

# Two Letters, the Cosmos

From Plato's *Timaeus* to  
Kepler and Galileo

– George Latura





Plato's *Timaeus* survived for  
1800 years because it contained  
Plato's mathematical and  
geometric account of Creation



In Plato's *Timaeus*, the cosmic geometer – the Demiurge – generates two geometric constructs that became known by two Greek letters: *Lambda* and *Chi*

*Lambda* – Planetary power  
proportions arranged in a  
triangular shape

*Chi* – Two visible celestial  
circles that meet 'like an X'

*Lambda* – Plato's planetary power proportions led to Kepler's Third Law (*Harmonices Mundi*)

*Chi* – Two visible celestial circles led Galileo to point his spyglass at the Milky Way (*Sidereus Nuncius*)

1. *Lambda*

2. *Chi*

*Lambda*

## Plato's Cosmogony (*Timaeus* 35b-c)

- 1 – One portion
- 2 – A portion double of this
- 3 – A portion three times the first
- 4 – A portion twice the second
- 9 – Three times the third
- 8 – Eight times the first
- 27 – Twenty seven times the first

The Academy scholar  
Crantor arranged Plato's seven  
cosmic numbers in the shape of  
a *Lambda*

**1**

**2**

**3**

**4**

**9**

**8**

**27**

The *Lambda* highlights the squares ( $2 \times 2$ ,  $3 \times 3$ ) and cubes ( $2 \times 2 \times 2$ ,  $3 \times 3 \times 3$ ) that Plato tied to the Wanderers in the sky (*Timaeus* 36d, 38c)

Planetary power proportions  
traveled from Plato, to Crantor, to  
Cicero, to Plutarch, to Theon, to  
Calcidius, to Macrobius, to Proclus,  
and to Kepler who illustrated his  
Third Law with Plato's power  
proportions.

# Plato's Planetary Power Proportions Led to Kepler's Third Law

– Latura, *AAS–HAD 2022 Presentation*

1. *Lambda*

2. *Chi*

*Chi*

## Plato's Cosmic X (*Chi*)

‘Next, he sliced this entire compound in two along its length, joined the two halves together center to center like an X, and bent them back in a circle, attaching each half to itself end to end...’

– *Timaeus*, 36c (tr. Donald Zeyl, 2000, Hackett, p. 21)

# Plato's Cosmology

‘And he decreed that the outer movement should be the movement of the Same [the Fixed Stars], while the inner one should be that of the Different [the Wanderers].’

– *Timaeus*, 36c (tr. Donald Zeyl, 2000, Hackett, p. 21)

# Plato's X – Planetary Orbits

‘When the god had finished making a body for each of them, he placed them into the orbits traced by the period of the Different – seven bodies in seven orbits.’

– *Timaeus*, 38c (tr. Zeyl, 2000, p. 25)

# Plato's Visible Cosmos

‘And so now we may say that our account of the universe has reached its conclusion.

This world of ours... A visible living thing containing visible ones, perceptible god, image of the intelligible Living Thing [World Soul]..’

– *Timaeus*: 92b (tr. Zeyl, 1997)

# Plato's Cosmos in Antiquity



Cicero, *De Re Publica*  
(tr. Keyes, 1928, LCL 213,  
p. 269)

“Imitate me, your father;  
love justice and duty... Such  
a life is the road to the  
skies...” (it was the circle of  
light...) “which you on earth,  
borrowing a Greek term, call  
the Milky Circle.”

