Founders of Western Philosophy: Thales to Hume

a 12-lecture course

by

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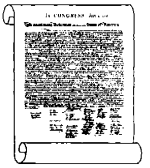
Lecture 5
A REVOLUTION:
THE BIRTH OF REASON, PART II



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A REVOLUTION: THE BIRTH OF REASON, PART II

Last week we surveyed Aristotle's epistemology and some of the essentials of his metaphysics. In regard to metaphysics, we said that reality for Aristotle is this world, the world in which we live, the world of concrete individual things as perceived through man's senses. We said that for Aristotle each individual object, each primary substance, is comprised of two elements: a universalizing element, which constitutes the basis for our putting it into a certain class and ascribing to it a certain nature; and an individuating element, which constitutes the basis of its uniqueness and makes it a this.

Aristotle's technical terms for these two elements, you recall, are "form" and "matter." Matter is the stuff or material comprising a thing; form represents its structure or organization. In these terms, change, we said, is the process of matter taking on new form, so that change in no way involves a contradiction; it is eminently logical, rational, scientifically intelligible. Or, using the other terminology that we developed, we can say that change is the passage from potentiality to actuality, a process that occurs in orderly, predictable, lawful ways.

Also, we saw, every change involves four essential factors, four causes, as they are called: the material cause, that is, the material from which the change proceeds; the formal cause, the new structure imposed on that material; the efficient cause, the action of the agent which gives the new structure to the matter; and the final cause, the goal or purpose of the process, the final answer to the question, why does it occur?

1. Aristotle's Teleology

On the basis of that two-minute recapitulation, let us continue with Aristotle's metaphysics. The first question is: Does Aristotle really mean his four-cause analysis of change to be metaphysical, i.e., to be applicable to all changes, of every kind? Because, you might say, his analysis is obviously sensible when applied to human action, as against Atomism, for instance, which denies the reality of purpose. But, you will probably ask, what about unconscious biological change, such as the acorn becoming the oak? And what about non-biological, inanimate change, for example, from the realm of physics, upsetting a bucket of water on the top of a hill and the water flowing down the hill? How do the four causes operate in these areas?

Well, consider the two cases I just mentioned: the acorn becoming the oak and the water mechanically flowing downhill. The first three causes, the material, formal, and efficient, still apply, obviously. In both these cases, you start from something, the acorn or the water on the top of the hill, which are the respective material causes of these two changes. In both cases you proceed to a new form, the oak, or the water at the bottom, which is the formal cause. And in both cases, the change is effected by some means: Without specificying them, there are various biological and/or mechanical processes at work on the matter, effecting the change; these are the efficient cause. But the big question is, what about the final cause? Does it apply to such processes also? According to Aristotle, the answer is yes.

Why did he hold this? First, I have to point out that Aristotle's favorite subject was biology. By contrast, Plato's was mathematics. Aristotle, in addition to being a great philosopher, was also a great biologist. So one factor was that he tended to start with biological examples and draw metaphysical generalizations from them; and in biology the doctrine of final causes has at least a considerable plausibility.

For instance, the growing acorn. Watch the little acorn be-

come a sprout and then a young plant and so on through all the intermediate stages until it becomes a fully mature tree. Now, asks Aristotle, can you explain this progression of stages as simply a blind reaction to outside forces with no inherent aim or end toward which it is striving? Or observe a mature plant's actions. They are unconscious. Nevertheless, the plant turns its leaves toward the sunlight. It sends its roots reaching out for water; if you put a rock in its way, within appropriate size limits, it will push against the rock to try to grow around it. It seems apparent from these and countless other such facts, says Aristotle, that the plant has a goal: to live, to grow, to reach its full development, its form, its actuality. It does not seem to be simply an indifferent reactor to external stimuli.

Or consider the self-repairing actions of an animal body. Break your arm. Within certain limits, the bones knit. (Of course, beyond a certain point, there is nothing the body can do.) You cut your finger and the body forms a scab. We say, "Why does it do that? In order to keep the germs out." That is a final cause, a goal. You contract a disease, to take a modern example, and the body manufactures antibodies. And we say, "Why? In order to fight the disease." Look at the organs of an animal body. Each of them has a function, which is often described in terms of its end or goal. What are the lungs for? In order to take in air. What is the heart for? In order to pump blood. Etcetera.

