

# Sophia et Sapiens

## PYTHAGOREAN :::: SOURCES :: AND : FRAGMENTS.

*"De Pythagoreis sine lumine, ne loquitor..."*

### Selected fragments from THE PYTHAGOREAN SOURCE BOOK AND LIBRARY

Translation & compilation by Kenneth Sylvan Guthrie (orig. 1920). Phanes Press, Grand Rapids, Michigan, 1987, 1988.

---

#### [1] FRAGMENTS FROM THE DOXOGRAPHERS

**i. 9; Dox.307** *The followers of Thales and Pythagoras and the Stoics held that matter is variable and changeable and transformable and is in state of flux, the whole through the whole. [p.308]*

**i.10; Dox.309** *Pythagoras asserted that the so-called forms and ideas exist in numbers and their harmonies, and in what are geometrical objects, apart from bodies. [p.309]*

**i.20; Dox.318** *Pythagoras said that time is the sphere which surrounds the world.*

**i.21; Dox.318** *Pythagoras, Plato: Motion is a certain otherness or difference in matter.*

**ii.6; Dox.334** *Pythagoras: The universe is made from five solid figures which are also called mathematical; of these he says that earth has risen from the cube, fire from the pyramid, air from the octahedron, and water from the icosahedron, and the sphere of the All from the dodecahedron.*

**ii.22; Dox.352** *The Pythagoreans: the sun is spherical.*

**ii.5. Dox.357.***Pythagoras: The moon is a mirror-like body. [p.309]*

**Aetius, Plac. iv. 2; Dox. 386.***Pythagoras holds that number moves itself, and he takes number as an equivalent for intelligence. [p.310]*

**iv.14;Dox.405** *The followers of Pythagoras and of the mathematicians on reflections of vision: for vision moves directly as it were against the bronze (of a mirror) and meeting with a firm, smooth surface, it is turned and bent back on itself meeting some such experience as when the arm is extended and then bent back at the shoulder. [p.311]*

**v.4;Dox 417** Pythagoras, Plato, Aristotle: The power of seed is immaterial, like intelligence, the moving power, but the matter that is poured forth is material. [p.311]

**Hippol., Phil. 2. Dox. 355**...[ According to Pythagoras]... Number is the first principle, a thing which is undefined, incomprehensible, having in itself all numbers which could reach infinity in amount. And the first principle of numbers is in substance the first Monad, which is a male monad, begetting as a father all other numbers. Secondly, the Dyad is a female number, and the same is called by the arithmeticians even. Thirdly, the Triad is a male number; this the arithmeticians have been wont to call odd. Finally, the Tetrad is a female number, and the same is called even because it is female. .... Pythagoras said this sacred Tektractys is: **'the spring having the roots of ever-flowing nature.'**

.... the four parts of the Decad, this perfect number, are called number, monad, power and cube. And the interweavings and minglings of these in the origin of growth are what naturally completes nascent number; for when a power of a power; and a cube is multiplied on a cube, it is the power of a cube; and when a cube is multiplied on a cube, the cube of a cube; thus all numbers, from which arise the genesis of what arises, are seven: number, monad, power, cube, power of a power, power of a cube, and cube of a cube. [p.312]

**[Contact with Zoroaster]** ...and he says the universe exists in accordance with musical harmony, so the sun also makes an harmonious period. And concerning the things that arise from the earth and the universe they say Zaratas spoke as follows: `There are two divinities, one of the heavens and the other of the earth; the one of earth produces things from the earth, and it is water; and the divinity of the heavens is fire with a portion of air, warm, and cold; wherefore he says that none of these things will destroy or even pollute the soul, for these are the essence of all things. [p.313]

**Pythagoras perished** in a conflagration with his disciples in Croton in Italy. And it was the custom when one became a disciple to burn one's property and leave one's money under a seal with Pythagoras, and one remained in silence sometimes three years, and sometimes five years, and studied.

