

**Pythagoras - Boethius - Euclid, Three Pillars of Ancient  
Masonry\***

**"Geometry or Masonry, originally synonymous terms"**

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Where wast thou when I laid the foundations of the earth?  
Declare, if thou hast the understanding.  
Who determined the measures thereof, if thou knowest?  
Or who stretched the line upon it?  
Whereupon were the foundations thereof fastened?  
Or who laid the corner-stone thereof;  
When the morning stars sang together,  
And all the sons of God shouted for joy?

Job 38: 4-7

It must seem to some of you that this is becoming too much of a good thing. Again, I stand before you to read a paper. As Immediate Past Sovereign Master, one is supposed to retire from the chair gracefully and fade into the distance. However, it is always an honour to accept the invitation of the Sovereign Master to participate once again by sharing a few ideas and expressing some opinions that, hopefully, will provide something for you to think about.

**I: Geometry, or Masonry, originally synonymous terms –**

*"Masonry . . . is an art founded on the principles of Geometry."*

Freemasonry's oldest surviving document, The Regius Manuscript, ca. 1390, begins with these lines:

*Hic incipient Constitutiones artis Gemetriae secundum Euclidem.*  
[Here begins the constitutions of the art of geometry according to Euclid.]

This honest craft of good masonry  
Was established and made in this manner:  
By imitation of these teachers together;  
At the prayers of these lords,  
they demonstrated geometry,  
And gave it the name of Masonry,  
For the most honest craft of all. <sup>1</sup>

In the legendary history recounted by Dr. James Anderson (ca.1680-1739) in *The Constitutions of the Right Worshipful Fraternity of Accepted Free Masons*, first published in 1723, we are informed that:

Adam, our first Parent, created after the Image of God, the great Architect of the Universe, must have had the Liberal Sciences, particularly Geometry, written on his Heart; for even since the Fall, we find the Principles of it in the Hearts of his Offspring, and which, in process of time, have been drawn forth into a convenient Method of Propositions, by observing the Laws of Proportion taken from Mechanism: So that as the Mechanical Arts gave Occasion to the Learned to reduce the Elements of Geometry into Method, this noble Science thus reduc'd, is the Foundation of all those Arts, (particularly of Masonry and Architecture) and the Rule by which they are conducted and perform'd. <sup>2</sup>

Dr. Anderson then goes on to trace the Art of Masonry or Geometry from Adam to Cain to Noah and his three sons, thence to Ishmael, Isaac, to his sons Esau and Jacob, to the Patriarchs, to Moses, and on to Solomon, "King of Israel, the Prince of Peace and Architecture."

In *Masonry Dissected* an exposure published by Samuel Prichard - 'late Member of a Constituted Lodge' - in London in 1730, and claiming to be 'an Impartial Account of their Regular Proceeding in Initiating their New Members in the whole Three degrees of Masonry,' we read:

The original Institution of Masonry consisteth on the Foundation of the Liberal Arts and Sciences; but more especially on the Fifth, viz., Geometry. For at the building of the Tower of Babel, the Art and Mystery of Masonry was first introduc'd, and from thence handed down by Euclid, a worthy and excellent Mathematician of the Egyptians, and he communicated it to Hiram, the Master-Mason concern'd in the building of Solomon's Temple in Jerusalem .... <sup>3</sup>

Fellow-Craft's Degree

**Q.** *Are you a Fellow-Craft?*

**A.** *I am.*

**Q.** *Why was you made a Fellow-Craft?*

**A.** *For the sake of the Letter G.*

**Q.** *What does that G denote?*

**A.** *Geometry, or the fifth Science.*

At a later point in the ceremony of the Fellow-Craft Degree, the candidate is required to "Repeat the Letter G."

*By letters Four and Science Five  
This G aright doth stand,  
In a due Art and Proportion  
You have your Answer, Friend.*

*Four letters are Boaz. Fifth Science Geometry.*

The lectures given in former days were much expanded and more explicit, which the following quotations will illustrate.

