 800 heroes could walk abreast. $540 \times 800 = 432,000$
- $43,200 =$ ratio of height and perimeter of the Great Pyramid to the radius and circumference of the Earth. Original height of the pyramid (481.3949 feet) $\times 43,200 = 3938.685$ miles. The modern measurement for the actual polar radius of the Earth (pole to center) is 3949 miles.
- $43,200 \times 3023.16$ feet (perimeter of the pyramid at its base) $= 24,734.94$, within 170 miles of the equatorial circumference of the Earth (24,902 miles). Also, the base length of the Pyramid of Cheops is exactly the distance the Earth rotates at the equator in one half-second of time.
- 432 Hz (cps) = tuning of A in alternative music scales. [◆SG201.4.5.1]
- $432 =$ frequency number in the musical series of Plato’s “World Soul”.
- 432 Mhz = common frequency used by amateur radio operators

$$432 = 4 + 3 + 2 = 9$$



↑ Precessional movement as seen from outside the Celestial Sphere. (Wikipedia)



← Medieval print showing a shepherd sighting the pole star



SG202.6.13 Number 666

Rooted in “6”, the number of physical order in the cosmos, 666 (trinity of 6) reinforces the meaning of creative, positive energy. As an elemental force, 666 represents the SUN and the life force influence of solar radiation. 666 is the Solar archetype number.

“Where the proportions are correct, the influence of 666 promotes fertility, life and color; but where it becomes too direct or overly dominant, there is the rise of violence, excess wealth and power. The rays of the Sun are filtered through the protective atmosphere and reach the seed through the medium of the earth. Were it not so, they would destroy all life. Likewise, the archetype 666 must always be combined with a feminine number (lunar or terrestrial - like 1080).” John Michell. *City of Revelation*. Ballantine, 1972.

Some Symbolic, Cultural & Traditional Clues

666 = sum of all numbers on a roulette wheel
 666 = “Number of the Beast” (Revelation 13). “Six hundred threescore and six”. Also “... the number of a man”.
 666 = Chi (= 600) + Xi (= 60) + Digamma (= 6) in Greek gematria
 6 unbroken (Yang) lines = first hexagram of I Ching: the Creative. “The Creative causes the beginning & begetting of all beings and can therefore be designated as heaven, radiant energy, father or ruler”.
 666 = The Chinese dragon and the Beast in Revelation have the same origin and number 666 but their histories have widely diverged. “In China, dragons are not slain; rather their electrical power is kept in the realm, in which it can be made useful”. (Wilhelm. Yi Ching)
 666 = gematria of TEITAN, an archaic solar deity. (365 + “cole!” 1)
 666 = gematria of PARA TEOU (“That which comes from God”)
 666 = gematria of E PHREN, the intelligence of the Heart
 666 = original length of Glastonbury Abbey (per Bligh Bond)
 666 = alchemical signature of Sulphur
 666 = gematria of SUENE or Syene, Egypt (modern Aswan), “place of the sun” where Eratosthenes made his solar observations.
 666 = “The excess of 666 is totalitarian rule & blind materialism leading to cyclic destruction by fire. The repression of true, balanced 666 energy eventually causes sudden macho outbursts of violence & cruelty”. (Michell).
 666, in Chinese culture, sounds a lot like the words ‘Things going smoothly’. It is therefore considered one of the luckiest numbers and can be seen prominently in many shop windows. Chinese people often pay extra to get a cell phone number including 666.
 1.666 = ratio of perfect 5th, the most pleasant musical chord

Some Mathematical, Geometrical & Numerical Properties

666 = triple master number. Triple “Balance & Cosmic Order”
 666 = 36th Triangular number and multiple of 18
 666 = sum of first 36 numbers (1 + 2 + 3 + ... + 34 + 35 + 36 = 666)
 666 = abundant number (it is exceeded by the sum of its factors)
 666 = (36 x 37) / 2
 666 = sum of squares of first 7 prime numbers (2² + 3² + 5² + 7² + 11² + 13² + 17² = 666)
 666 = sum of magic square of the Sun (6 x 6 grid)
 666 x 6³ = 144,000 - 144
 666 reversed = 999, triple master number of completion. 666 / 999 = .666
 6-6-6 protons-neutrons-electrons = structure of carbon atom. All organic life is carbon-based
 666 = encoding matrix for physical organic life
 666 = DCLXVI in roman numerals. Uses once each of the symbols in descending order.
 666 = 3 “sixes”, corresponding to the 3 angles (60°) of an equilateral triangle
 Sin 666 = .8090169 = Phi / 2 = half of the Golden Ratio



← Tarot card #19, the Sun.