**[Other Contacts]** ..and immediately on being released from this one mingled with the others and continued as a disciple and made one's home with them; otherwise one took one's money and was sent off. The esoteric class were called Pythagoreans, and the others Pythagoristians. And those disciples who escaped the conflagration were Lysis and Archippus and Zalmoxis the slave of Pythagoras who is said to have taught the Pythagorean philosophy to the Druids among the Celts. It is said that Pythagoras learned numbers and measures from the Egyptians. [p.313]

---

## [2] THE FRAGMENTS OF PHILOLAUS

**1. (Stobaeus, 21. 7; Diogenes Laertius, 8. 85).** The world's nature is a harmonious compound of Limited and Unlimited elements; similar is the totality of the world in itself, and of all it contains. [p. 168]

**4 (Nicomachus, Arith. Intr., 2. 509) . ....** it would not be possible that any of the things that exist

and that are known to us, should arrive to our knowledge if this Being was not the internal foundation of principles of which the world was founded - that is, of the Limited and Unlimited elements. Now since these principles are not mutually similar, nor of similar nature, it would be impossible that the order of the world should have been formed by them in any manner whatever unless harmony had intervened. Of course, the things that were similar, and of similar nature, did not need harmony; but the dissimilar things, which have neither a similar nature, nor an equivalent function. must be organized by harmony, if they are to take their place in the connected totality of the world.

**5** The extent of the Harmony [octave] is a fourth, plus a fifth. The fifth is greater than the fourth by 8:9, for from the lowest string to the second lowest there is a fourth; and from to the higher a fifth; but from this to the next, or third string, a fourth; and from this third string to the lowest, a fifth. The interval between the second lowest and the third [from the bottom] is 8:9 [a tone]; the interval of the fourth is 3:4, that of the fifth, 2:3, that of the octave, 1:2. Thus the Harmony contains five whole tones plus two semitones; the fifth, three tones, plus one semitone; the fourth, two wholes, plus one semitone. [p.168]

**6 (Boethius, De. Inst. Mus., 3.5).** Nevertheless, the Pythagorean Philolaus has tried to divide the tone otherwise; his tone's starting-point is the first uneven number which forms a cube, and you know that the first uneven number was an object of veneration among these Pythagoreans. Now the first odd number is three; thrice three is nine, and nine times three is 27, which differs from the number 24 by the interval of one tone, and differs from it by this very number 3. Indeed, 3 is one eighth of 24, and this eighth part. of 24, added to 24 itself. produces 27, the cube of 3. Philolaus divides this number 27 in two parts, the one greater than half, which he calls apotome, the other one smaller than half he calls sharp, but which latterly has become known as a minor half-tone. He supposes that this sharp contain thirteen unities, because 13 is the difference between 256 and 243, and that this same number is the sum of 9, 3, and unity, in which unity plays the part of the point, 3 the odd first line, and 9 of the first odd square. After having, for these reasons, expressed by 13 the sharp, which is called a semitone, out of 14 unities he forms the other part of the number 27, which he calls apotome, and as the difference between 13 and 14 is the unity, he insists that the unity forms a comma, and that 27 unities form an entire tone.

**7 (Boethius. De. Inst. Mus., 3. 8).** These are the definitions that Philolaus has given of these intervals, and of still smaller intervals. The comma, says he, in the interval whose eight-ninths relation exceeds the sum of two sharps, namely, the sum of two semitones. The schisma is half the comma, the diaschisma is half the sharp, namely, of the minor semitone.

**8 (Claudianus Mamertus, De Statu Animæ, 2. 3).** Before treating of the substance of the soul, Philolaus, according to geometrical principles, treats of music, arithmetic, measures, weights, and numbers, insisting that these are the principles which support the existence of the universe. [p. 169]

**9 (Nicomachus, Arithm. Intr., 2. p. 72).** Some, in this following Philolaus, think that this kind of proportion is called harmonic, because it has the greatest analogy with what is called geometrical harmony; which is the cube, because all its dimensions are mutually equal, and consequently in perfect harmony. Indeed this proportion is revealed in all kinds of cubes which

always have 12 sides, 8 angles, and 6 surfaces. [p.169]

**B. (Cassidorus, Exp. in Ps., p. 36).** The number 8, which the arithmeticians call the first actual cube, has been given by the Pythagorean Philolaus the name of geometrical harmony, because he thinks he recognizes in it all the harmonic relations. [p. 169]

**10A. (Stobæus, Eclog. Physic., 1. 15. 7. p.360).** The world is single and it came into being from the center outwards. Starting from this center, the top is entirely identical to the base; still you might say that what is above the center is opposed to what is below it; for the base, lowest point would be the center, as for the top, the highest point would still be the center; and likewise for other parts; in fact, in respect to the center, each one of the opposite points is identical, unless the whole be moved.

