

__ARISTOTLE "FOUR TYPES OF EXPLANATION" [PHYSICS] (c. 335 - c. 322 BCE)

Aristotle. "Physics." Trans. R. P. Hardie and R. K. Gaye. Vol. 1 of Complete Works: the Revised Oxford Translation. Ed. Jonathan Barnes. 2 Vols. Princeton: Princeton UP, 1984. 315-446.

BOOK I

Chapter 1

Aristotle begins by pointing out that when the "objects of any inquiry, in any department, have principles, causes, or elements, it is through acquaintance with these that knowledge and understanding is attained. For we do not think that we know a thing until we are acquainted with its primary causes or first principles, and have carried our analysis as far as its elements" (315).

BOOK II

Chapter 3

Here, Aristotle states his intention to "consider causes, their character and number" (332).

Knowledge is the object of our inquiry, and men do not think they know a thing till they have grasped the 'why' of it (which is to grasp its primary cause). So clearly we too must do this as regards both coming to be and passing away and every kind of natural change, in order that knowing their principles, we may try to refer to these principles each of our problems. (332)

In other words, in order to understand the nature of any natural or humanly-made phenomenon, the key thing is to understand its origin or 'cause.'

Aristotle posits that there are at least four possible conditions or 'causes' necessary to the existence of an object and which may be inductively ascertained:

- the *material* cause: "that out of which something comes to be and which persists, . . . for example, the bronze of a statue" (332) (in other words, the material of which it is made);
- the *formal* cause: the "form or the archetype, i.e. the definition of the essence and its genera" (332) (this is not to be confused with Plato's ideal forms or essences of which physical objects are imperfect imitations);
- the *efficient* or moving cause: the "primary source of the change or rest; e.g. . . . the father is cause of the child, and generally what makes of what is made and what changes of what is changed" (332); and
- the *final* cause: the "end or that for the sake of which a thing is done, for example, health is the cause of walking about" (333) (i.e. to what end it exists, its ultimate purpose).

To understand any phenomenon, natural or humanly made, the task of the philosopher is to ascertain its several causes. Aristotle argues that there may be "several causes of the same thing (not merely accidentally), e.g. both the art of the sculptor and the bronze are cause of the statue" (333), one being the material cause, the other the efficient cause.