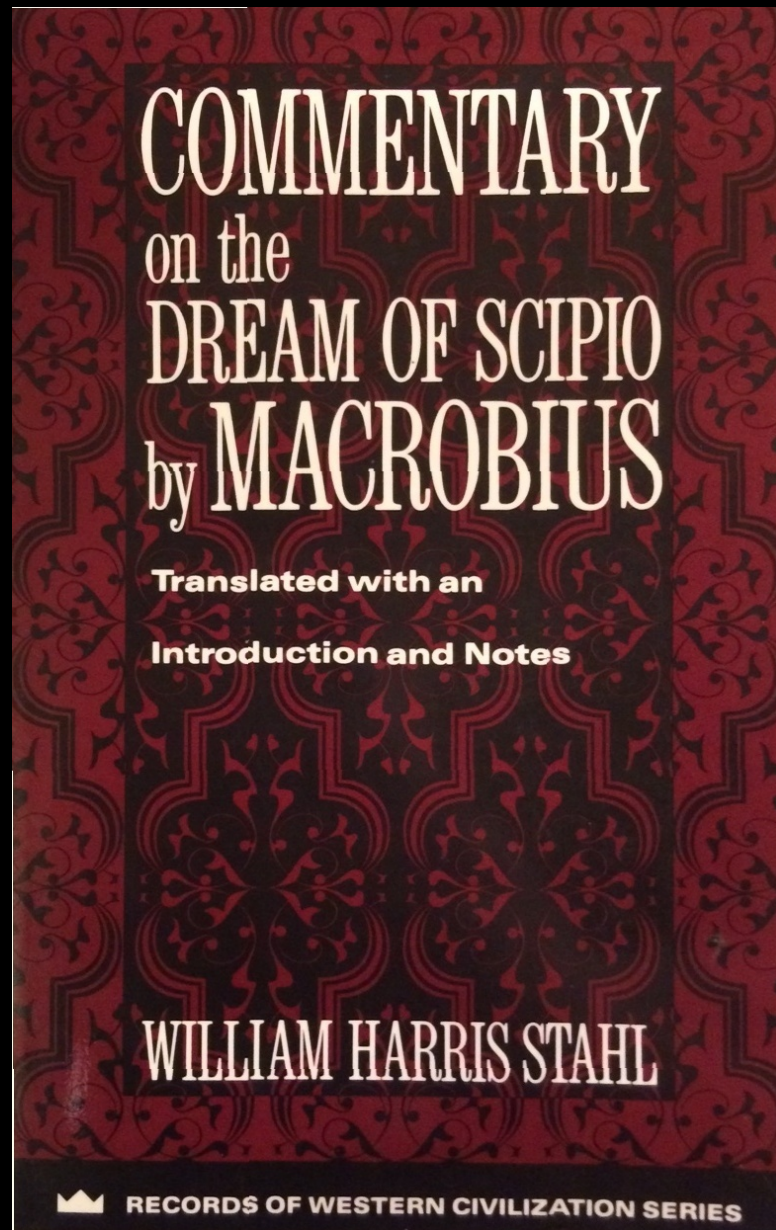
Illustration for Macrobius' *Commentary  
on Cicero's Dream of Scipio* (1467). In  
Houghton Library (Harvard), MS Typ 7.

## Cicero's 'Dream of Scipio,' in *De Re Publica* (Book VI)

- Scipio meets his ancestors in the Milky Way
- Scipio hears the Music of the Planetary Spheres



Illustration for Macrobius' *Commentary on Cicero's Dream of Scipio* (Bologna, 1383). In Bodleian Library (Oxford), MS. Canon. Class. Lat. 257.



## Macrobius' Celestial Gates (c. 400 CE)

‘The soul, descending from the place where the zodiac and the Milky Way intersect...’