Magic square of the Sun →
 The sum of all numbers = 666

6	32	3	34	35	1
7	11	27	28	8	30
19	14	16	15	23	24
18	20	22	21	17	13
25	29	10	9	26	12
36	5	33	4	2	31

In contrast to the yang solar number 666, the archetypal number 1080 is yin, feminine, terrestrial and lunar, as water is opposed (yet complementary) to fire.

Via the lunar energies, 1080 links the power of psychism with underground water & chthonian currents. Under the influence of the moon, "oracles placed themselves by springs and over clefts in the rock, where the spirit arising out of the earth might induce the prophetic trance." (John Michell. *City of Revelation*.)

1080 also relates to the measurement of time and the heavenly bodies.

Excess of 1080 leads to anarchy & dissolution, known by tradition as death by water. When 1080 is not honored, the energy it represents turns bitter, or poisonous / dark.

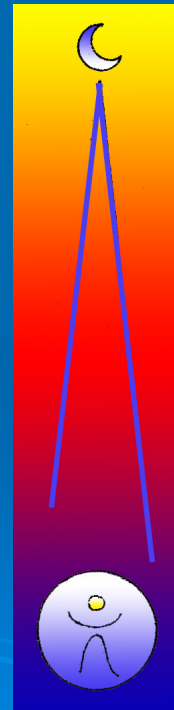
Some Mathematical, Geometrical & Numerical Properties

- 1080 = radius of the moon in mile (1080 miles = 1738 kms x .621)
- 1080 x 2 diameter of star 6th magnitude = diameter Sun (Galileo)
- 1080 = number of stars of 1st magnitude given by Hipparchus (150 BCE)
- 1080 = 24th of the Great Year (25,920 years = precession equinoxes)
- 1080 x 2 years = time it takes the Sun to move through one sign of the zodiac
- 1080 = sum of 8 inner angles of octagon ($135^\circ \times 8 = 1080$)
- 1080 + 1000 = sum of all numbers 1 to 64
- 1080 + 1000 = sum of Magic Square of Mercury (8 x 8 grid)
- 10,800 = number of minutes in a semi-circle ($180 \times 60 = 10,800$)
- 10,800 = number of seconds in 3 degrees of a circle
- 10,800 = number of seconds in 3 hours of time
- 10,800 years = Heraclitus noted that civilizations are destroyed every 10,800 years
- 10,800 = time interval between successive ice ages, according to climatologists
- 108,000 years = 1 season (1/4 division) of Hindu Kali Yuga of 432,000 years
- 108,000 thirds = 30 minutes = apparent diameter sun at average distance (Galileo)

$$1080 = 1 + 8 = 9$$

→ The Magic Square of Mercury.
Sum of all numbers = $1080 \times 2 = 2080$

8	58	59	5	4	62	63	1
49	15	14	52	53	11	10	56
41	23	22	44	45	19	18	48
32	34	35	29	28	38	39	25
40	26	27	37	36	30	31	33
17	47	46	20	21	43	42	24
9	55	54	12	13	51	50	16
64	2	3	61	60	6	7	57



SG202.6.14 Number 1080

Some Symbolic, Traditional & Cultural Clues

- 1080 = average number of breaths taken in 1 hour
- 1080 square megalithic yards = 888 square yards
- 1080 feet = 888 remens
- 1080 = "minims" (Halakioms) = divisions of one hour for the Jews
- 1080 = "parts" of Talmudic day. 24 hours divide into 1080 parts of 72 "instants" each
- 1080 = gematria for TO AGION PNEUMA (the Holy Spirit)
- 1080 = gematria for TO GAION PNEUMA (The Spirit of Earth)
- 1080 = gematria for PEGE SOPHIAS (Fountain of Wisdom)
- 1080 = gematria for E ABUSSOS (The Abyss) (1081)
- 1080 = gematria of IESOUS (Jesus) + MARIAM (Mary)
- 1080 = gematria for E ARMONIA KOSMOU (The Cosmic Harmony)
- 10,800 stanzas in the Rigveda (10,800 x 40 syllables = 432,000 syllables).
- 10,800 = number of bricks in Vedic fire-altar (Agnicayana).



