

Two Letters, the Cosmos

From Plato to Kepler and Galileo

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Plato holds *Timaeus* (left) in Raphael's fresco 'School of Athens' (Vatican, 1511)

Plato's *Timaeus*

Plato's cosmological book survived for two thousand years because it contains Plato's mathematical and geometric account of Creation.

In this cosmogony, the Demiurge – the cosmic geometer – generates two geometric constructs that would relay astronomical ideas through the ages, to the Renaissance and beyond.

In the first cosmic construction, the Demiurge takes various portions from an elemental mixture of Same, Different, and Being. These portions give seven numbers: 1, 2, 3, 4, 9, 8, 27, that progress the numbers 2 and 3 through squares (2×2 , 3×3) and cubes ($2 \times 2 \times 2$, $3 \times 3 \times 3$).

For the second geometric construct, the Demiurge erects two celestial circles that intersect at an angle resembling an X.

These two cosmic constructs became associated with two Greek letters.



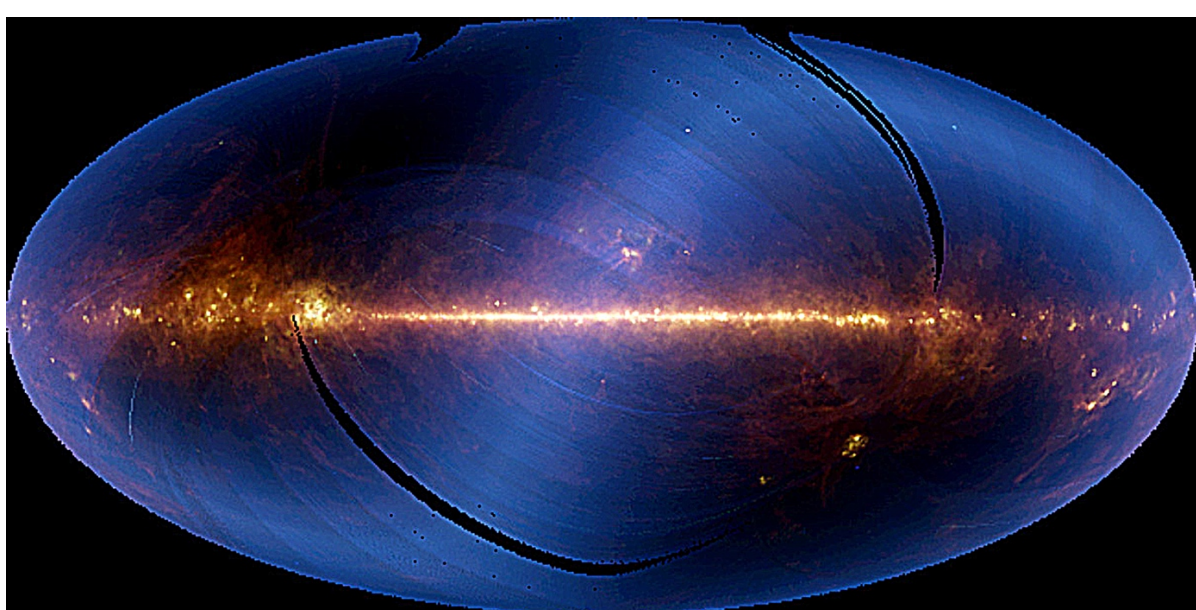
Plato's seven numbers were arranged by Crantor in the shape of the letter *Lambda* to emphasize the squares (4, 9) and cubes (8, 27) in Plato's planetary power proportions that Kepler would use to illustrate his Third Law of Planetary Motion in *Harmonices Mundi*.

Lambda (Λ)

Plato's seven numbers (*Timaeus* 35b-c) were arranged, by the Academy scholar Crantor, in the shape of the letter *Lambda*, spotlighting the squares and cubes that Plato connects, through the Circle of the Different (36d), to the Wanderers in the sky (38c).

Planetary power proportions traveled from Plato to Crantor, to Plutarch, to Theon of Smyrna, to Macrobius, to Proclus, and to Kepler, who used Plato's planetary numbers to illustrate his Third Law of Planetary Motion (Latura, 2022) in *Harmonices Mundi*:

'Let the periodic times of two planets be 27 and 8... Hence the semidiameters of the orbits will be as 9 to 4. For the cube root of 27 is 3; that of 8 is 2; and the squares of these roots are 9 and 4.' (tr. Aiton et al., 1997: 413).



Plato's Cosmic X, embodiment of the Cosmic Soul: Infrared, intersection of the Ecliptic (blue) and the Galactic plane (red). Image: NASA/JPL-Caltech, IRAS

Chi (X)

The second geometric structure in Plato's *Timaeus* is the intersection of two heavenly circles (36 b-c) that meet at an angle 'like an X' (tr. Zeyl, 1997: 1240).

Antiquity saw these two circles as the Ecliptic (path of Wanderers) and the Milky Way (Latura, 2019, 2018, 2014).

Medieval Europe held the Milky Way to be a sublunary phenomenon (per Aristotle's *Meteorologica*), until Galileo's spyglass showed it was all stars (*Sidereus Nuncius*, 1610).

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