In his explanation of 'the winding staircase that led to the middle chamber, where Solomon had ordered all the gifts to be conferred,' William Preston (1742-1818) informed the candidate:

On the Fifth step, the Geometrician displayed the superiority of his science; he treated on the powers, and properties of magnitude in general, where length, breadth, and thickness were considered. He taught the architect to construct his plans; the general to arrange his troops; the engineer to mark out ground for encampments; the geographer to give us the dimensions of the world, delineate the extent of seas, and specify the divisions of Empires, kingdoms, and provinces; and the astronomer to make his observations, and fix the duration of times and seasons. In short he proved Geometry to be the foundation of architecture, and the root of mathematics. <sup>4</sup>

There is some truth in the iconoclastic definition of a 'geographer' included by Ambrose Bierce (1842-1914) in *The Cynic's Word Book*: A chap who can tell you offhand the difference between the outside of the world and the inside. <sup>5</sup>

In *A Dictionary of Symbolical Masonry*, published in 1853, Dr. George Oliver (1782-1867) asserted that, "Among the mathematical sciences geometry is the one which has the most especial reference to architecture, and we can, therefore, under the name of geometry, understand the whole art of Freemasonry." <sup>6</sup>

## **II: God, the Grand Geometrician of the Universe**

Of old hast thou laid the foundations of the earth:  
and the heavens are the work of thy hands.

[Psalm 102: 25 KJV]

When the Fellow-Craft is asked to explain the Letter **G**, he replies,

Geometry, the fifth science; but more particularly to the sacred name of the Deity, to whom we should all, from the youngest Entered Apprentice who stands in the northeast corner, to the Worshipful Master who presides in the east, with reverence most devoutly and humbly bow. <sup>7</sup>

The allegorical reference to God, the Architect and Creator of heaven and earth in this passage from the *Book of Job* is illustrated in the well-known painting by William Blake (1737-1827) in which God is depicted holding the compasses:

Then the Lord answered Job out of the tempest:  
Where were you when I laid the earth's foundations?  
Tell me if you know and understand.  
Who settled its dimensions? Surely you should know.  
Who stretched his measuring line over it?  
On what do its supporting pillars rest?  
Who set its corner-stone in place,  
when the morning stars sang together  
and all the sons of God shouted aloud?

[Job 38: 4-7 New English Bible]

### **III: Geometry teacheth a man the mett and measure of earth and all other things**

Geometry is the study of the properties, measurements, and relations of lines, angles, triangles, surfaces, and solids. In the ancient world, the three great exponents of the science were 1) *Pythagoras of Samos* ( ca. 569- 475 BCE), 2) *Euclid of Alexandria* (ca. 330-260 BCE), and 3) *Boethius of Rome* (480-524 CE).

The constraint of time allows only brief reference to each of these great mathematicians. We will not concern ourselves with the biographical details, which, while they may be interesting, are at best sketchy or conjectural. Rather, we will review briefly their more important teachings, the dowry of ideas they bequeathed to Western Civilization in philosophy, mathematics, and science.

**1) Pythagoras**, 'the first genius and the founder of Greek mathematics,' taught that nature is commanded by numbers. <sup>8</sup> He it was that coined the word, 'philosopher' - a lover of wisdom.

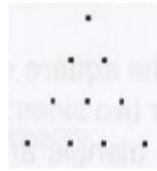
In summary Pythagoras taught:

- 1) that at its deepest level, reality is mathematical in nature,
- 2) that philosophy can be used for spiritual purification,
- 3) that the soul can rise to union with the divine,
- 4) that certain symbols have a mystical significance, and
- 5) that all brothers of the order should observe strict loyalty and secrecy.

In these statements of belief, Freemasons find resonance. When in his Lecture to the Entered Apprentice, the Junior Warden informs the candidate that, "The Pythagorean system seems to have been established on a similar plan" we understand what is meant.

The philosophical school of Pythagoras was a series of initiations comprised of three degrees: *Mathematicus*, *Theoreticus*, and *Electus*. The study of geometry, music, and astronomy were basic essentials to an understanding of God, nature, and man. To Pythagoras, "Geometry is knowledge of the eternally existent." In simple terms, the dot or point symbolized the power of the number **1**, the line the power of the number **2**, the surface the power of the number **3**, and the solid the power of the number 4. The *Tetractys* formed of ten dots arranged in four rows as an

equilateral triangle was a symbol of universal nature. [1 + 2 + 3 + 4 = 10] On it the Pythagoreans swore an oath: "By him who gave to our soul the tetractys which hath the foundation and root of ever-springing nature." Graphically, the numerals **1** and **0** are pillar and circle - symbolically male and female.



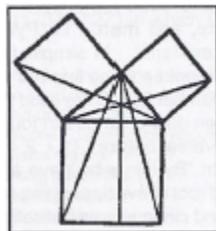
The Monad is the Father Embracing all that will be.  
 The *Dyad*, the form of Difference, and Mother of Multiplicity.  
 The *Triad*, the first actual number, with Beginning, End, and Mean.  
 The *Tetrad* completes the arrangement of the Soul and what is seen.  
 Ancient Tetractys, Pythagoras' vision divine,  
 The *Decad*, a perfect Limit, and Cosmic Paradigm.