**B. (Stobæus, Eclog. Physic., 1. 21. 1. p.468).** The prime composite, the One placed in the center of the sphere, is called Hestia. [p.170]

---

### [3] THE FRAGMENTS OF ARCHYTAS.

**".....The first who methodically applied the principles of mathematics to mechanics: who imparted an organic motion to a geometric figure, by the section of the semi-cylinder seeking two means that would be proportional, in order to double the cube." [p.178]**

"Archytas of Tarentum, son of Mnesagoras, or Hestius, according to Aristoxenus, also a Pythagorean ... (an alleged contemporary/communicator with Plato). ... With the exception of the mathematical fragments and a few others, the fragments of Archytas are not considered genuine..... [p.177]

(cf., Sir Thomas Heath, **A History of Greek Mathematics**, Vol. 1., 246-49., and also Evans. G. Valens, **The Number of Things**, Methuen & Co. Ltd, London, 1965.)

---

### [4] METAPHYSICAL FRAGMENTS

**1. There are necessarily two principles of beings: the one contains the series of beings organized, and finished; the other, contains unordered and unfinished beings. That one which is susceptible of being expressed, but speech, and which can be explained, embraces both beings, and determines and organizes the non-being.**

*For every time that it approaches the things of becoming, it orders them, and measures them, and makes them participate in the essence and form of the universe. On the contrary, the series of beings which escapes speech and reason, injures ordered things, and destroys those which aspire*

*to essence and being; whenever it approaches them, it assimilates them to its own nature.*

*But since there are two principles of things of an opposite character, the one the principle of good, and the other the principle of evil, there are therefor also two reasons, the one of beneficent nature, the other of maleficent nature.*

*That is why the things that owe existence to art, and also those which owe it to nature, must above all participate in these two principles: form and substance.*

*The form is the cause of essence; substance is the substrate which receives the form. Neither can substance alone participate in form, by itself; nor can form by itself apply itself to substance; there must therefore exist another cause which moves the substance of things, and forms them. This cause is primary, as regards substance, and the most excellent of all. Its most suitable name is God.*

*There are therefore three principles; the substance is the matter, the moved; the essence is what you might call the art, and that to which the substance is brought by the mover. But since the mover contains forces which are self-contrary, those of simple bodies, and as the contraries are in need of a principle harmonizing and unifying them, it must necessarily receive its efficacious virtues and proportions from numbers, and all that is manifested in numbers and geometric forms, virtues and proportions capable of binding and uniting into form the contraries that exist in the substance of things. For, by itself, substance is formless; only after having been moved towards form does it become formed and receive the rational relations of order. Likewise, if movement exists, besides the thing moved, there must exist a prime mover; there must therefore be three principles: the substance of things, the form, and the principle that moves itself, and which by its power is the first; not only must this principle be an intelligence, it must be above intelligence, and we call it God.*

*Evidently, the relation of equality applies to the being which can be defined by language and reason. The relation of inequality applies to the irrational being' and cannot be fixed by language; it is substance, and that is why all begetting and destruction take place in substance and do not occur without it. [p.179]*

**2.** *In Short, the philosophers began only by so to speak contrary principles; but above these elements they knew another superior one, as is testified to by Philolaus, who says God has produced, and realized the Limited and Unlimited, and shown that at the Limit is attached the whole series which has a greater affinity with the One, and to the Unlimited, the series that is below. Thus, above these two principles they have posited a unifying cause, superior to everything; which, according to Archytas, is the cause before cause, and, according to Philolaus, the universal principle. [p.179]*

**3. A.** *Which One are you referring to? The supreme One. or the infinitely small One that you can find in parts? The Pythagoreans distinguish between the One and the Monad, as says Archytas: the One and the Monad have natural affinity, yet they differ.*

**B.** *Archytas and Philolaus indiscriminately call the One a monad, and Monad a One. The majority,*

however, add to the name *Monad*, the distinction of *first Monad*, for there is a *monad* which is not the first, and which is posterior to the *Monad* itself, and to the *One*.

