

Lecture 12

Aristotle on Knowledge of Principles

Patrick Maher

Scientific Thought I
Fall 2009

We've seen that according to Aristotle:

- One way to understand something is by having a demonstration of it.
- Demonstration starts with principles, which can't be demonstrated.
- To have understanding by demonstration we must understand the principles—in another way.

Aristotle gave two different accounts of what this other way is.

The process

From perception there comes memory, as we call it, and from memory (when it occurs often in connection with the same thing), experience; for memories that are many in number form a single experience. And from experience, or from the whole universal that has come to rest in the soul (the one apart from the many, whatever is one and the same in all those things), there comes a principle of skill and of understanding—of skill if it deals with how things come about, of understanding if it deals with what is the case. [100a3]

Repeated perception of the same thing → grasp of a principle.

Example from *Metaphysics* (book I ch. 1)

Art arises, when from many notions gained by experience one universal judgement about similar objects is produced. For to have a judgement that when Callias was ill of this disease this did him good, and similarly in the case of Socrates and in many individual cases, is a matter of experience; but to judge that it has done good to all persons of a certain constitution, marked off in one class, when they were ill of this disease, e.g. to phlegmatic or bilious people when burning with fever,—this is a matter of art. [981a6]

This process is called induction

- *Induction is a passage from particulars to universals. [105a12]*
- *Thus it is clear that it is necessary for us to become familiar with the primitives by induction; for perception too instils the universal in this way. [100b4]*
- In this case we pass from perception of particular things to grasp of a general principle.

Dialectical deduction

- *A deduction is an argument in which, certain things being laid down, something other than these necessarily comes about through them. It is a demonstration, when the premisses from which the deduction starts are true and primitive, or are such that our knowledge of them has originally come through premisses which are primitive and true; and it is a dialectical deduction, if it reasons from reputable opinions. [100a25]*
- *Those opinions are reputable which are accepted by everyone or by the majority or by the wise—i.e. by all, or by the majority, or by the most notable and reputable of them. [100b22]*

Use of dialectic

After stating a number of reasons why dialectic is useful, Aristotle adds:

It has a further use in relation to the principles used in the several sciences. For it is impossible to discuss them at all from the principles proper to the particular science in hand, seeing that the principles are primitive in relation to everything else: it is through reputable opinions about them that these have to be discussed, and this task belongs properly, or most appropriately, to dialectic; for dialectic is a process of criticism wherein lies the path to the principles of all inquiries. [101a37]

Relation of these accounts

Explanation of the discrepancy

- Dialectic is Plato's approach.
 - Plato said understanding reaches the first principle of everything by dialectic.
 - Plato would never have induction, because that uses perception, which Plato thinks can't give knowledge.
- *Topics* was written earlier than *Posterior Analytics*. Probably Aristotle early on accepted the view of his teacher Plato but later changed his mind and developed his own approach.

Even in *Topics*, Aristotle differs from Plato

- Plato said dialectic establishes the first principle of everything; all science is to be deduced from that.
- Aristotle said dialectic establishes "the principles proper to the particular science in hand." He didn't believe there is a first principle of everything.

Definition

- *A definition is a phrase signifying a thing's essence.* [102a1]
- A thing's essence is what the thing is essentially, what makes it the sort of thing it is.
- Aristotle's definition of man: a rational animal.

Property

- *A property is something which does not indicate the essence of a thing, but yet belongs to that thing alone, and is predicated convertibly of it. [102a18]*
- A is “predicated convertibly” of B if all A are B and all B are A.
- *Thus it is a property of man to be capable of learning grammar; for if he is a man, then he is capable of learning grammar, and if he is capable of learning grammar, he is a man. [102a20]*

Genus

- *A genus is what is predicated in what a thing is of a number of things exhibiting differences in kind. [102a31]*
- “Predicated in what a thing is” means it is essential, i.e., part of the definition of the thing.
- Example:
 - Man is animal, essentially.
 - Ox is also animal, essentially.
 - So “animal” is a genus of man (and of ox).

Accident

- *An accident is something which, though it is none of the foregoing—i.e. neither a definition nor a property nor a genus—yet belongs to the thing; and something which may either belong or not belong to any one and the self-same thing, as (e.g.) being seated may belong or not belong to some self-same thing. Likewise also whiteness; for there is nothing to prevent the same thing being at one time white and at another not white. [102b4]*
- Difference with property:
 - A property of a thing always belongs to it; an accident does not always belong.
 - A property of a thing never belongs to anything else; an accident may belong to other things too.

- 1 State a similarity and two differences between the views of Plato and Aristotle on how the principles of a science are known.
- 2 For each of the following pairs of concepts, say how they are alike and how they differ.
 - (a) Definition and property.
 - (b) Definition and genus.
 - (c) Property and accident.



Jonathan Barnes, editor.

The Complete Works of Aristotle.

Princeton University Press, 1984.

[Online in Past Masters.](#)

Numbers in brackets are standard page numbers given in many editions of Aristotle.