Robert Apatow

2) **Euclid**, "whose name would for two thousand years provide geometry with a synonym." In the twelve books of *Elements* he collected in logical order the accumulated geometrical knowledge of the Greeks. Each 'problem' was stated as proposition, diagrammatic illustration, proof, and conclusion. The figures needed only ruler and compasses to 'prove' the propositions. The historian Will Durant gives us this appraisal: "The total result was a mathematical architecture that rivalled the Parthenon as a symbol of the Greek mind. ... One must go to the Bible to find a rival for it in enduring influence."<sup>9</sup>

A motto of the Pythagorean brotherhood was 'A diagram and a step, not a diagram and a penny' - a 'step' being a step in knowledge. When a student asked Euclid, "What shall I profit from learning geometry?" - a question posed by many a schoolboy even today- he turned to his slave and said with contempt, "He wants to profit from learning - give him a penny."

Considered to be the key to philosophic mathematics, to Freemasons, the *47<sup>th</sup> Proposition of the First Book of Euclid* is of the greatest significance. While included by Euclid in his *Elements*, it is properly attributed to Pythagoras. It is the figure in the jewel worn by a Past Master, and as such may represent the three Grand Masters who bore sway at the building of the Temple - Solomon, Hiram the king, and Hiram the Master.



In a right-angled triangle, the square on the hypotenuse is equal to the sum of the squares on the other two sides:  $a^2 + b^2 = c^2$ . The proportions of the three sides of a right-angled triangle

are perpendicular 3 - base 4 - hypotenuse 5. When the candidate in the first degree is instructed to approach the Altar by three steps, 'the first of about fifteen inches, the second of twelve, and the third of nine,' the steps are the proportions of a right-angled triangle.

The three great pillars - *Wisdom, Strength, and Beauty* - are symbols of Intelligence, Matter, and Cosmos or beauty and order in the world itself. Plato further explains them as Wisdom, the Idea- Exemplar- Father; Strength, the Mother - the Nurse - the Place and Receptacle of Generation; and Beauty, the Offspring and the Production. Thus, the perpendicular is masculine, the base is feminine, and the hypotenuse is the offspring.

**3) Boethius**, Bertrand Russell, (1872-1970) the English philosopher and mathematician, said of him, "He would have been remarkable in any age; in the age in which he lived, he is utterly amazing."

Statesman, philosopher, and mathematician, Boethius wrote extensively on the science of music. His *De Institutione Musica* defined three kinds of music: the first, the music of the universe; the second, human music; the third, instrumental music. He also went on to describe three classes of musician: one class has to do with instruments, another invents songs, a third judges the work of instruments and the song.

Every art, and every discipline as well, has by nature a more honorable character than a handicraft, which is produced by the hand and labor of a craftsman. For it is far greater and nobler to know what someone does than to accomplish oneself what someone else knows, for physical skill obeys like a handmaid while reason rules like a mistress. And unless the hand does what the mind sanctions, it is vain. How much more admirable then, is the science of music in apprehending by reason than in accomplishing by work and deed!"<sup>10</sup>

Or expressed in familiar Masonic language - 'we are not operative but speculative.'

His magnum opus, *De consolation philosophiae* (Consolation of Philosophy) was written in prison. In conversation with Dame Philosophy, he considered the questions of the nature of good and evil, of fortune, chance, or freedom, and of the divine foreknowledge. Daniel Boorstin observed that, "After the *Latin Bible*, his was perhaps the most widely read book of the European Middle Ages."<sup>11</sup>

#### **IV: ... the study of moral geometry ...**

Mathematical studies are ladders and bridges to the divine because they share a perfection and beauty that is true of the divine but lacking in the physical world. . . . Therefore, the meditation upon and comprehension of mathematical Ideas allows the soul to enter into the ideas as a genuine

mandata, awakening the energy of the soul and preparing it for the vision of true reality.<sup>12</sup>

In a passage of Old Testament scripture familiar to all Installed Masters, the Hebrew prophet Amos records this vision of the Lord God:

This was what the Lord showed me: there was a man standing by a wall with a plumb-line in his hand. The Lord said to me: 'What do you see, Amos?' 'A plumb-line', I answered, and the Lord said, 'I am setting a plumb-line to the heart of my people Israel; never again will I pass them by.'

