

THE SCHOOL OF PYTHAGORAS

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From *The Universe of Numbers**

Former Research Librarian Ruth Phelps introduces readers to Pythagorean number theory and its mystical significance in this excerpt from her work on mathematics and mysticism.

Pythagoras wrote no works that have come down to us; hence, we know Pythagorean theory and symbolism from three sources. First, the writings of his followers, such as Nicomachus's *Introduction to Arithmetic*, give the system in a form closest to the original taught in the Pythagorean group. Second, Pythagorean ideas are found in the works of individuals such as Plato, who was greatly influenced by followers of Pythagoras, but who modified those concepts according to his own understanding. Finally, some understanding of the theories may be gained from writers like Aristotle who quote or summarize Pythagorean thought but who disagree with them.

Pythagoras was born in 572 BCE, but the biography of him by Diogenes Laertius was not written until the third century CE. Iamblichus's *Life of Pythagoras* was written about 300 CE; therefore, much of the life of Pythagoras is unknown or legendary.

The knowledge which he passed on to his followers came at least partly from the Egyptians and Babylonians, whether or not his travels to those countries were factual. He was also influenced by the Greek Orphics. Neugebauer has shown that the Babylonians, for example, knew of the right angle triangle with which the Pythagorean theorem is concerned.



The Pleiades: A Universe of Numbers. From the Rosicrucian Archives

Number theory was fundamental to the teachings of the Pythagorean Community at Crotona. According to their ideas, number is the essence of the created universe. Number is Being. The cosmos was created and ordered according to the divine, ideal plan or pattern. Number is basic to the nature of the divine pattern and its manifestation in the actual world. Because it is the basis of creation, it is also the fundamental nature of the law of correspondences. Number, creation, cosmology, and music are all related.

The monad or unit is the first principle of all things and is the beginning of number. The divine plane or the One, and the human, worldly plane or the many are interrelated. The One becomes the many; the many are united again with the One. This is symbolized by the tetraktys, which says that $1 + 2 + 3 + 4 = 10$, and the ten returns to the unit. This

*Ruth Phelps, *The Universe of Numbers*, (Chapter 3) (San Jose: Rosicrucian Order, AMORC, 1984).

relationship between Unity and multiplicity is paralleled by the fall from the cosmic world of light into darkness, and by the ideal and the material realms. To the mystic, the cycle includes the reunion with the Cosmic, divine realm.

The monad is the beginning; from it comes the dyad or two, which corresponds to matter and to the undetermined. Numbers are derived from the dyad. In the series of numbers, each arises from its predecessor. In the series of point, line, plane figure, and sensible body also, each is derived from the preceding one. Sensible bodies are made up of the four elements—fire, air, water, and earth—which constitute the universe, which is an organism.

One is not a number, but the origin of number. Two differs from it by one unit; it is therefore regarded as other, and the term *other* is used properly only of the two. The one is then represented as the same in contrast to the two or other.

Number may be regarded as even and odd, two being the first even number, three the first odd one. Odd numbers were considered as masculine, even as feminine, or to put this in terms of polarity, the odd are positive and the even negative. The monad is both even and odd because when added to numbers it makes odd numbers even and vice versa. The monad and dyad symbolize the ordered and disordered, the definite and indefinite, or what is usually called the limited and unlimited.

The duality of limited and unlimited is the basis of a series of ten pairs or opposites:

Limited	Unlimited
Odd	Even
Unity	Plurality or multiplicity
Right	Left
Male	Female
Resting	Moving
Straight	Crooked
Light	Darkness
Good	Evil or bad
Square	Oblong

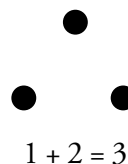
These are different expressions of the two basic principles from which all things originate and which are in all things.

In Pythagorean thought, the unit or one corresponds to the point, and does not have interval or dimension. Two is related to the line; three to the triangle which has three points, sides, or angles. In this series, four corresponds to the pyramid having a triangular base, because it has four points. The point becomes a line, the line a square, and the square a cube, which gives another series in which the first solid is the cube.

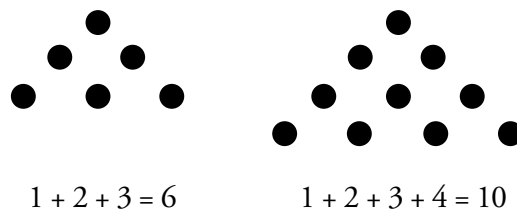
There are, therefore, the following correspondences:

1. Point	Point	Point
2. Line	Line	Line
3. Plane figure	Triangle	Square
4. Sensible bodies	Pyramid with triangular base	Cube

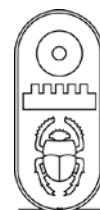
Numbers were represented by the Greeks by letters of the alphabet or by a series of points or alphas, the first letter of the alphabet, which represents one. Thus, one point or alpha represented one, two meant two, etc. The monad is the beginning of number, while the first interval is two. The triangle is the most elementary plane figure represented by:



If we add a unit each time, we have a series of what the Pythagoreans called triangular numbers. The next figures are:



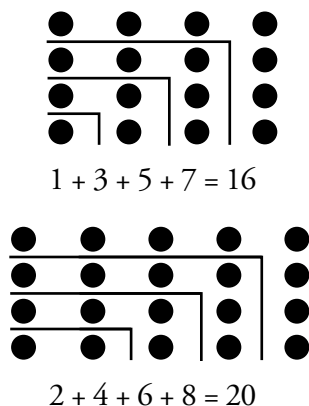
The figure on the right is the famous tetraktys. However, the series was carried



further, the next being $1 + 2 + 3 + 4 + 5 = 15$. Each total number in the series was called a triangular number, 3, 6, 10, 15, etc.