“According to traditional alchemy, life is created out of the fusion of two element: Mercury & Sulfur. Mercury represents the receptive, female principle in nature which is animated by Sulfur, the positive male force.

The two numbers corresponding to these in ancient numerological philosophy were 1080 and 666. Their sum, 1746, is represented by the “grain of mustard seed” at the pyramid’s top.

The operations of the medieval alchemists were the last flickerings of a scientific tradition by which sulfur & mercury were brought to fusion within the great retort or womb of the earth herself. The marriage of heaven & earth took place at the Pyramid as an union between the terrestrial current, accumulated in its rocky mass, and the divine spark of celestial fire distilled from the ether at the point of its gold & crystal apex”.

(John Michell. *The New View Over Atlantis*. Harper & Row. 1986.)

Greek Gematria Clues to Mystic Union

1746 = TA AUTA KAI TA ETERA = "The Same and the Other", the two forces, positive & negative, that Plato, in the Timaeus, ascribes to the process of creation.

1746 = TO PNEUMA KOSMOU = The Spirit of the Universe

1746 = AGION PNEUMA KAI E NUNPHI = Holy Spirit and the Bride

1746 = IEPOUSALEM E POLIS THEOU = Jerusalem, the City of God

1746 = KOKKOS SINAPEOS = Grain of Mustard Seed

1746 = PATER UIOS PNEUMA = Father, Son, Spirit

1746 = O NOMOS O PNEUMATIKOS = The Spiritual Law

1746 = MARGARITES SOPHIAS = Pearl of Wisdom

1746 = O ANTHROPOS O THEIOS = The Divine Man

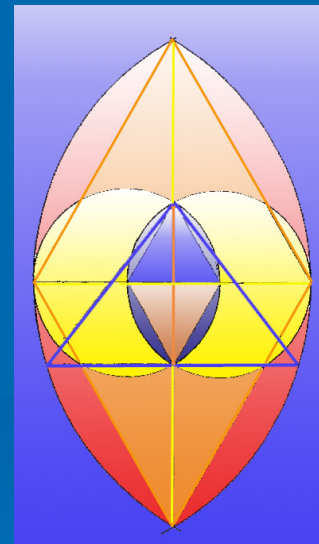
1746 = TA HEPTA MUSTERIA = The Seven Mysteries

1746 = GNOSIS THEOU = Divine Gnosis

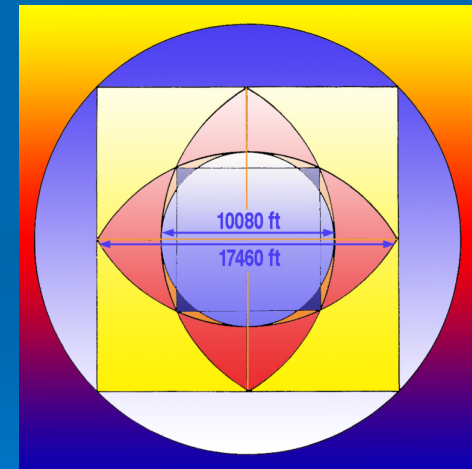


$$1746 = 1 + 7 + 4 + 6 = 18$$

$$= 1 = 9 + 8$$



↑ The Great Pyramid’s height (481 ft) forms the longer axis of a Vesica Piscis made by the intersection of 2 equal circles of circumference ~1746 ft. Perimeter of small rhombus = ~1110 ft



↑ The squared circle of the New Jerusalem cosmo-gram (radius 5,040 ft) is contained by a double Vesica. The length of the Vesica is 17,460 ft, or 10 times the “Number of Fusion”.

SG202.6.15 Number of Fusion 1746

Some Numerical & Geometrical Properties

$$1080 / 666 = \sim \Phi = 1.621\dots$$

$$1080 \times \Phi = 1.747\dots$$

$$1080 \times 1/\Phi = 667.44$$

$$1746 = 1080 + 666 = 18 (60 + 37)$$

1746 has a geometric link with the Vesica Piscis (made out of 2 circles in the shape of a magnetic vortex).