*C. Pythagoras said the human soul was a tetragon with right angles. Archytas, on the contrary, instead of defining the soul by the tetragon, did so by a circle, because the soul is a self-mover, and consequently, the prime mover, and it is a sphere or a circle.*

*D. Plato and Archytas and the other Pythagoreans claim that there are three parts in the soul: reason, courage, and desires. [p.179]*

*4 The beginning of knowledge of beings is in the things that produce themselves. Of these some are intelligible, and other sensible; the former are immovable, the latter are moved. The criterion of intelligible things is the world; that of sensible things is sensation.*

*Of the things that do not manifest in things themselves, some are science, the other, opinion; science is immovable, opinion is movable,*

*We must, besides, admit these three things; the subject that judges, the object that is judged, and the rule by which that object is judged. What judges is the mind, or sensation; what is judged is the *logos*, or rational essence; the rule of judgement is the act itself which occurs in being, whether intelligible or sensible. the mind id judge of essence, whether it tends towards an intelligible being or a sensible one. When reason seeks intelligible things, it tends towards an intelligible element; when it seeks things of sense, it tends towards their element. Hence come those false graphic representations in figures and numbers seen in geometry, those researches in causes and probably ends, whose object are beings subject to becoming, and moral acts, in physiology or politics. It is while tending toward the intelligible element that reason recognized that harmony is in the double relation [the octave] but sensation alone attests that this double relation is concordant. In mechanics, the object of science is figures, numbers, proportions - namely, rational proportions; the effects are perceived by sensation, for you can neither study nor know them outside of the matter or movement. In short, it is impossible to know the reason of an individual thing, unless you have preliminarily by the mind grasped the essence of the individual thing; the knowledge of the existence, and of quality, belongs to reason and sensation; to reason, whenever we effect a thing's demonstration by a syllogism whose conclusion is inevitable; to sensation, when the latter is the criterion of a thing's essence. [p.180]*

---

## [5] PHYSICAL & MATHEMATICAL FRAGMENTS

*A. Some say that time is the sphere of the world; such was the sentiment of the Pythagoreans according to those who heard Archytas give this general definition of time:*

*"Time is the interval of the nature of all."*

**B.** *The divine Iamblicus, in the first book of his Commentaries on the Categories, said that Archytas thus defined time:*

*"It is the number of movement, or in general the interval of the nature of all."*

**C.** *We must combine these two definitions, and recognize time as both continuous and discrete, though it is properly continuous. Iamblicus claims that Archytas taught the distinction of physical time, and psychic time. So at least Iamblicus interpreted Archytas, but we must recognize that there, and often elsewhere, he adds his own commentaries to explain matters.*

**10** *The general proper essence of "when-ness" and time is to be indivisible and unsubstantial.*

*For, being indivisible, the present time has passed, while expressing it and thinking of it; nothing remains of it, and so becoming continuously the same it never subsists numerically, but only specifically. In fact, the actually present time and future are not identical with former time. For the one has past, and is no more; the other one passes while being produced and thought. Thus the present is never but a bond; it perpetually becomes, changes, and perishes, but nevertheless it remains identical in its own kind.*

*In fact, every present is without parts, and indivisible; it is the term of past time, the beginning of time to come; just as in a broken line, the point where the break occurs becomes the beginning of a line. and the end of the other. Time is continuous, and not discrete as are number, speech and harmony.*

*In speech, the syllables are parts, and distinct parts; in harmony, they are the sounds; in numbers, the unities. The line, place and space are continuous; if they are divided, their parts form common sections. For the lines divide into points, the surface into lines, the solids into surfaces. Therefore time is continuous. In fact there was no time when time was not; and there was no moment when the present was not. But the present has always been, it will always be, and will never fail; it changes perpetually, and becomes another according to the number, but remains the same according to kind. The line differs from the other continua, in that if you divide the line, place, and space, its parts will subsist; but in time, the past has perished, and the future will. That is why either time does absolutely not exist, or it hardly exists, and has an insensible existence. For of its parts one, the past, is no more, and the future is not yet; how then could the present, without parts and indivisible, possess true reality?*

