

# Lecture 30

## Descartes on Matter and Motion

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- This lecture concerns Part II of Descartes's *Principles of Philosophy*. It deals with matter and motion.
- Descartes claims to deduce everything from his principles.
- The view of physics that Descartes defends is interesting and was influential. The arguments by which he claims to deduce it from his principles are mostly invalid.
- So I'll focus on the physical views Descartes advocated and mostly ignore the arguments by which he claimed to deduce these views from his principles.

## The nature of matter

- Matter is substance that is extended, i.e., it has length, breadth, and height. [1,4]
- Other properties aren't part of the essence of matter [4], e.g., weight, hardness, color.
- All the differences in matter are due to motion. [23]

## Comparison with Democritus

### Similarities:

- All matter is of the same kind.
- Extension and motion are the only properties it really has.
- Other properties are to be explained in terms of those.

### Differences:

- There is no vacuum [16]  
Reason: A vacuum is space with nothing in it; that would be extension without matter. But whatever is extended is matter, on Descartes's definition. Therefore, there is no vacuum.
- There are no atoms [20]  
Reason: Indivisibility isn't an essential property of matter, so it is always possible to divide it (Properties that aren't essential can always be absent.)

## The universe has no limits to its extension [21]

- Reason: Space goes off indefinitely, and where there is space there is matter, so matter goes off indefinitely.
- Descartes is here rejecting the conception of the universe as bounded by a sphere.

## Movement properly speaking [25]

*If, however, we consider what should be understood by movement, according to the truth of the matter rather than in accordance with common usage (in order to attribute a determinate nature to it): we can say that it is the transference of one part of matter or of one body, from the vicinity of those bodies immediately contiguous to it and considered as at rest, into the vicinity of [some] others.*

## Examples

- Water in a river is moving past earth. Earth is normally considered to be at rest. Therefore, the water is moving, properly speaking.
- A twig floating in the river is not moving with respect to anything adjacent to it (assuming it is covered by the water). Therefore, the twig is not moving, properly speaking.

## Laws of nature

- *The first law of nature: that each thing, as far as is in its power, always remains in the same state. [37]*  
I.e., a body not acted on by another body remains in the same state of motion or rest.
- *The second law of nature: that all movement is, of itself, along straight lines. [39]*

## Differences with Aristotle

- Nothing ever begins or stops moving by itself. For Aristotle, a stone not at the center will begin moving to get to the center and stop when it gets there.
- Nothing moves in a circle by itself. For Aristotle, the heavenly bodies do.
- There is no preferred direction. For Aristotle, earth and water naturally move to the center, air and fire naturally move away from it.

- ① What is the nature of matter, according to Descartes?
- ② Compare and contrast Descartes's account of matter with that of Democritus. Where they differ, explain Descartes's reason for not accepting Democritus's view.
- ③ What is Descartes's definition of movement properly speaking? If a balloon is being carried along in a breeze, does it have movement properly speaking? Explain.
- ④ What are Descartes's first two laws of nature? State three ways that these laws differ from Aristotle.



René Descartes.

*Principles of Philosophy.*

D. Reidel Publishing Company, 1983.

Translated by Valentine Rodger Miller and Reese P. Miller.

This is the only English translation of the whole book.

Numbers in brackets are section numbers of Part II.