

GLOSSARY

MAKE THIS AN INDEX AS WELL – GIVE EVERY PLACE IN THE TEXTS THAT THESE WORDS APPEAR

Alogon: irrational, both in the sense of defying rational thought, and being incapable of being put in a ratio of *arithmoi*

analogon: proportion, analogy. Used by Euclid in the first sense, by Aristotle often in the second sense, especially when speaking of cognate structures in different animals that do not have the same apparent genesis.

anthuphairesis, anaeresis, antanairesis: literally, mutual subtraction. The process by which we find the greatest common divisor of two or more magnitudes or numbers, by continually subtracting the smaller from the larger. The method is also used to discover if two numbers are prime to each other, and to prove the incommensurability of two magnitudes. Often referred to today, especially with respect to finding the GCD, as the ‘Euclidean algorithm.’ It is cognate with continuing fractions.

Aoristos duas: the ‘indeterminate dyad’, or the principle of the great and small. Never mentioned in Plato explicitly, but attributed to Plato by Aristotle and later commentators such as Plotinus. This is the principle active in the essential duality of all instantiations of ideas in this world, and of the relationship between imperfect minds and ideas. Briefly, everything that is not a perfect exemplar of its idea, must be both that idea and its opposite: ordinary courage is both courage and rashness or cowardice. With relation to the ideas: we can know them only as we know the irrational numbers: any attempt at definition will be ‘greater or lesser’ than the actual expression of the idea.

Aporia: literally ‘non-porous’. Usually means a puzzle or predicament – a place where we are stumped or stopped.

arête: ‘virtue’, or human excellence. The term is naturalistic, and is can be used to refer to the ‘virtue’ or excellence of any natural or artificial entity. On the other hand, it has a similar etymology to the Latin *virtu*, from which we derive our

modern term. *Virtu* comes from the Latin *vir* meaning ‘man’ (male, as in ‘virility’). *Arête* probably derives from *arren*, Greek for ‘man’ (male).

arithmos: the Greek word for number, derived from the verb *arithmein*, to count.

It is the name only of what we would call ‘counting numbers’, but which the Greeks consider to be the whole and essence of the idea ‘number’.

Arithmetike: the science of *arithmoi*, closest to what we would today call ‘number theory.’

arrheton: literally, ‘inexpressible’ or ‘unspeakable’; often translated as ‘irrational’, but Euclid does not use it as synonymous with *alogon*, which literally means ‘irrational’ or incapable of being put in ratio.

Arche: the ‘beginning’ of something. Sometimes read as ‘first principles. Also contains the meaning of ‘ruling’. Plural ***archai***

dunameis: coming from *dunamis* meaning potential or power, in mathematics this refers to the side of a square which can be represented in area by a square number, or what we would call a rational square root. Sides of squares not represented as rational numbers in area are called *mekei*. The choice of the word *dunameis* (first appearing in Plato’s *Theaetetus*) suggests that the root is considered only potentially something. ????

eidōs: literally, the ‘looks’ something, from a Greek verb meaning to see. In mathematics it comes to mean the shape or form of something, and with Plato, the word, and its alternate grammatical form *idea* come to mean the ‘universal’ that stands behind the many instances of something. The *eidōs* of ‘human’ for instance, is that which every human essentially shares, through all of our differences; that which makes us human. It is the un-seeable ‘look’ of humanness.

episteme: ‘knowledge’. This word is often translated as ‘science’ (from the Latin *scientia*, which also means knowledge). It is often used in Greek to refer to a particular genus of knowledge; e.g. the study of animals is one *episteme*. In this partitioning use, it resembles our word ‘science’, but always carries the meaning

‘knowledge’ as well, which current empirical understandings of science do not necessarily suggest.

Genos a word that often translates as ‘genus’ when opposed to *eidōs* which can translate as ‘species’. In Aristotle the word often just means a particular ‘kind’ of entity, defined often by the mode of apprehension we apply. Thus, *arithmetikē* is a distinct *genos* from *geometrikē*.

geometrikē: literally ‘earth measuring’, but by the time of Euclid it has very little to do with the art of measurement, and in fact eschews, to the greatest extent possible, all reference to particular numbers. It comes more to mean the science of shape or form.