**11** *Plato says that the movement is the great and small, the non of being, the unusual, and all that reduces to these; like Archytas, we had better say that it is a cause.*

**12** *Why do all natural bodies take the spherical form? Is it, as said Archytas, because in the natural movement is the proportion of equality? For everything moves in proportion; this*

*proportion of equality is the only one which, when it occurs, produces circles and spheres, because it returns on itself.*

**13** *He who knows must have learned from another, or have found his knowledge by himself.*

*The science that you learn from another, is as you might say, exterior; what you find by yourself, belongs to ourselves individually. To find without seeking is something difficult and rare; to find what one is seeking is commodious and easy; to ignore, and seek what you ignore, is impossible.*

**14** *The Pythagorean opinion about sciences to me seems correct, and they seem to show an exact judgement about each of them. Having known how to form a just idea of the nature of a ball, they should have likewise seen the essential nature of the parts. They have left us certain and evident theories about arithmetic, geometry and spherics, also about music, for all these sciences seem to be kindred. In fact, the first two kinds of being are indistinguishable.*

**15A.** *First they have seen that it was not possible that noise should exist unless there was a shock of one body striking against another; they said there is a shock when moving bodies meet and strike each other. The bodies moved in the air in an opposite direction and those that are moved with an unequal swiftness - in the same direction - the first, when overtaken, makes a noise, because struck. Many of these noises are not susceptible of being perceived by own organs; some because of the slightness of the shock, the others because of their too great distance from us, some even because of the very excess of their intensity, for noises too great do not enter into our years, as we cannot introduce anything into jars with too narrow an opening when one pours in too much at a time.*

*Of the sounds that fall within the range of our senses, some - those that come quickly from the bodies struck - seem shrill; those that arrive slowly and feebly, seem of low pitch. In fact, when one agitates some object slowly and feebly, the shock produces a low pitch; if the waving is done quickly, and with energy, the sound is shrill. This is not the only proof of the fact, which we can prove when we speak or sing; when we wish to speak loud and high, we use a great force of breath. So also with something thrown; if you throw them hard, they go far; if you throw them without energy, they fall near, for the air yields more to bodies moved with much force, than to those thrown with little. This phenomenon is also reproduced in the sound of the voice, for the sounds produced by an energetic breath are shrill, while those produced by a feeble breath are weak and low in pitch. This same observation can be seen in the force of a signal given from any place: if you pronounce it loud, it can be heard far; if you pronounce the same signal low, we do not hear it even when near. So also in flutes, the breath emitted by the mouth and which presents itself to the holes nearest the mouthpiece is greater; farther [down], they are of lower pitch. It is therefore evident that the swiftness of the movement produces shrillness, and slowness, lower pitch. The same thing is seen in the bull roarers which are spun in the Mysteries;; those that move slowly produce a low pitch, while those that move quickly with force make a shrill noise. Let us yet adduce the reed: if you close the lower opening, and blow into it, it will make a certain sound; and if you stop it in the center, or in the front, the sound will be shrill. For the same breath traversing a long space weakens, while traversing a shorter, it remains of the same power. After having developed this opinion that the movement of the voice is measured by intervals, he resumes his discussion, saying, that the shrill sounds are the result of a swifter movement, the*

lower sounds, of a slower movement. This is a fact which numerous experiments demonstrate clearly.

**B.** Eudoxus and Archytas believed that the reasons of the agreement of the sounds was in numbers; they agree in thinking that these reasons consist in the movements. the shrill movement being quick, because the agitation of the air is continuous, and the vibration rapid; the low pitch movement being slow because it is calmer.

