ANATOLIA "THE LAND WHERE SCIENCE WAS BORN AND FLOURISHED"

EUDOXUS

Born & Died: C. 390 – C . 337BC
Main Interest: Astronomy, Mathematics, Physics, Geography
School: Plato **Know for:** Eudoxuan Planetary Models

LIFE

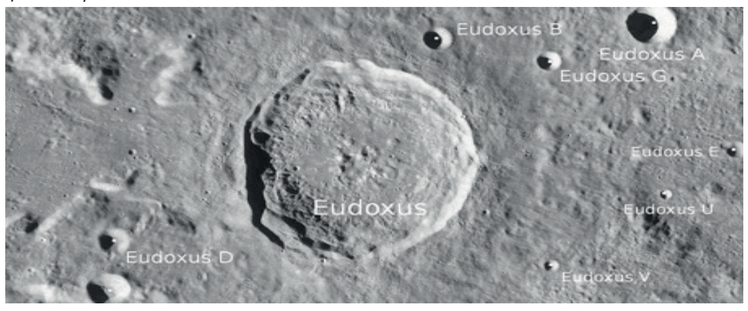
His name Eudoxus means "honored" or "of good repute" (in Ancient Greek εὔδοξος, from eu "good" and doxa "opinion, belief, fame"). It is analogous to the Latin name Benedictus. Eudoxus's father Aeschines of Cnidus loved to watch stars at night. Eudoxus first travelled to Tarentum to study with Archytas, from whom he learned mathematics. While in Italy, Eudoxus visited Sicily, where he studied medicine with Philiston. He eventually attended lectures of Plato and other philosophers for several months, but due to a disagreement they had a falling out. Eudoxus was quite poor and could only afford an apartment at the Piraeus. To attend Plato's lectures, he walked the seven miles (11 km) each direction, each day. Due to his poverty, his friends raised funds sufficient to send him to Heliopolis, Egypt, to pursue his study of astronomy and mathematics. He lived there for 16 months. From Egypt, he then traveled north to Cyzicus, located on the south shore of the Sea of Marmara, the Propontis. He traveled south to the court of Mausolus. During his travels he gathered many students of his own.

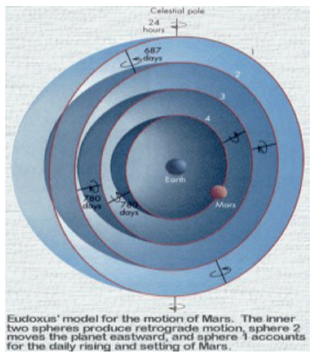
Around 368 BC, Eudoxus returned to Athens with his students. According to some sources, around 367 he assumed headship of the Academy during Plato's period in Syracuse, and taught Aristotle.[citation needed] He eventually returned to his native Cnidus, where he served in the city assembly. While in Cnidus, he built an observatory and continued writing and lecturing on theology, astronomy and meteorology. He had one son, Aristagoras, and three daughters, Actis, Philtis and Delphis.

ASTRONOMY

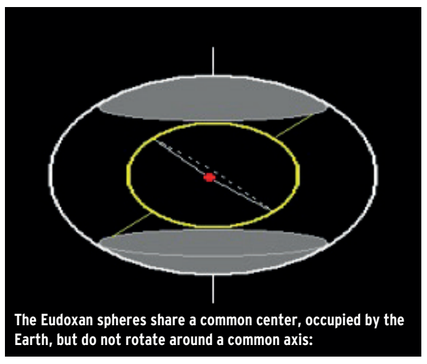
In ancient Greece, astronomy was a branch of mathematics; astronomers sought to create geometrical models that could imitate the appearances of celestial motions. Identifying the astronomical work of Eudoxus as a separate category is therefore a modern convenience. Some of Eudoxus' astronomical texts whose names have survived include:

Disappearances of the Sun, possibly on eclipses
Oktaeteris (Ὀκταετηρίς), on an eight-year lunisolar cycle of the calendar
Phaenomena (Φαινό↔ενα) and Entropon (Εντρο℗ον), on spherical astronomy, probably based on observations made by Eudoxus in Egypt and Cnidus On Speeds, on planetary motion





