

Notes on “The Natural Philosophers”

- I. Natural Philosophers – mainly concerned with natural processes
- II. Three philosophers from Miletus: sixth century BC
 - A. Thales
 1. said to have traveled to Egypt and brought back geometry to the Greeks
 2. measured the height of a pyramid by waiting until the length of his shadow was the same as his height, then measured the length of the pyramid’s shadow
 3. said to be able to calculate the distance of ships at sea by taking measurements from two points on land
 4. accurately predicted an eclipse
 - a. this is how the dates of his life can be estimated; there was an eclipse in 585 BC
 - b. Babylonians (who invented the 24 hour day and the 360 degree circle) already knew how to predict lunar eclipses and, to a lesser extent, solar eclipses
 5. believed everything came from water
 - B. Anaximander
 1. thought everything came from “the boundless”
 2. said to be the first man to make a map
 3. held that the earth is shaped like a cylinder
 - C. Anaximenes
 1. thought all things come from “air” or “vapor”
 2. thought that the soul was air, fire is rarefied air; when condensed it becomes water, then earth, then stone
 3. thought that the earth was shaped like a round table
- III. The “Eleatic” philosophers from Elea in Southern Italy, the most important of whom was Parmenides – sixth century
 - A. thought that nothing could actually change; complicated argument based on reason
 - B. the senses deceived us into believing things changed
 - C. Parmenides was a **rationalist** – he believed that reason is the primary source of knowledge, not the senses
 1. What do you think when you see a magician pull a rabbit out of a hat?
 2. Are you more confident that you are sitting here listening to this, or that $1 + 3 = 4$?
 - D. Heraclitus – sixth century
 1. Says that “everything flows” – cannot step twice in the same river

2. Everything an interplay of opposites; not different from the law of the conservation of energy – fire becomes ash, but atoms only rearranged; the atoms are constant
 3. Substituted the Greek word “logos,” meaning reason, for god – there was a kind of divine reason at the center of all universal flux
 4. More of an **empiricist**, in that he believed in the testimony of the senses
- IV. Empedocles – fifth century
- A. Believed the world created not of one thing, but of earth, air, fire, and water
 - B. Says “love” binds and “strife” separates the elements
- V. Anaxagoras – fifth century
- A. Believed nature built of tiny invisible particles, each containing fragments of all other particles
 - B. Like fractals or holograms
 - C. Called the forces organizing particles into forms “nous,” meaning mind or intelligence
 - D. Explained eclipses, knew that the moon reflected light, said that stars are fiery stones, but too far away for us to feel their heat, thought the moon was inhabited
 - E. Exiled from Athens for saying the sun was a big hot rock