SG202.6.16 Number 3168

The number 3168, of great importance in ancient cosmological diagrams and sacred sites, was adopted by the founders of Christianity as the number of their sacred name: Lord Jesus Christ.
ΚΥΡΙΟΣ ΙΗΣΟΥΣ ΧΡΙΣΤΟΣ (KURIOS IESOUS CHRISTOS = 3168)

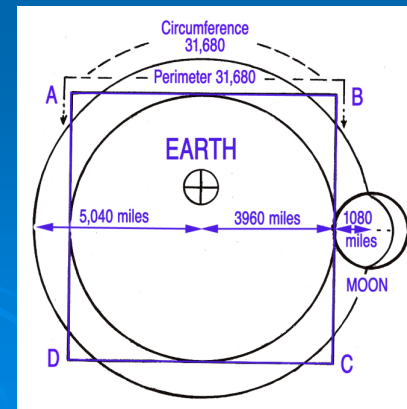
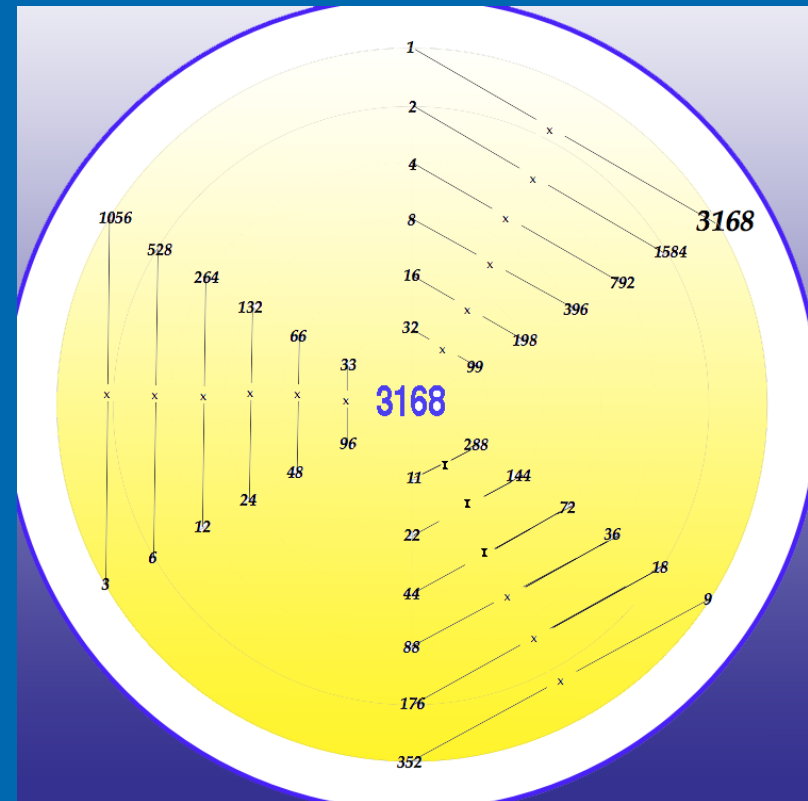
“The general character of the number 3168 is that it represents the spirit which passes through and encircles the universe, Plato’s World-Soul.”
 (John Michell. *Dimensions of Paradise.*)

3168 is a superabundant number. Interestingly enough, the sum of all its 35 divisors (not counting 3168 itself) is another master canonic number: 6660.

Some Geometrical, metrological & Cosmological Properties

- **31,680**, in the New Jerusalem diagram [◆SG202.7.1], measures both the perimeter of the square and the circumference of the circle of radius 5040.
- Note that $5040 / 3168 = 1.59 \sim$ close to the Phi ratio.
- **316.8 ft** = main circumference of the Stonehenge *sarsen* circle.
- **31,680 x 2 inches** = one mile
- **31,680 ft.** = 6 miles = 4 x 12 furlongs
- **31,680 ft** = perimeter of the square (12 hides) of Glastonbury
- **31,680 furlongs** = 3960 miles = mean radius of the earth.
- **31,680 miles** = perimeter of square + circumference of the earth tangent to the moon.
- **31,680 miles** = 10,080 x pi (as 22/7). 10,080 = number of minutes in a week.
- **3,168,000 miles** = figure given by Pliny (23 - 79 CE), in his *Naturalis Historia*, as the world circumference.
- $3168 / 8 = 396 =$ UT note in the Solfeggio scale [◆SG201.4.7.2]
- **316.8 ft. x 2** = 633.6 ft. = the longer Greek furlong or stade of 625 Greek feet, which appears in the dimension of the Parthenon and Stonehenge.
“This Greek furlong and the English furlong of 660 ft. come together in the acre: a rectangle with sides of 1 English furlong x 5 Greek furlongs (660 x 3,168 ft.) = 48 acres exactly.” (John Michell).

