

The Induction-Deduction Problem in the First Chapter of the First Book of Aristotle's Physics

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In the first chapter, Aristotle points out that he wants to find the first cause through the deductive method. The deductive method says that one takes something as a whole and goes step to step in the smaller particulars until one found the smallest – the origin (arché). When one has a certain thing, the thing as such exists not as one unit but consists of several things which make the thing as it is. Therefore, if one looks at water, it is not existent as such, but there are elements which make water be water. Using the deductive method, we take water and then split it in its particulars and split everything further until we reach the smallest particular of it which Aristotle calls the first cause. However, calling it the first cause actually is an inductive term. Using the deductive method it should be rather called 'last cause' since it is the last thing which will be found and there is nothing further than that. Calling it the first thing seems to contradict this method. The inductive method goes from the smallest parts to the whole unit. Through an inductive method, one first looks at the first causes and sees how they are joined together to something bigger and then takes into account how the bigger things are joined together until one big thing appears. So here the contradiction becomes evident! On the one hand one shall use the deductive method, but on the other hand the term 'first cause' suggests an induction.

This contradiction however can be explained. Through using the deductive method the thing we find last is the first thing which was there to build the thing that we analyzed. Therefore the seemingly last cause is actually the first cause as without the first cause the whole thing could not exist as the thing built itself through induction, while we look at its parts through deduction. Therefore, as the first cause must have existed first to make the existence possible, it is reasonable to call it first cause although it is the cause we found at last through our analysis.

The Stanford Encyclopedia points out that "induction [...] plays a crucial role in the theory of scientific knowledge in the *Posterior Analytics*: it is induction, or at any rate a cognitive process that moves from particulars to their generalizations, that is the basis of knowledge of the indemonstrable first principles of sciences"¹.

The main definition of the first principles for Aristotle are set down in the *Posterior analytics* where he points out that they are "things that 'cannot be otherwise.'"² The first causes have

to be true, primitive, immediate, better known, prior and explanatory³. However, to find the first causes (archai) which bear these attributes, we have to conduct deduction, as we simply cannot find the things for themselves, but through other things. However, as they are primitive, immediate and the first truths, everything is built on it, and that makes it first. Therefore, we can take from Aristotle's understanding itself, that he did not build a contradiction, but that it only seems to be a contradiction to us, because we do the other way round than physics which built the things.

Notes:

1. Smith, Robin: Aristotle's Logic, Stanford Encyclopedia of Philosophy, 17 February 2017, <https://plato.stanford.edu/entries/aristotle-logic/> (retrieved on 12 August 2017)
2. ____: Posterior Analytics – Epistemology and Philosophy of Science, University of Washington, <https://faculty.washington.edu/smcohen/433/anpost.htm> (retrieved on 12 August 2017)
3. *ibid.*

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