**16** Explaining himself about the means, Archytas writes: In music there are three means: the first is the arithmetical mean, the second is the geometrical, the third is the subcontrary mean, which is called harmonic. The mean is arithmetical, when three terms are in a relation of analogical excess, that is to say, when the difference between the first and the second is the same as the difference between the second and third; this in proportion, the relation of the greater term is smaller, and the relation of the smaller is greater. The geometric mean exists when the first term is to the second as the second is to the third; here the relation of the greater is identical with the relation of the smaller terms. The subcontrary mean, which we call harmonic, exists when the first term exceeds the second by a fraction of itself, identically with the fraction [of the third] by which the second exceeds the third; in this proportion the relation of the greater terms is greater, and that of the smaller, smaller." [p.185]

---

## [7] FRAGMENTS ("POLITICAL")

**22. C.** ...Law is useful to the political society if it is not monarchical, if it does not constitute privileged classes, if it is made in the interest of all, and is equally imposed on all. Law must also regard the country and the lands, for not all soils can yield the same returns, neither all human souls the same virtues. That is why some establish the aristocratic constitution, while other prefer the democratic or oligarchic. The aristocratic constitution is founded on the sub-contrary proportion [Harmonic Mean], and is the most just, for this proportion. in which the results of the great and small are equal [in ratio]. The oligarchic and tyrannic constitutions are founded on the arithmetical proportion, which, being the opposite of the subcontrary, attributes to the smallest terms the greatest results, and vice versa.

Such are the kinds of proportions, and you can observe their image in families and political constitutions; for either the honors, punishments and virtues are equally distributed to the great and small, or they are so attributed unequally, according to superiority, in virtue, wealth or power. Equal distribution is the characteristic of democracy; and the unequal, that of aristocracy or an oligarchy.

*D. The best laws and constitution must be a composite of all other constitutions, and contain something democratic, oligarchic, monarchic and aristocratic, as in Lacedæon; for in the kings formed the monarchic element, the elders the aristocracy, the magistrates the oligarchy, while the cavalry generals and the youths formed the democracy. Law must therefore not only be beautiful and good, but its different parts must mutually compensate. This will give it power and durability, and by this mutual opposition I mean that the same magistracy command and be commanded, as in the wise laws of Lacedæmon. For the power of its kings is balanced by the magistrates, this by the elders, and between these two powers are the cavalry generals and the youths, who, as soon as they see any one part acquire the preponderance, throw themselves on the other side . [p.192]*

*D. ...Beings that are thus organized are superior to others; they are free and liberated from servitude unless, for their conservation, they need many things, but have only a few needs easily satisfied. In that way the vigorous man becomes able to bear heavy burdens, and the athlete, to resist cold, for men are exercised by events and misfortunes. The temperate man, who has tested his body and soul, finds any food, drink, even a bed of leaves, delectable. He who has preferred to live like a Sybarite among delights, would finally scorn and reject the magnificence of the great [Persian] king. Law must therefore deeply penetrate into the souls and habits of the citizens; it will make them satisfied with their fate, and distributes to each his deserts.*

*Thus the sun, in traversing the zodiac, distributes everything to everything on the earth: growth, food, life, in the proper measure, and institutes this wise legislation which regulates the succession of the seasons. That is why we call Zeus nomios, law-giver, from Nomeios, and we call nomeus he who distributes their food to the sheep; that is why the verses sung by the lyre players nomoi, [ "laws" in addition to various modes of Greek music. Each Greek mode, or "Scale" was associated with a distinctive style of playing and affect], for these verses impart order to the soul because they are sung according to the laws of harmony, rhythm, and measure. [p.192-193]*

*25 When the art of reflection was discovered, dissension diminished and concord increased; those who possess it feel the pride of predominance yielding to the sentiment of equality. It is by reflection that we succeed in adjusting our affairs in a friendly fashion; through it the poor receive riches, and the rich give to the poor, each possessing the confidence that he possess the equality of rights. [p. 193]*

*26 Reflection is like a rule which hinders and turns aside the people who know how to reflect from committing injustices, for it convinces them that they cannot remain hidden if they carry out their purposes, and the punishment which has overtaken those who have not known how to abstain makes them reflect and not become back-sliders. [p.193]*

### **Here Endeth the Selection**

**A word of Caution:** *The fragments provided here represent a limited selection from a single resource.*

## CHRONOLOGY & SOURCES

*Guthrie, Kenneth Sylvan. Phanes Press, Grand Rapids, Michigan, 1987, 1988. (Orig. 1920).*

*Crane, Gregory R. (ed.) The Perseus Project, <http://www.perseus.tufts.edu>, March, 1997.*

[Perseus Project Texts](#)

[Texts in Perseus for Browsing:English](#)