*“In the center of the marketplace in Athens was the **omphalos** pillar, from which all distances were measured and where the sacred paths converged. The inscription carved on it, **OI DODEKA THEOI** (the twelve gods) = 1008 = diameter of a circle with circumference 3168.”*
 (J. Michell)



↑ Mandala of the 36 factors of the number 3168. After Connie Achilles. www.harmonictheory.com

$$3168 = 3 + 1 + 6 + 8 = 18 = 1 + 9 = 9$$

← 31,618 and 5040 in the New Jerusalem diagram.

SG202.6.17 Number 5040

Some Numerical & Geometrical Properties

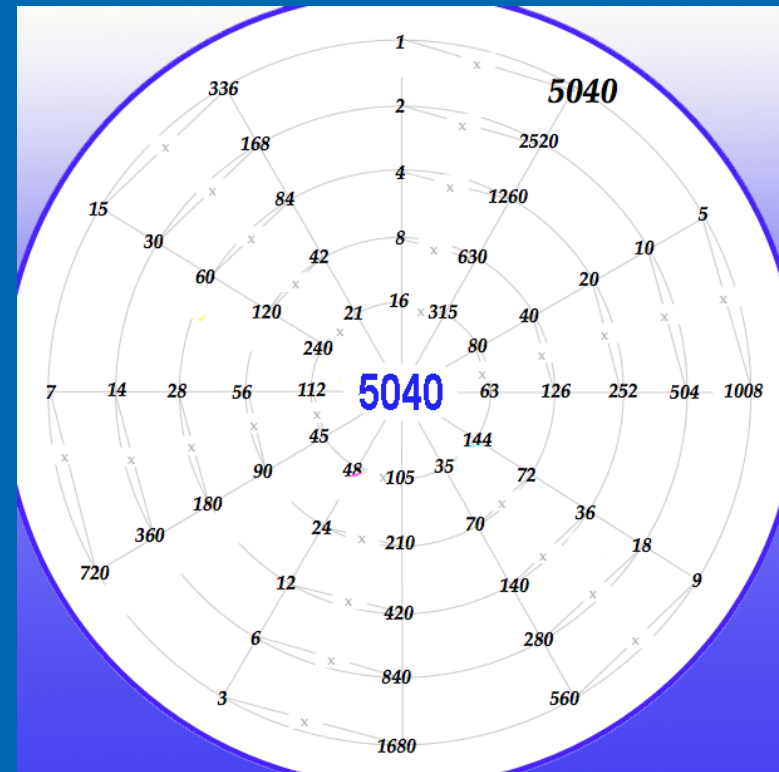
- **5040** = 7! (factorial 7) = 1 x 2 x 3 x 4 x 5 x 6 x 7
- **5040** is a HCN = highly composite number = a positive integer with more divisors than any smaller positive integer.
- **5040** is a Super Abundant Number: the sum of its 60 divisors = 19,344
- **5040** x 2 = 10080. 10080 has 72 divisors.
- **5040** = number of permutations of 4 items out of 10 choices ($10 \times 9 \times 8 \times 7 = 5040$).
- **5040** = sum of 42 consecutive primes, from 23 to 229.
- **504** sections of Crooked Soley crop circle (8-27-2002) standing, while 792 sections were laid down. $504 + 792 = 1296$. Note: $7920 = 3,960 \times 2 =$ diameter Earth.
- **5040** = Earth (3,960 miles) + Moon (1,080 miles) radii.
- **5040** units = radius of circle with a quarter of that circle's circumference = approximately 7920 units (using $22/7$ for π).
- **5040** ft. = New Jerusalem circle of radius 79.60 ft.
- **504** furlongs (63 miles) = Circle of Perpetual Choirs, centered on the *Whiteleafed Oak*, England.
- **50.4** ft. = radius of Stonehenge *sarsen* circle with circumference 316.8 ft.

$$72 \times 70 = 5040 = 5 + 4 = 9$$

“The main subject of Plato’s Laws is Magnesia, the city-state which he imagined himself founding in a depopulated area of Crete... (Plato’s) first principle was that state constitutions should be designed to imitate the cosmos: ‘No state can find happiness unless the artist drawing it uses a divine pattern’.