It seemed obvious to Aristotle that the organs and the actions of living entities have goals, that living things aim at an end, which they strive for as far as they can. Their goal is to develop, to grow, to reach their full form or actuality. He uses the term *entelecheia* to denote this final, completed form of a living thing, e.g., the oak tree in relation to the acorn. This goal seems to him to be the primary factor determining the actions of a living entity.

And, he asks, how would the Atomists account for all this behavior? They would say that it is simply a blind mixing and unmixing of the atoms owing to mechanical forces. Well, Aris-

totle says, the blind, mechanistic mixing of atoms might produce a few cases of acorns becoming oaks, but why does it happen regularly? What keeps the process on the same track so many times? On the theory of Atomism, why is it not the case that sometimes, by mechanistic reactions, the atoms making up an acorn are reshuffled and come out as carrots, or playing cards, or Hegel? Why do they repeatedly, regularly come out as oak trees?

Aristotle knew that they do not always come out as oak trees, because there are stunted acorns. His expression is that they happen "always or for the most part." But such regularity, he says, implies an aim inherent in the process to keep it on the track. This is why Aristotle is a universal teleologist. He believes that everything that exists, every change, has a final cause.

As for the inanimate world, we will not belabor his physics. But it seems that he generalized from human and biological behavior to the inanimate world as a whole. In his view, the inanimate world is ultimately reducible to four basic elements: earth, air, water, and fire, which he took over from early Greek physics. Each of these elements, he believes, has its own natural place, its own proper location in the universe. That location represents its true form or actuality. Therefore, the final cause of each mechanical change is ultimately reducible to the aim of the elements to reach their natural place.

For instance, the natural place of water is next to the earth. So if you take water way up in the air and turn the pail upside down, the water is on its way back to its natural place, and that is its final cause. On the other hand, the natural place of fire is up near the heavens, which is why when you light a match, the fire goes up instead of going down. And so on.

For Aristotle, therefore, every entity, whether it is human, biological, or inanimate, has an aim. The ultimate natural goal of each thing is to reach its form. In this sense, the formal cause and the final cause of every change become the same thing, the same form. For instance, when the acorn becomes the oak, the formal

cause is the new structure; and the final cause is to acquire and develop that same new structure. The usual way of stating this point is that the formal and final causes are, for Aristotle, a single fact—the same form—regarded from two different perspectives. You call it the formal cause when you regard the form as already attained. You call it the final cause when you regard the form as being aimed at but not yet attained. Technically, this view is known as Aristotle's "doctrine of the identity of formal and final cause"—which is simply a name for his particular version of universal teleology.

There are, of course—I here interject a critical comment—many objections to this view. Obviously, in the case of unconscious entities, he does not intend the term "goal-directed behavior" in the sense of consciously goal directed. Yet what exactly would an unconscious goal-directed action be? Taken at face value, the term goal-directed implies an entity with the capacity to be aware of a potential future state and to pursue it. What it would mean for an entity that has no capacity for awareness of anything, including the future, to pursue a future state remains a mystery. Aristotle certainly does not want to say that it is an unconscious striving, but neither is it a conscious striving in these cases. Ultimately (at least as far as we can tell from his surviving writings), it seems that he must leave the mechanism of goal-directedness in such cases unintelligible.

In opposition to Aristotle's view here, of course, many people have argued for an alternative explanation of the apparent purposiveness of biological phenomena, an explanation that denies any such thing as purposive, unconscious action. Couldn't living entities, they say, be built in such a way, have such a nature, that no matter what happens to them, within the appropriate limits, their necessary reaction is a pro-life course of behavior—so that it would look as if they are pursuing an end, but in fact they are simply expressing their nature. They say, living things could be like a thermostat. It is so structured that whatever the forces

operating upon it, within certain limits, it will react in order to produce a certain temperature. Someone unfamiliar with this mechanism might say that the thermostat has an end, because it systematically acts to achieve a certain goal. But in fact it is simply expressing the laws of its nature, without itself pursuing an end.

In other words, people have argued—and you can see the plausibility in this—Aristotle's own principle, that the nature or actuality of a thing determines its behavior, can be used to explain the biological phenomena that he refers to. So final causation is not necessary to keep such phenomena on track, simply an appropriate kind of efficient causation.

