

Chapter 5

The Pythagorean Tradition

5.1 Homework

Readings – Lindberg chapter 2

Study questions – Give a short answer to the following questions:

1. Explain the fundamental shift between the mythologies of Homer and Hesiod, and the theories of the philosophers of the 6th and 5th centuries BCE, in the way they inquire and explain the nature and origin of the world.
2. Why does Plato think that the true reality lies in ideas and not in sensible, material objects?
3. How does Plato explain the stability and order of the cosmos? How does he differ from the Presocratics on this matter?
4. Explain why Plato can be considered as the philosopher who introduced the idea that the world is a book written in the language of mathematics?

5.2 The birth of philosophy

Philosophy was born in the 6th-5th centuries BCE. Let us try to understand what this means:

Before Philosophy – there were people trying to explain the origin of the world, in particular:

- Homer and Hesiod

But:

- stories and not arguments

- picture of a world governed by the will of capricious Gods

Presocratics – The first philosophers distinguish themselves by

New kinds of question – the nature and the origin of the physical world: its fundamental constituents, the way in which these constituents interact such that the world is what it's look like to us.

New kinds of answer – naturalistic (no gods), materialist, mechanistic and universal explanations

New kinds of method – they inquire into the rules of argumentation and proof. They deem it important to discuss and refute the others' views – Homer does not “discuss” Hesiod's account on the basis of empirical evidence and rational inference !

A few of their answers – they all develop rational accounts of the nature and origin of the world:

- Thales: water
- Anaximenes: air
- Heraclitus: fire
- Leucippus and Democritus: atoms and void

The new worldview is one of an *ordered, rational, and hence predictable* world: a *kosmos*. What is important is that the world is seen as a “lifeless piece of machinery, in which everything that occurs is the necessary outcome of inert, material, atoms moving according to their nature”

A new tool: Reason – it is the first time that reason is taken so seriously. Reason is often taken as more reliable than the senses.

Senses are deceptive, rational reasoning is our best bet to get to the truth.

Example: Parmenides on Change, Zeno on movement

A special case: Pythagoreans – Pythagoreans held the belief that the fundamental constituents of the world are mathematical objects (numbers or geometrical volumes).

As a consequence, the proper investigation of nature is mathematical.

This idea will have a huge influence on the history of science:

- Plato
- Copernicus – rejected Ptolemy mostly because not perfect circles
- Galileo of course with the “book of nature” written in “mathematical language”
- Kepler – found out about the elliptic trajectories because could not accept that the world not be perfectly mathematical

5.3 From the Presocratics to Plato

Plato is not satisfied with the Presocratics' accounts of the world

Materialism is not enough – we have seen this with Aristotle: materialist and mechanistic explanation are not considered to be satisfactory for Plato because they fail to explain the order of the world.

Some of the Presocratics had introduced some non materialistic principle in their physics: Empedocles: for example says that interactions between the elements due to two main forces: Love and Strife.

The problem of change – we have also touched the topic already:

- The problem of change was formulated by Parmenides: change is a logical impossibility

- Heraclitus had a different story: everything changes all the time.

These views have epistemological consequences (consequences for knowledge)

The problem of knowledge – if either Parmenides or Heraclitus are right about change, then knowledge of the world is impossible:

- if nothing changes, then we can say is: “What is is” and no further knowledge is possible of these things that we believe are changing

- if everything changes all the time, then no knowledge is attainable of changing things: by the time I finish to pronounce the sentence: “Mount Sentinel is all burned” , Mount Sentinel has already changed (a little bud came up), and my sentence is already false.

Plato's theory of the Forms as an answer – the theory of the forms is going to be an answer to both the problem of change and the problem of knowledge

- The forms never change and remain eternally the same: we can know them and their relationships

- The sensible world is changing all the time: we cannot know it unless seen as the poor image of the forms

5.4 Plato's worldview

Here is roughly, at the end, Plato's view of the world. Plato never wrote anything “serious” in philosophy. This because philosophy must be discussed in a dialogue. That said, he gives “stories” which help to understand his views.

First story: The demiurge – In the *Timeaus*, Plato give an analogy for the creation of the world

- The Carpenter has an idea of the table, and creates the sensible and material table as an image of the pure rational and immaterial idea of the table, using recalcitrant material.

- Similarly, the Demiurge had an idea of the world, and created the sensible and material world as an image of the pure rational and immaterial idea of the world, using recalcitrant material.

Second Story: the Cave – or the movie theater of ancient times

Prisoners, Puppets, Conversion of the philosopher, and his unfortunate return to the other prisoners

Two realms of reality – In the end, we have two realm of reality: the sensible world and the forms

The forms are: immaterial, insensible, eternal, immutable, original, perfect and the object of true knowledge

The sensible objects are: material, sensible, transitory, mutable, pale copies, imperfect and the object of opinion only

Epistemological consequence – an important consequence of the above is that knowledge is not attainable through the senses, but through reason only

In fact the situation is a little more subtle:

- the senses can play an important role as triggers *reminiscence* of the forms – experiment with the slave boy in the *Meno*
- but in the end, only the faculty of reason is able to “sense” the true forms

5.5 The world’s order

Plato could be seen as going back in time, but in fact, his views are far from going back to mythologies

- Gods and souls are back, but no personal, capricious gods: rather, they secure the rationality of the world
- The world is mathematical – 5 elements and the five platonic solids – everything is made of triangles ! Again, long legacy on this.

Note: Plato’s view is good for Alchemy: transmutation is possible