The one thing Plato insists upon is that everything in the state, from the number of its citizens and land-holdings to the measurements of domestic utensils, must be in accordance with a system of mathematics based on the number 5040.” (John Michell)

Plato observed that, on a practical level, **5040** can be divided by the first 10 numbers (and the number 12), having 60 factors; thus, the 5040 land-holdings can be subdivided into many fair shares. But also, **5040** is part of the Canon of Numbers which Plato used as a guiding inspiration for Magnesia.



↑ Mandala of the 60 factors of the number 3168.
After Connie Achilles. www.harmonictheory.com

The shorter versions of the Roman and Greek standards of measurement, taken in units of 10,000 to make them whole numbers, are multiples of **504**:

10,000 Roman feet	= 96,768	= 504 x 192 ft.
10,000 Roman cubits	= 145,152	= 504 x 288 ft.
10,000 Greek feet	= 100,800	= 504 x 200 ft.
10,000 Greek cubits	= 151,200	= 504 x 300 ft.
10 Roman miles	= 48,384	= 504 x 96 ft.
10 Greek miles	= 50,400	= 504 x 100 ft.

(John Michell. *Dimensions of Paradise.*)

SG202.6.18 The “Number Field”

Let us review and compare the two main concepts of the Number Field we have encountered:

- Written or architectural documents, traditions, myths, partial re-construction and progressive understanding of the past history on the earth point to a Number Wisdom which seems to have flourished, to various degrees, in ancient sacred cultures (Sumerian, Vedic, Chinese, Mayan and specially Egyptian) and was seemingly the basis of coherent and harmonious civilizations.
- The modern Numerical Mathematics based on the Hindu-Arabic number notation which we take for granted but has, unbeknownst to most of us, deeply programmed many of our behaviors and concepts of reality.

The MODERN NOTATION:

-9, -8, -7, -6, -5, -4, -3, -2, -1 **0** 1, 2, 3, 4, 5, 6, 7, 8, 9

For modern cultures, numbers came to be disparate groups of abstractions used to map out and harness the workings of the universe. The invention of zero proved to be a two-edged gift: on one side, it allowed for the phenomenal development of science & technology, but, on the reverse side, the price to pay was a deep alienation from the living universe and therefore from ourselves. The modern notation is a linear, sequential series that satisfies our sense of mental, logical order but lacks multi-dimensionality. As noted in [[◆SG202.1.1](#)], the modern view of numbers is centrifugal: it expands towards the periphery, losing reference to Unity: Zero is the new focus and center point.

The TRADITIONAL NOTATION

1/9, 1/8, 1/7, 1/6, 1/5, 1/4, 1/3, 1/2, **1** 2, 3, 4, 5, 6, 7, 8, 9

For the ancient tradition, numbers were the root of all things because they were perceived as living principles of resonance, fractals of Unity playing out the music of the manifested universe. Numbers were experienced as nodes of consciousness wholly and perpetually interrelating in multi-dimensional patterns of golden-phi harmony. Their immediate and intimate resonance brought together all magnitudes, all time periods, all forms and all beings as One orchestra. They were seen and studied in nature and all aspects of human life because they were the patterns of the interactive web of life and the teachers of harmonic living and cosmic dance. The traditional notation is proportional, relational and resonant-harmonic. The ancient view of numbers is centripetal: 3 - 9 are generated by the “cosmic parents” 1 and 2. It is a vortex path back to center as Origin-Unity.

The question then arise: is there a new Number Field for the emerging paradigm of expanded human consciousness? A new conception that would be inclusive of the two preceding systems and can support human consciousness in a much larger, multi-dimensional context. A timely upgrade to reach a fractal holographic understanding of the Cosmic Presence. A spiral, vortical, holo-musical hyper-map of scale-invariant, phi cascades of frequency ratios and a corresponding updated hiero-iconing number notation that can call upon numbers to be again the loved company of cosmic gods & goddesses they used to be.

Yes, we believe so: $1 + 0$ resolve in PHI

The global human consciousness is co-creating the new Number Field right now. In the midst of the Quantum Plenum Matrix, we are finding again the Cosmic Seed (PHI) out of which all manifestations are drawn and into which they all return, with infinite blessings.

