

## Stephen Lumsden, essay for Units 1-3, Program C: The First Philosophers

*Essay for Question 2. Why does the Earth (appear to) stand still? Discuss with reference to the theories of Thales, Anaximander and Anaximenes.*

### **The Ionians' Theories of the Stability of the Earth**

In order to try to fully understand the early philosophers' initial approach to cosmology we must study the views of the Ionians as to why the Earth appears to stand still. In this essay we shall summarise the theories from the earliest philosopher Thales, onto Anaximander and then Anaximenes. We shall then discuss the merits of each argument, compare them and make note of the historical context such arguments were made in. We could also ask whether they saw anything in the world that could make it stand still, so we will also note how each theory coheres with each philosopher's other theories, namely on the primary substance, the *Arche*. We shall then conclude which argument may be the most persuasive and possibly relevant to later discussions on cosmology.

Thales saw the world as the Earth supported in cosmic sea. He even theorised how waves in this cosmic ocean could be the cause of earthquakes, much like a ship in a choppy sea. The idea of floating does reinforce the idea of stability of the earth, as everybody is familiar with the idea of floating on water and how this works against the effects of gravity. Aristotle later asked what was supporting the sea and because of this reason it must be infinitely deep. One could postulate that Thales would agree. We can imagine him picturing such as scenario and positing the idea of infinite depth to get around the idea of gravity, because if something is falling, it has to land somewhere. Anaximander justified the Earth's stability by positing it was of a round cylindrical shape at the centre of an infinite, fully symmetrical universe. Again, one can visualise why the Earth will not fall as it has nowhere to fall to, because it is already supposedly where it should be, in equilibrium at the centre of everything. Note Anaximander does not make any inference whether it has fallen from somewhere to its current fulcrum, but one can picture him using this notion assist his theory. Like Anaximander, Anaximenes thought the universe an infinite one, but sees the world as existing on a cushion of air, much like one can picture a leaf defying gravity from a current of hot air. In this case Anaximenes could describe earthquakes as disturbances in air currents and describes the sun and the stars as fireballs of heated air. It is important to mention how easy it is to visualise all the above, and with the absence of any specialised scientific equipment at the time, such simple models would have been unavoidable and necessary.

In looking at each philosopher's relationship with the *Arche*, we may get more insight into how each philosopher's idea of a basic primary substance could lend support to their Earth stability theories. Thales held that the primary substance is water and this forms the basis of everything. This is most likely due to water's inclusion in all aspects of life on Earth. This coheres quite directly with Thales cosmology and similar refutations against his primary substance theory can be made against his cosmology. For instance if fire is quenched by water, how can it exist if the world exists on an infinite sea? Additionally no account of made for water's change of form and so one finds it difficult to be swayed by his argument. Anaximander pointed to no single physical substance being the primary substance, but rather stressed the idea of *Apeiron*, the infinite or indefinite as an underlying

stratum. In doing so he was the first philosopher to put forward the idea of a logical structure to the universe's properties as a concept rather than attribute nature to one underlying physical substance. In attaining this level of abstraction Anaximander laid the groundwork for the later theories of the atomists, Democritus and Leucippus. Anaximander stressed that such an infinite universe exists with continually competing opposites in an infinite wheel of destruction and creation. This idea of the infinite coheres well with the processes of birth, death and regeneration, which all have to happen on an ongoing basis for the universe to persist. His idea of a stationary Earth also fits in well with the idea of an infinite universe, but anyone who has looked at the stars at night will realise we are definitely not at the centre of a symmetrical universe. Anaximander forwards the idea that the stars we see were actually limited apertures, opening and closing, thus giving us glimpses of the ring of fire which surrounds our world. Given that it was commonly supposed that the Earth lies at the centre of the universe until Copernicus' discovery in the sixteenth century, one is reluctantly forced to accept this theory may not appear as outdated as Thales'. Anaximenes' primary substance, air, also coheres well with his vision of the stationary Earth. Like Thales' water which is necessary for life, air is transparent and appears to be everywhere (the Ionians would have no concept of a vacuum that modern man takes for granted). Unlike Thales, Anaximenes forwards the idea that air can change its physical state through different stages of condensation and rarefaction. Thus it is logically more coherent in imagining a solid Earth lying on a current of air. While Anaximenes does agree with Anaximander's idea of the indefinite, he is also practical enough to attribute the idea of a primary substance to something we can easily grasp, rather than sticking solely to more abstract concepts as Anaximander did.

In reviewing each argument it is not surprising that Thales', being the earliest, stays closest to earlier near Eastern myths of creation, most likely picked up from his earlier travels in Egypt. Anaximander brings in the idea of certain laws governing an unquantifiable universe and in so doing lays down some foundations for natural science, or physics, as we know it today. In doing so Anaximander took another step away from the accepted thinking of the time, in recognising the infinite, or indefinite without attributing any of this unknown universe to divine forces. In looking at his ideas we may forget that we do so within a background of today's scientific perspective, which was something not yet available to the Ionians. In that respect Anaximander may have been ahead of his time. For this reason it is likely that Anaximenes' argument, in forwarding the picture of the Earth floating on the primary substance of air, though within an indefinite universe, may have been more accessible to the curious man of ancient Greece.

In concluding we have seen how, with each philosopher, there is a certain progression of thought, initially close to old myths, but progressing towards more solid concepts, all without reference to Greek Gods or any of their interactions with the world. While Thales' theory proves far too simple and easily refutable, Anaximander's is too mysterious and arcane. Although history has been kinder to Anaximander, Anaximenes, in positing a clear picture of the Earth floating on air while recognising the unknown and introducing the idea of physical changes of state, seems to take the more accessible route.

## References

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*Ask A Philosopher Q and A:*

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