[Amos 7: 7-8, New English Bible]

To a contemplative Freemason, the infallible plumb-line is applied to every thought, word, and deed. Today, plumb-lines in the form of tassels hang in the four corners of every Masonic Temple, and symbolically represent the Four Cardinal Virtues: Temperance, Fortitude, Prudence, and Justice. The Greek philosophers Plato and Aristotle considered the cardinal virtues to be four sides of a perfectly symmetrical character, and the man who possessed them could stand foursquare to all the winds that blow.<sup>13</sup>

"In their ethical practices, the Pythagoreans were famous for their mutual friendship, unselfishness, and honesty." These three Freemasons espouse as our fundamental principles: *Brotherly Love, Relief, and Truth*.

Pythagoras taught that friendship and nearest perfect of all relationships. He declared that in Nature there was a friendship of all for all; of gods for men; of doctrines one for another; of the soul for the body; of the rational part for the irrational part; of philosophy for its theory; of men for one another; of countrymen for one another; that friendship also existed between strangers, between a man and his wife, his children, and his servants. All bonds without friendship were shackles and there was no virtue in their maintenance."<sup>14</sup>

Freemasons are taught the three great social treasures: *fraternity, liberty, and equality* - "to view in every son of Adam, a brother of the dust."

Out of the simplest lines and figures the whole secret of corporeal nature emerges. Just as the Trinity of the circle (centre, radius, and circumference) shows the Divine Trinity, so the Divine Trinity's creative works appear in the trinity of the equilateral triangle . . . . The right angle signifies the constant and immutable operation of all natural law ...  $3 + 4 + 5 = 12$ , which is the nature of the dodecahedron. Hence, just as numbers are implicitly contained in numbers, lines in lines, and figures in figures, so all are all in all. ... (From the right-angled scalene proceeds the genesis of all mundane bodies and the universe.<sup>15</sup>

Pythagoras said: "Every man has been made by God in order to acquire knowledge and contemplate." By a study of Moral Geometry the Freemason extends his researches into the hidden mysteries of nature and science and makes a daily advancement in Masonic knowledge.

"This course, if you observe, you shall know then  
The constitution both of gods and men.  
The due extent of all things you shall see,  
And nature to her uniformity."

*The Golden Verses of Pythagoras  
Iamblichus - Exhortation to Philosophy*

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- <sup>1</sup> Hunter, F.M. nd. Regius Manuscript The Earliest Masonic Document. Kila, MT: Kessinger Publ. Co., p. 46.
- <sup>2</sup> Anonymous. 1924. Little Masonic Library. Vol. I. Anderson's Constitutions of 1723. Richmond, VA: Macoy Puhl. & Masonic Supply Co., Inc., pp. 184-185.
- <sup>3</sup> Knoop, J.H. 1975. The Early Masonic Catechisms. London: Quatour Coronati Lodge No. 2076, 2nd ed., pp. 158-159.
- <sup>4</sup> Dyer, C. F. W. 1987. William Preston and his works. Shepperton: Lewis Masonic, p. 251.
- <sup>5</sup> Bierce, A. 1996. The Devil's Dictionary. London: Wordsworth Editions Ltd., p. 102. 6
- <sup>6</sup> Oliver, G. 2000. A Dictionary of Symbolical Masonry. Reprinted from New York: Gramercy Books, Random House Value Publ., Inc. p. 585.
- <sup>7</sup> Duncan, M.C. n.d. Duncan's Masonic Ritual and Monitor. New York: David McKay Co., Inc., p. 85.
- <sup>8</sup> Bronoswski, J. 1981. The Ascent of Man. London: Macdonald Futura Publ., p. 97.
- <sup>9</sup> Durant, W. 1939. The Life of Greece- The Story of Civilization – Part II, New York: Simon and Shuster, pp. 627-628.
- <sup>10</sup> Strunk, O. 1959. Source Readings in Music History. I. Antiquity and the Middle Ages. III. Music as a Liberal Art, Art. 11. Boethius. New York: W. Norton & Co., Inc., pp. 84-86.
- <sup>11</sup> Boorstin, D.J. 1992. The Creators: A History of the Heroes of the Imagination. New York: Random House, Inc., p. 236.
- <sup>12</sup> Apatow, R. 1999. The Tetractys: The Cosmic Paradigm of the Ancient Pythagoreans. Parabola, The Magazine of Myth and Tradition vol. 24, no. 3 (Fall 1999).
- <sup>13</sup> Stalker, J. 1902. The Seven Cardinal Virtues. New York: Dodd, Mead & Co., p. 2.
- <sup>14</sup> Hall, M.P. 1988. The Secret Teachings of all Ages. Los Angeles, CA: The Philosophical Res. Soc., Inc., p. LXIX.
- <sup>15</sup> Kircher, A. n.d. Oedipus Aegyptiacus (1652), quoted in Hall, op. cit. The Forty-seventh Proposition of Euclid, facing p. LXIX.