SG202.Ca Conclusion

In this module SG202 about the “Power of Archetypal Numbers”, we have been considering the following:

1. Numbers are fractal modulations of Unity in the continuum of the universe. Specific (sacred) number configurations, with micro/macro scale harmonic coherence, are the cymatic “Nada Brahma” or “Unity-Source” codes patterning the cosmic quantum plasma.

2. Numbers are dynamic powers and living principles of creation.

This module endeavored to personalize numbers i.e. to put a face on numbers, to lift the veil of abstraction and separatedness between our awareness and “numbers”, to open up again a loving, playful, creative affair with numbers, to reveal the living presence of numbers as to their personalities, colors, relationships and their intimate, constant weaving of everything we are, do and take for granted.

We aimed at re-creating, beyond all unpleasant memory of math classes, a warm feeling of familiarity and loving friendship with numbers as integral partners of our spirit nature, our consciousness and our perception of reality. Numbers are a primordial, primeval family! They have identities, past & future histories, and spiritual lessons & functions. Each number is a universe. Numbers can offer multiples levels of wisdom, knowledge and co-creation of harmonious environments for human life & civilization. They weave the primal cosmic matrix.

We ask you: do you feel that you may love numbers a little more, now that they may prove to be friendly company?

3. Numbers are patterns & geometries of relationships.

Numbers are not standing by themselves as separate, monolithic, ego-based entities. This focus-on-the-object-only is the historical conditioning and bias that makes the modern humans blind to the inherent inter-connectedness of the Web of Life and deprives them of the perennial wisdom of communion with the universe.

Numbers are reaching in and out to others numbers, entering into precise and direct dances of couples, groups, clusters, pods, networks, communities, geometries, architectures, scales, series & “canons”... The creative power of numbers is actualized and manifested in these dances, just like we really evolve through relationships, on whichever level we choose to. The true access to understand numbers is to expand out of our ego separation and start again to see ourselves as belonging to harmoniously larger “wholes”... as the Golden Ratio cascades sustain all of life.

4. Numbers are harmonic fields of musical resonance in the cosmic orchestra.

As our minds are progressively re-learning how to couple with our hearts in the dance of this evolving human consciousness, we are increasingly aware of the power of waves & frequencies as fields of resonance in whirling, spiraling, vortexting motions, with time frames of frequency way above and way below the usual clock references we have.

Just like there is no such thing as a separate musical note or a separate person, but interactive patterns and families of manifestation, we can go a step further and say: there is no patterns per se but fields with multi-dimensional layers of resonant overtones, momentarily appearing as events but really only enticing us to let go of the phenomenal manifestations, let go of numbers and knowledge itself... and enter, in celebration, the Unity of Consciousness.

5. Some new synthesis (a new vortical 3D hyper-map of number dynamics) will express the emerging new paradigm of expanded human consciousness and update both the traditional (resonant fractals) and the modern (strings of abstraction) concepts of the Number Field. An expanded understanding of the cosmic science of numbers will harmoniously marry the newly explored Quantum Plenum and the ancient concept of the Cosmic Matrix? Together, we are birthing a larger paradigm of cosmic wisdom, a garden of multi-dimensional harmony.

SG202.Cb Conclusion



Numbers are showing us the magnificent cosmic harmony of Life
preciously hidden in the apparent chaos.

They invite us back into the co-creative Dance of One!
Can you hear their music?

SG202.Cc Online SG School Curriculum: Intro & Intermediate

Sacred Geometry Introductory Level: 8 Modules

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SG 107	Intro VII	The Five Platonic & 13 Archimedean Solids
SG 108	Intro VIII	The Vesica Piscis: Cosmic Womb of Creation

Sacred Geometry Intermediate Level: 8 modules

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SG 202	Interm II	The Power of Archetypal Numbers
SG 203A	Interm IIIA	Sacred Geometry Resurgence in Science - Part 1
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SG 204	Interm IV	PHI in the Human Body, Biology & DNA
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SG 205B	Interm VB	The SG of Nature - Part 2: Animals & Minerals
SG 207	Interm VII	SG in Architecture, Sacred Sites & Green Design

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SG 303	Adv III	Universal Symbols: Primordial Knowledge
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SG 308	Adv VIII	Harmony on Earth: Science & Consciousness of Harmony

Upon completion of each level (Introductory, Intermediate & Advanced), a Certificate of Graduation from the Sedona School of Sacred Geometry will be presented to Certification students.