Now, I want above all to be fair to Aristotle, so I should mention that the issue of Aristotle's teleology and how precisely to interpret it is a very controversial question. I have given you, in effect, the standard, traditional interpretation, but others are possible and have some basis in the writings which have come down to us. In particular, it is possible to interpret Aristotle's teleology as in no way implying any unconscious striving or yearning for a goal on the part of nonconscious entities. Of course, that raises the question: What then does teleology consist of, and how would you defend this interpretation of Aristotle?

This, however, is a technical issue, entirely beyond the scope of this course. For those interested in it, however, I might mention a doctoral dissertation being written on this subject by Professor Allan Gotthelf, titled "Aristotle's Conception of Final Causality." I understand that it will be available in the stacks of Columbia University sometime in the spring of 1973. I refer you, if you're interested, to that work for a thorough discussion of the complex issues involved in this topic.

Before we leave the subject of Aristotle's teleology, I want to mention one unfortunate effect of Aristotle's teleology on his philosophy. Namely, it prevented him from grasping explicitly the idea of a universe run by absolute natural laws. I said last

week that although Aristotle laid the basis for cause and effect, he himself seemed from the surviving fragments to have no clear idea of a universal reign of cause and effect—because he observed that sometimes acorns do not become oaks, but are stunted. Sometimes little babies don't grow up into healthy men, but become "monsters" (and here I mean not moral monsters, but metaphysical "freaks.") In other words, sometimes the teleological process seems to be interfered with or to break down.

Consequently, for Aristotle, what happens in the physical world is not absolutely necessary. Certain things, he says, are necessary *if* the end or form is to be achieved. But, he maintains, there is such a thing as accidental or chance factors, which can interfere occasionally, and thus breach the absolute universality of natural law. This is why, for Aristotle, laws of nature are expressed in the form: "Such and such happens always *or for the most part*." The exceptions, the cases in which final causality breaks down, in his view, cannot be scientifically understood; they are outside the province of science. These accidents, he says, are simply brute, contingent facts. ("Contingent" is the later word for it.) That is to say, they are facts that cannot be ultimately explained, brute data that we simply have to accept as facts. Thus, even Aristotle (I say for those of you who know the later, Kantian philosophy) accepts a form of the necessary versus contingent dichotomy, which feeds very nicely into Kant's analtyic-synthetic dichotomy.

If you ask Aristotle, "What is the explanation for such accidental or chance phenomena?," characteristically he says: In those cases, the form was thwarted in its development by matter, by the resistance of the material element. You see, this is an obvious legacy in him of Plato's myth of the demi-urge, the god who tried to shape matter to the perfection of the Forms but met a certain resistance. This kind of anti-matter element does exist in Aristotle.

Needless to say, the idea that laws are "always or for the most

part" is a very bad limitation on science. This doctrine prevents you from seeing the world as wholly intelligible. And that is why I stressed last week that, although Aristotle laid the basis for causality, he did not himself have a clear idea that every event is necessitated in accordance with strict universal laws. (I might mention that he apparently believed in free will but seems to have been unclear how to reconcile free will with the universal reign of cause and effect; this was a different element leading him to accept chance or contingency.)

One last word on Aristotle's teleology: it is what is known as *immanent*. This means that, in his view of teleology, each thing is metaphysically egoistic, so to speak. There is no outside cosmic purpose, as for instance, in the Christian version of teleology, which says: Everything is striving to achieve God's purpose. Or Plato's: Everything is striving to satisfy an external Form of the Good. For Aristotle, the end of each thing is immanent within it; each thing is striving to reach its own fulfillment, actualize its unique potentialities, reach its own form. Everything is striving to realize itself. Therefore, this is very often referred to as the metaphysics of self-realization—in the broadest sense—encompassing water going downhill, acorns becoming oaks, etc. And, as you will see this evening, this becomes the metaphysical basis of Aristotle's ethics. The world is a universe of development, in which everything is striving to develop itself, fulfill itself, ascend the ladder from matter to form, become fully and in actual reality what it has in it to become.

2. The Unmoved Mover

Now let us ask the question: What keeps it all happening? What keeps things striving to actualize their forms? What keeps things on the go? Why are the acorns out to become oaks and the baby busily changing into a man and the water flowing downhill and the sculptor shaping his statues? Why does the universe not run down, stop dead, become motionless? In a word, what is the