Homologoumenon: That which is agreed upon. In synthesis we proceed from the *homologoumenon* to the *zetoumenon*. In analysis, the process is the reverse. In Greek mathematics the word means either an assumption or the result of a previous proof.

hōpoion: meaning quality (The name of an Aristotelian category), ‘of what sort’.

Hulē: the passive, receptive principle in Aristotle’s cosmology. Often translated as ‘matter’, it has the sense of undifferentiated ‘stuff’ – stuff which has not yet had form impressed upon it.

kakōn: bad. It is sometimes translated as ‘evil’, and clearly is used in both moral situations and ones without moral implications. It does not have the same connotation as the English word ‘evil’, in so far as that word means something different from ‘bad’. **Plural:** *kakā*, with the article, can mean ‘bad things’ (*ta kakā*)

kakia: ‘badness’, vice

kalon: a multipurpose word that means, beautiful, noble, or fine. It can also mean something fine, or in the neuter plural with an article, (*ta kalā*) “fine things”

kath’auto

khōrion: country, or in mathematics, space or area; it is notable that the word in Greek does not automatically carry the meaning of ‘measured area’ Euclid, for

instance treats of equal areas through much of the *Elements* without any use of or reference to measurement.

Logistike: the art of calculation. Close to what we mean by the term ‘arithmetic’, but sometimes has the special meaning of the science of ‘comparative numbers’ or ratios.

Logos: perhaps the most important word in ancient Greek intellectual life. Means reason, account, rationality, ratio, speech.

Mathematike: from *mathema*, learning or knowledge, which is related to *manthanein*, to learn

Megethos: magnitude. Has a literal meaning something like ‘greatness’.

Mesos, mesotes: mean, middle

Musike: literally, that which is inspired by the muses. For the Greeks this included poetry and other spoken arts. From the time that the Pythagoreans discovered the mathematical basis of musical intervals, it was included as one of the four *episteme* that constituted *mathematike*

Nous intelligence, thought, good sense. Often means, for both Plato and Aristotle, the intuitive immediate apprehension of something as a whole. Sometimes has a grander meaning of the primal and universal intelligence in the kosmos.

Ousia: essence or nature of something – its essential property.

Pelikos: originally an interrogative meaning ‘of what size’, this becomes the word meaning ‘magnitude’, and specifically ‘continuous magnitude’; often contrasted with *poson*.

Phronêsis: wisdom – sometimes interchangeable with *nous* or *Sophia*, but in general has more of the sense of *practical* wisdom or good sense, often with an ethical tinge. This is especially so in Aristotle. It also may carry the sense in Aristotle of immediate or intuitive practical wisdom – a non-discursive knowing. Jowett, attempting to capture both aspects, translates it as “wisdom or temperance”.

Plethos: ‘manyness’, usually translated as ‘multitude.’

Poios: literally ‘of what sort’: quality

Poson: literally, ‘how much’. Usually translated as ‘quantity’

Rhete: literally, ‘expressible’ or perhaps ‘speak-able’. Often translated as ‘rational’

Schema: figure, shape, form. In *Meno* it means specifically the shape of the surface of a solid, not the whole of the solid.

Sophrosune: a difficult term often translated as ‘temperance’ or ‘prudence’; perhaps the best translation would be something like ‘wise self-control’. This is an excellent candidate of the Greek ‘virtue of virtues’, and Aristotle comes close to making it so.

Techne: an organized skill set. It is a continuous question among Greek intellectuals whether *technai* are *epistemai*. For the most part, however, *techne* is used in contrast to *episteme*. For instance, *logistike* is considered more of a *techne*, or mere ‘know-how’ than a true *episteme* – science or understanding.

theoria – looking at, contemplation, speculation. Translated as ‘theory.’

Ti Esti: the ‘what is it’ of something, often translated as ‘essence’.

Zetoumenon: That which is sought. See *homologoumenon*.

MIT OpenCourseWare
<http://ocw.mit.edu>

ES.2H3 Ancient Philosophy and Mathematics
Fall 2009

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.