There were other figures called gnomons, the simplest of which are the square and rectangular numbers and figures.

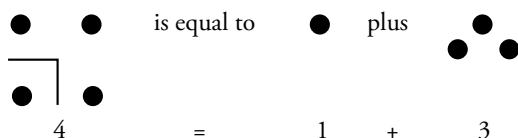
Squares are based on one, rectangles on two, thus:



The square beginning with one remains essentially the same figure, while the rectangle or oblong by the addition of each gnomon is different or other. Hence, one corresponds to sameness, two to otherness.

Square numbers are 1, 4 or $1 + 3$, 9 or $4 + 5$, 16 or $9 + 7$. Rectangular numbers are 2, 6 or $4 + 2$, 12 or $6 + 6$, 20 or $8 + 12$. This series, too, may be carried further. Other series are based on pentagons, hexagons, heptagons, and the like, and these may be found in Nicomachus and in the book of Greek mathematics listed in the bibliography at the end of this article.

There are certain relationships between such numbers. For instance, each square number is equal to the corresponding triangular number and the triangular number preceding it. For example:



The tetraktys and decad symbolize the relationship between the One and the many, the pattern of creation, the essence of

Being. In a sense ten is perfect, but three is also a perfect number because it contains the beginning, middle, and end.

More strictly speaking, perfect numbers are those which equal the sum of their parts. Half of six is 3, one-third is 2, and one-sixth is 1, and $3 + 2 + 1 = 6$. The next perfect number is 28, which is made up of its half 14, fourth 7, seventh 4, fourteenth 2, and twenty-eighth 1. Numbers are greater than perfect when their parts add up to more than the number, and they are deficient when the sum is less than the number.

The former Emperor of the Rosicrucian Order, Ralph M. Lewis, wrote, "Pythagoras also assigned *moral qualities* to numbers. These meanings were not understood by the uninitiated, and, taken literally or without further qualification, they often seemed ludicrous. That the Pythagoreans had a more extensive and lucid meaning is known only to those schools of esotericism as the Rosicrucians, who are traditional affiliates of the ancient Pythagorean School at Crotona. Pythagoras regarded the numeral one as the source of all numerals. It was the point of beginning, the self-contained, the absolute. It likewise, therefore, depicted the reason, the *mind cause*. Two stood for opinion. Four represented justice and stability of character. Five represented marriage, because it consisted of the unity of the odd and even numbers two and *three*. Five was also held to be the key to the laws of color. The sphere was completion, that without beginning or end." Seven was said to represent opportunity, but it also symbolized Athena, the goddess of wisdom. The Pythagoreans used the five-pointed star to mean health.

The cosmology of the later Pythagoreans held that the universe is spherical and finite. Outside it was a void. At the center of the universe was a central fire, and next was a counter-Earth which cannot be seen from Earth because the side of the Earth on which we live is turned away from it. After the counter-Earth came the planets in this order:

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Earth, the Moon, the Sun, Mercury, Venus, Mars, Jupiter, Saturn, and the sphere of the fixed stars. This makes ten spheres revolving around the central fire. The motion of these bodies resulted in the harmonious music of the spheres.

The universe came into being from the central fire or the Hearth of the Universe. It was the original unit or monad. The fire is limited; from the unlimited void outside the universe comes the breath which the universe breathes, and which separates things keeping them distinct. Hence, there is a duality consisting of the central fire or unit and the void.

The Pythagorean teachings also included music and harmony. They noted the correspondence between numbers in musical harmony and the universe, or to put it as Aristotle did, "The whole Heaven or visible universe is a musical scale or number." It is possible that the Pythagoreans had a concept such as the keyboards used by Robert Fludd, which will be taken up later, or the present day Rosicrucian Cosmic Keyboard.

Systems such as the Pythagorean are a means of representing humanity's understanding of order. The study of the sciences, according to the Pythagoreans, and the study of the theory of numbers which is the foundation of creation, is an aid in achieving harmony between the soul and that on which one meditates. It is, therefore, a means of becoming attuned with the Cosmos and God. The One becomes the many, the many return to the One, but the many also exhibit the archetypal order and pattern on a mundane level.

The influence of the Pythagorean Community extended over a long period of time. Greek philosophers such as Plato, the followers of Democritus, and even Parmenides and Aristotle who disagreed with them, were influenced by their ideas. Arabic thought shows Pythagorean influences. Mystics such as Fludd, Vaughan, and Heydon based their philosophy to some extent on Pythagorean ideas, as did scientists such as Copernicus, Kepler, Galileo, and Newton.



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