

# Lecture 01: Descartes

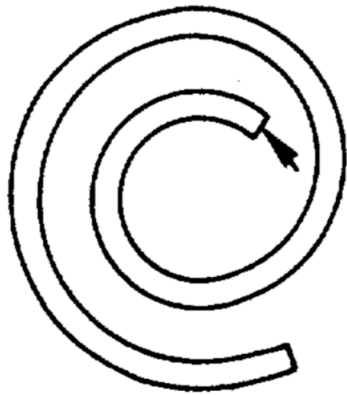
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*Overall Topic:* What, according to Descartes, is the relation between a sensory perception and the thing perceived?

*Question for this Lecture:* How can we acquire knowledge about the essential nature of the bodies located outside us?

*Argument of this Lecture:*

1. Sensory perceptions provide only very obscure information about the essential nature of bodies.
2. Therefore, we cannot acquire knowledge about the essential nature of the bodies located outside us through sensory perceptions alone.



## 1. Exercise

The diagram shows a thin curved metal tube. Imagine you are looking down the tube. A metal ball is put into the end of the tube indicated by the arrow. The ball is then shot out of the other end of the tube at high speed. Please draw the path the ball will follow after it comes out of the tube (McCloskey et al. 1980).

## 2. Forms

What is an Aristotelian form? It 'is not a subset of the properties that the organism [or thing] has, but rather a set of those that are proper to it, and towards which it strives or tends. Why does an acorn develop into an oak rather than a pig? Because of its special relation to the form that defines oak: it develops as it does because, while still an acorn, it lacks some of the properties that oaks have, and is somehow drawn towards instantiating that form more fully' (Bennett 2003, p. 10).

## 3. Key Quote from *Meditations*

'I have been in the habit of misusing the order of nature. For 'the proper purpose of [...] sensory perceptions [...] is simply to inform the mind of what is beneficial or harmful [...]; and to this extent they are sufficiently clear and distinct. But I misuse them by treating them as reliable touchstones for immediate judgements about the es-

sential nature of the bodies located outside us; yet this is an area where they provide only very obscure information.' (Descartes 1984, pp. 57-8)

## 4. Impetus

The person who sets the ball moving impresses in it a certain impetus, [which acts] in the direction toward which the mover was moving the body, either up or down, or laterally, or circularly' (Buridan, 13xx; cited by McCloskey et al).

## 5. Perceiving Impetus

Sometimes when adult humans observe a moving object that disappears, they will misremember the location of its disappearance in way that reflects its momentum; this effect is called *representational momentum* (Freyd & Finke 1984; Hubbard 2010).

The trajectories implied by representational momentum reveal that the effect reflects impetus mechanics rather than Newtonian principles (Freyd & Jones 1994; Kozhevnikov & Hegarty 2001; Hubbard et al. 2001; Hubbard 2013). And these trajectories are independent of subjects' scientific knowledge (Freyd & Jones 1994; Kozhevnikov & Hegarty 2001). Representational momentum therefore reflects judgement-independent expectations about objects' movements which track momentum in ac-

cordance with a principle of impetus.<sup>1</sup>

‘the representational momentum memory shift for a ball following a spiral path after exiting a tube is greater than the memory shift for a ball following the physically correct linear path. A curvilinear path, midway between the spiral and straight paths, produces shifts midway between those for the other two paths’ (Freyd & Jones 1994, p. 975)

Yet ‘our subjects had relatively accurate conscious knowledge of the trajectory of a ball exiting a spiral tube (63(Freyd & Jones 1994, p. 975)

‘subjects showed a memory shift for a path that the majority of subjects did not consciously consider correct’ (Freyd & Jones 1994, p. 975)

## 6. Against Resemblance

Do sensory perceptions resemble their causes?

‘In putting forward an account of light, the first thing that I want to draw to your attention is that it is possible for there to be a difference between the sensation that we have of it, that is, the idea that we form of it in our imagination through the intermediary of our eyes, and what it is in the objects that produces the sensation in us, that is, what it is in the flame or in the Sun that we term ‘light’.’ (Descartes 1998, p. 3 (AT 3))

‘if words, which signify something only through human convention, are sufficient to make us think of things to which they bear no resemblance, why could not Nature also have established some sign which would make us have a sensation of light, even if that sign had in it nothing that resembled this sensation? And is it not thus that Nature has established laughter and tears, to make us read joy and sorrow on the face of men?’ (Descartes 1998, p. 4 (AT 4))

‘Do you think that, when we attend solely to the sound of words without attending to their signification, the idea of that sound which is formed in our thought is at all like the object that is the cause of it? A man opens his mouth, moves his tongue, and breathes out: I see nothing in all these actions which is in any way similar to the idea of the sound that they cause us to imagine. And most philosophers maintain that sound is only a certain vibration of the air striking our ears.<sup>4</sup> Thus if the sense of hearing transmitted to our thought the true image of its object, then instead of making us think of the sound, it would have to make us think about the motion of the parts of the air that are vibrating against our ears.’ (Descartes 1998, p. 4–5 (AT 5))

Aristotelian physics ‘is reasonably effective for organizing bodies of knowledge. From the perspective of modern physical and biological science, however, it is severely crippled by its close linkage with what Wilfrid Sellars calls ‘the man-

ifest image’, i.e. what is available to us by means of our very limited sense organs. . . . The tie to entities known through perception prevents access to—much less the discoveries of—modern physics (and, consequently, chemistry and biology)’ (Turnbull 1988, p. 120 cited by Bennett 2003.)

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<sup>1</sup> Note that momentum is only one of several factors which may influence mistakes about the location at which a moving object disappears (Hubbard 2005, p. 842).

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