

# Lecture 10

## Aristotle on Demonstration

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Scientific Thought I  
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- Aristotle lived from 384 to 322 B.C. He was a student in Plato's Academy and later set up his own school in Athens, called the Lyceum.
- Today we'll discuss some of Aristotle's work *Analytcs*. It is divided (probably not by Aristotle) into two parts:
  - *Prior Analytcs*: Deals with deduction. The first logic book. We'll just look at the definition of deduction from this.
  - *Posterior Analytcs*: Deals with demonstration. We'll focus on this.
- Aristotle's text is difficult; it sometimes seems as if it is a rough draft or notes.

## Definition

*A deduction is a discourse in which, certain things being stated, something other than what is stated follows of necessity from their being so. [24b19]*

## Example

Some birds are swans.  
All swans are white.  
So, some birds are white.

The things stated are called *premises*; what is deduced from them is called the *conclusion*.

## Definition

- *We think we understand a thing simpliciter . . . whenever we think we are aware both that the explanation because of which the object is is its explanation, and that it is not possible for this to be otherwise. [70b9]*
- *I.e., to truly understand something, we must know (i) its explanation and (ii) that it cannot be otherwise.*
- *Now whether there is also another type of understanding we shall say later; but we say now that we do know through demonstration. By demonstration I mean a scientific deduction; and by scientific I mean one in virtue of which, by having it, we understand something. [70b17]*

## Characteristics of demonstration

*If, then, understanding is as we posited, it is necessary for demonstrative understanding in particular to depend on things which are true and primitive and immediate and more familiar than and prior to and explanatory of the conclusion. [70b20]*

## Truth

- Demonstration must be from things that are true because deducing something from a falsehood would not give understanding of it.

- This is a deduction:

Some birds are swans.

All swans are white.

So, some birds are white.

It isn't a demonstration because the second premise is false.

## Priority

Aristotle distinguishes two senses of “prior”:



- Things that are less general and closer to perception are *prior relative to us*.
- Things that are more general and further from perception are *prior by nature*.

Demonstrations must be from things that are prior *by nature*.

## Characteristics of demonstration (again)

*If, then, understanding is as we posited, it is necessary for demonstrative understanding in particular to depend on things which are true and primitive and immediate and more familiar than and prior to and explanatory of the conclusion. [70b20]*

## Other characteristics

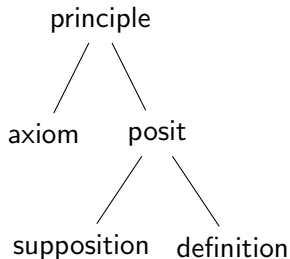
- **Immediate:** *An immediate proposition is one to which there is no other prior. [72a7]*
- **Primitive:** Same as immediate.
- **More familiar than the conclusion:** *Since one should both be convinced of and know the object by having a deduction of the sort we call a demonstration . . . it is necessary not only to be already aware of the primitives (either all or some of them) but actually to be better aware of them. [72a25]*
- **Explanatory of the conclusion:** The premises must give the reason why the conclusion is true.

- 1 State Aristotle's definition of deduction. Give an example of something that is a deduction and something that is not. Say why your non-example does not satisfy the definition.
- 2 Can there be a deduction that is not a demonstration? Can there be a demonstration that is not a deduction? Explain.
- 3 When Aristotle says that a demonstration is from things that are prior to the conclusion, what does he mean by "prior"?



## Kinds of principle [72a15]

- **Principle:** An immediate premise.
- **Axiom:** A principle “which it is necessary for anyone who is going to learn anything whatever to grasp.”  
E.g., equals added to equals gives equals.
- **Posit:** “It is not necessary for anyone who is to learn anything to grasp it.”
- **Supposition:** Asserts “that something is or that something is not.” E.g., arithmetic posits that a unit exists.
- **Definition:** Says what something is.  
E.g., what a unit is.



- ④ Which of the following terms of Aristotle apply to which of Euclid's terms?

Aristotle	Euclid
Principle	Definition
Axiom	Postulate
Posit	Common notion
Supposition	Proposition
Definition	



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.