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Questions: phi@schoolofsacredgeometry.org

SG202.Ce Starwheel Blessing



SW#37. "11 : 11" . www.starwheels.com



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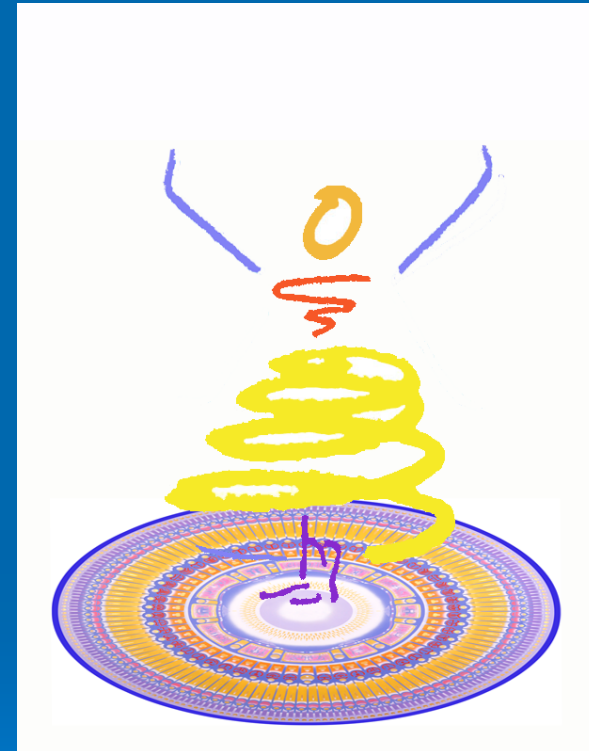
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Φ celebration



On Facebook: Aya Sheevaya
FB Group: Sedona School of Sacred Geometry



SG201.Cg About Aya

A native of France, Aya is a visionary artist and celebration yogi who has dedicated his life to serve humanity and to develop sacred arts education. In his late 20's, Aya realized that his professional life in the French diplomatic service was not fulfilling his heart's desires; he quit everything to go on an extended vision quest. His path took him around the world to visit a variety of sacred sites & cultures and to receive inspiration from many teachers.

In 1985, in Santa Monica, CA, Aya was gifted with a spiritual vision prompting him to create a series of 108 airbrushed neo-mandala paintings: the "StarWheels". The StarWheels, a happy family of vibratory flowers for the Earth, are looking for sacred spaces to be graced with their presence... (www.starwheels.com / www.starwheelmandalas.com)

Moving to Sedona, Arizona, in 1997, Aya has been involved with sacred arts classes & events, mandala creation, Sedona guided tours, labyrinth making and Sacred Geometry teaching. Aya has presented several StarWheel art exhibits, has sponsored community awareness events at the Sedona Library, has developed, in collaboration with Gardens for Humanity, the Peace Garden arboretum at the Sedona Creative Life Center, was a speaker at the Sacred Geometry Conference (Sedona, 2004), co-designed several labyrinth sites (The Lodge at Sedona, Mago's Ranch...), and was on the management team of the Raw Spirit Festival in 2006 - 2008.

Realizing that Sedona was progressively becoming a global spiritual university for many seekers from around the world, Aya founded in 2005 the Sedona School of Sacred Geometry. The school is offering online access to Sacred Geometry PDF modules, with 17 modules completed so far. In the school's website, Aya states: *"We are living at the extraordinary and exciting times of a global transformation to a higher order of human consciousness... Sacred Geometry is the expression and resurrection of our deep innate wisdom, now awakening from a long sleep: seeing again the all-encompassing, fractal-holographic unity of nature, life and spirit... The keyword is HARMONY."* (www.schoolofsacredgeometry.org)

Aya's visionary dream, supported by his non-profit educational organization, the StarWheel Foundation, is the co-creation of an international eco-village "The School of Celebratory Arts" - a green, tropical environment encouraging young people of all nations to develop their creative consciousness and thus contribute to a new, spirited, life-respecting global civilization on Earth. (www.starwheelfoundation.org).

Since 2012, Aya is dancing the body divine, after his re-discovery of Yoga, Partner Yoga and AcroYoga. Aya is currently the AcroYoga.org Jam coordinator for Sedona and a teacher of yoga swing asanas.

Blessings in Anjali!