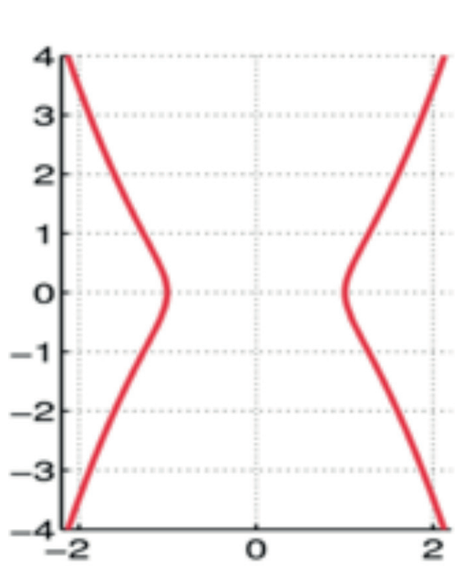
Eudoxus' model for the motion of Mars. The inner two spheres produce retrograde motion, sphere 2 moves the planet eastward, and sphere 1 accounts for the daily rising and setting of Mars.


The Eudoxan spheres share a common center, occupied by the Earth, but do not rotate around a common axis:

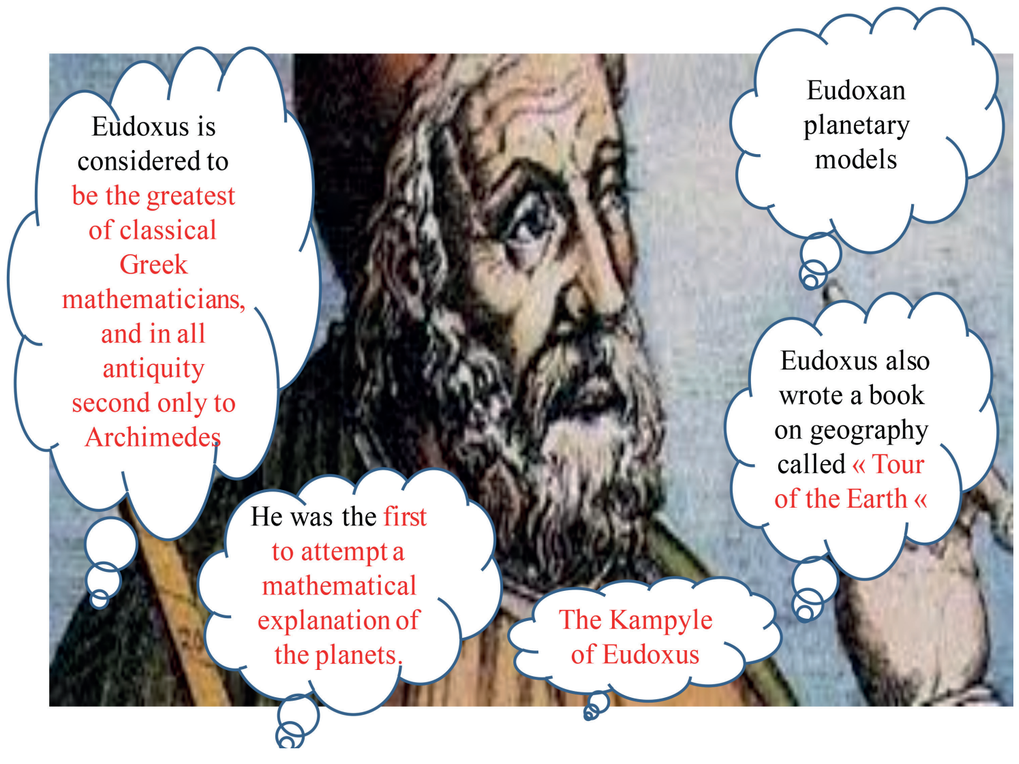
WORKS

In mathematical astronomy, his fame is due to the introduction of the astronomical globe, and his early contributions to understanding the movement of the planets.
His work on proportions shows insight into numbers; it allows rigorous treatment of continuous quantities and not just whole numbers or even rational numbers. When it was revived by Tartaglia and others in the 16th century, it became the basis for quantitative work in science for a century, until it was replaced by Richard Dedekind.

Craters on Mars and the Moon are named in his honor. An algebraic curve (the Kampyle of Eudoxus) is also named after him.



Graph of Kampyle of Eudoxus with a = 1



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