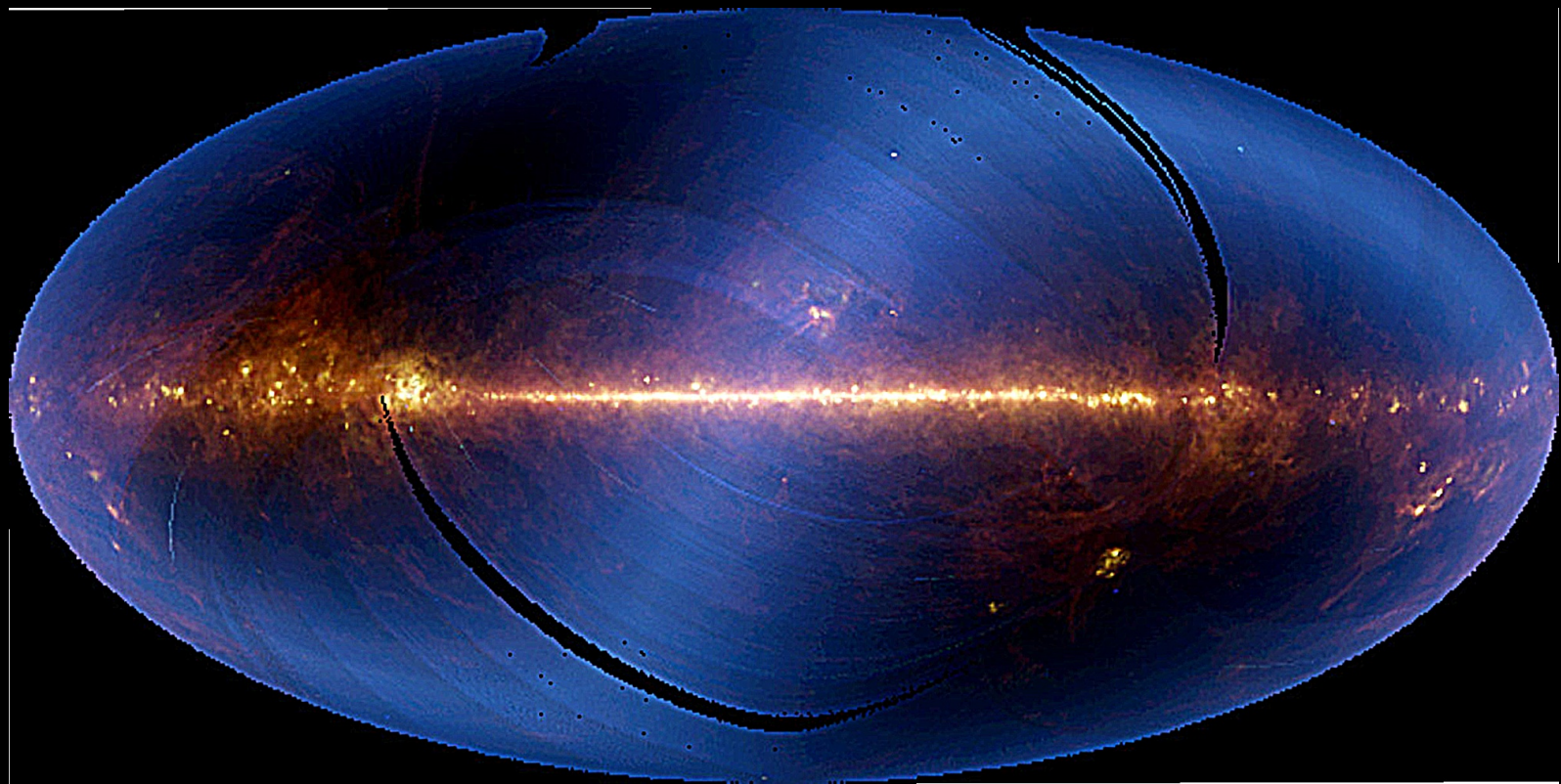
– trans. Stahl, 1952,  
Columbia Univ. Press, p. 134



Intersection of the Milky Way and the Zodiac,  
the path of the Planets along the ecliptic



Plato's visible X: intersection of Milky Way and zodiacal light by Scorpius (photo Axel Mellinger)



# Milky Way = Underworld in the Sky

‘Damascius appropriates the hypothesis of Empedotimus concerning the Milky Way... For he says that the Milky Way is the path of souls that travel through the Underworld in the sky.’

– Philoponus, *Commentary on the First Book of Aristotle's Meteorology*. In Schutrumpf (ed), *Heraclides of Pontus: Texts and Translations* (Rutgers University Studies in Classical Humanities, 2008, p. 125)

# Milky Way as Heavenly Abode

- Damascius (c.530 CE) – Heavenly Hades
- Macrobius (c. 400 CE) – *Commentary on Dream of Scipio*
- Martianus Capella (c. 400 CE) – *Marriage of Philology & Mercury*
- Porphyry (c. 280 CE) – *On the Cave of the Nymphs*
- Numenius (c. 170 CE) – Fragments
- Manilius (c. 10 CE) – *Astronomica*
- Ovid (c. 8 CE) – *Metamorphoses*
- Cicero (c. 50 BCE) – ‘Dream of Scipio’ in *On The Republic*
- Heraclides of Pontus (c. 300 BCE) – Vision of Empedotimus
- Plato (c. 340 BCE) – ‘Vision of Er’ in *Republic*

# Aristotle's Sublunary Milky Way

Writing about the Milky Way, not in *On The Heavens*, but in *Meteorology* (c. 350 BCE), Aristotle removed the Milky Way from the heavenly regions.

# Medieval Sublunary Milky Way

Aquinas (c. 1270) adopted Aristotle as *The Philosopher*.

The Aristotelian claim of a sublunary Milky Way ruled scholastic and ecclesiastical thinking for centuries.

# Galileo's Milky Way (1610)

‘What we observed... is the... matter of the  
Milky Way...

‘...what philosophers for centuries found an  
excruciating problem has been solved with  
ocular certainty...’

– *Sidereus Nuncius* (tr. Shea, 2009: 73)

# Galileo's Milky Way (1610)

'For the Galaxy is nothing else but a collection of innumerable stars heaped together.'

– *Sidereus Nuncius* (tr. Shea, 2009)

*Lambda* – Plato's planetary power proportions led to Kepler's Third Law (*Harmonices Mundi*)

*Chi* – Plato's visible celestial circles led to Galileo's celestial Galaxy (*Sidereus Nuncius*)

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