

# Lecture 9

## Plato's Theory of Matter

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## Both play a role

- *We must describe both types of causes, distinguishing those which possess understanding and thus fashion what is beautiful and good, from those which are devoid of intelligence and so produce only haphazard and disorderly effects every time. [46e]*
- Timaeus calls these “intellect” and “necessity,” respectively.
- *Now in all but a brief part of the discourse I have just completed I have presented what has been crafted by Intellect. But I need to match this account by providing a comparable one concerning the things that have come about by Necessity. For this ordered world is of mixed birth: it is the offspring of a union of Necessity and Intellect. [47e]*

## Contrast with *Phaedo*

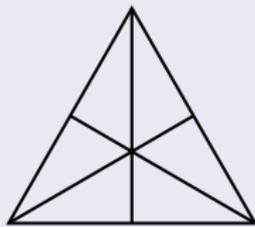
- In *Phaedo* Socrates said he wanted to explain everything by showing it is for the best.
- In Timaeus's terminology, he wanted to explain everything by intellect.
- But Timaeus says that in addition to intellect there is necessity and we need to take account of both.

## Use of Platonic solids

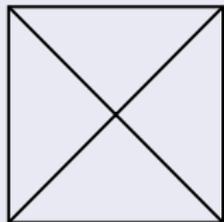
- The creator gave fire, air, earth, and water forms that make them as perfect as possible.
- The regular polyhedra are the best shapes, so he gave the elements those shapes. *See diagrams.*
  - Tetrahedron: fire
  - Octahedron: air
  - Cube: earth
  - Icosahedron: water

## Elementary triangles

The faces of the tetrahedron, octahedron, and icosahedron are equilateral triangles. Timaeus says these triangles are composed of six smaller ones, each of which is half an equilateral triangle.



The faces of the cube are squares. Timaeus says they are composed of four triangles, each of which is an isosceles right-angled triangle.



These two kinds of triangle (half-equilateral and isosceles right-angled) are said to be the best triangles that could be used.

## Properties of the elements

- *To earth let us give the cube, because of the four kinds of bodies earth is the most immobile and the most pliable—which is what the solid whose faces are the most secure must of **necessity** turn out to be, more so than the others. [55e]*
- *Of the solid figures that are left, we shall next assign the least mobile of them to water, to fire the most mobile, and to air the one in between . . . Now in all these cases the body that has the fewest faces is of **necessity** the most mobile, in that it, more than any other, has edges that are the sharpest and best fit for cutting in every direction. It is also the lightest in that it is made up of the least number of identical parts. The second body ranks second in having these properties, and the third ranks third. [56a]*

## All elements appear to transform into others

*We see (or think we see) the thing we have just now been calling water condensing and turning into stones and earth. Next, we see this same thing dissolving and dispersing, turning to wind and air, and air, when ignited, turning to fire. And then we see fire being condensed and extinguished and turning back into the form of air, and air coalescing and thickening and turning back into cloud and mist. When these are compressed still more we see them turning into flowing water, which we see turning to earth and stones once again. In this way, then, they transmit their coming into being one to another in a cycle, or so it seems. [49b]*

## Explanation of transformations

- Fire, air, and water transform into each other by breaking down into equilateral triangles that recombine. E.g.:

$$1 \text{ water} \rightarrow 2 \text{ air} + 1 \text{ fire}$$

because there are 20 equilateral triangles on each side.

- Earth:
  - The faces of the cube are squares, and the triangles of which it is composed are different to the ones making up the equilateral triangles.
  - So Timaeus says earth doesn't really transform into the other elements, or from them. *Earlier . . . it appeared that all four kinds of bodies could turn into one another by successive stages. But the appearance is wrong.* [54b]
- What transformations are possible is due to necessity.
  - Timaeus doesn't say this, but it's due to the shapes of the elements, which is not something that possesses intelligence.

## Empedocles

- *Similarity*: Timaeus agrees things are made of fire, air, water, and earth.
- *Difference*: Timaeus doesn't agree these are conserved.
  - All are made of triangles and can be decomposed into those.
  - As a result, three can change into one another.
  - Earth can break into triangles which may later reform to make earth again. [56d]

## Anaximander

- *Similarity*: Timaeus says the elements are formed in something, space, which lacks all properties, like Anaximander's indefinite.

*For if it resembled any of the things that enter it, it could not successfully copy their opposites or things of a totally different nature whenever it were to receive them. It would be showing its own face as well. This is why the thing that is to receive in itself all the kinds must be totally devoid of characteristics.*

[50e]

- *Difference*: Timaeus says earth can't change into air, fire, or water, or vice versa; Anaximander says it can.

- 1 Plato says that “this ordered world is of mixed birth: it is the offspring of a union of Necessity and Intellect.” (48a) Explain what he means by this and give an example of something that Plato holds to be due to each of these two causes.
- 2 State a similarity and a difference between Timaeus's account of matter and that of:
  - (a) Empedocles
  - (b) Anaximander
  - (c) Leucippus and Democritus



Plato.

Timaeus.

Many editions.

Numbers in brackets are standard page numbers given in many editions. Translations given here are by Donald Zeyl.