

# SPACE

a w a r e n e s s

JOURNEY OF IDEAS:  
INTRODUCTION CHAPTER 3

**THE RISE OF ASTRONOMY AS A SCIENCE**

## WHAT IS THE WORLD MADE OF? KNOWLEDGE FOR THE SAKE OF KNOWLEDGE

Many ancient cultures made use of the periodic movement of the stars to measure time and make calendars. These were used to fix the time of religious festivities, for letting farmers know when to plant crops, and even for the collection of taxes. Thus, for many centuries many old civilisations – including the Babylonians, Egyptians, Chinese, Indians and Mayans – developed and used astronomy for practical purposes. They also projected their gods onto the sky by naming the planets after them and by making them responsible for all earthy events including seasons, weather, earthquakes, rain, births and deaths.

However, something very special happened 600 BCE in the city of Miletus (today's Turkey). Being of its trading harbour, this city became a meeting point for people from different cultures. Caravans coming from the Middle-East brought with them the Sundial and other Babylonian instruments. From the Egyptians the inhabitants of Miletus learned about the division of the year in 365 days and about mathematics and geometry, which were used in Egypt to measure the land and to build monuments. This collection of ideas and instruments came together in Miletus, with stories about the different gods.

One well known merchant of Miletus was a man called Thales. He was very interested in learning about astronomy and mathematics, as well as in hearing all the stories about the different gods. Because each culture believed in different gods (as the Greek also did) Thales believed that the truth could not be found in all these religions (each having their "own truth"), but that rather there should be another way of explaining natural phenomena without invoking the several gods: This was the first huge step that led to the foundation of rational thinking science.

Since then, exploring nature, the night sky and mathematics became a fascinating endeavor independently of any practical applications. Knowledge itself became highly valuable. Thales sought after explanations for the constituents of nature by trying to identify basic principles. For instance, he believed that water was the basic element shaping nature. Water seemed the basis of solid (ice), liquid and gaseous matter. He was highly interested in geometry, but instead of using it to measure a piece of land like the Egyptians did, he found that the sum of the angles in a triangle is always equal to  $180^\circ$ . He tried to give a rational answer to astronomical events which traditionally were interpreted as supernatural. It is said that Thales was able to predict a solar eclipse on the year 585 BCE! In this way astronomy acquired a value in itself independently of any practical purposes. Soon after, Thales' way of rational thinking spread throughout all Greece. Other philosophers like Anaximenes, Anaxagoras, Parmenides, Heraclitus and Democritus followed Thales' way of thinking and became the first natural philosophers of history. Some of them found explanations for the Moon phases, the solar and lunar eclipses, measured the size of the Earth and the position of the stars in the sky.

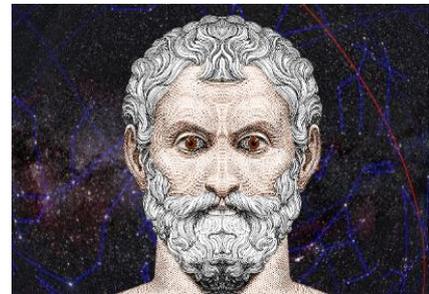


Fig. 1 Thales (Credits: famous scientists.org)

## LITERATURE CHAPTER 3

1. Aristotle, 350 BC, On the Heavens, Stuart Leggatt, *On the Heavens I and II* (Warminster: Aris & Phillips, 1995).
2. The Exact Sciences in Antiquity, By: [O. Neugebauer](#), Dover Publications



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