A History of Philosophy
10 Aristotle's Metaphysics 1
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Aristotle's conception of cause is significantly more complex than ours. What we tend to call a cause is really a force exerted that produces a result. So what causes the baseball to fly, but the force exerted by the one up at bat? What is it that causes something, and we think in terms of a force with some causal power to produce consequences? Aristotle's not satisfied with that.

What we call a force, he calls simply the efficient cause. Efficient because it has effects. It has efficacy in that sense.

But it's obvious that if you want to account for the total outcome of any sort of process, whether a natural process or a process that is the result of human action, some artifact, whatever it is you're trying to account for, the kind of material that is involved, the nature of the stuff being affected also has causal significance. So he talks of the material cause. If you were carving something out of wood, it's going to be different in consequence than if you're trying to sculpt it out of stone.

The material makes a difference. As well as the work put out by the sculptor. So that's two kinds of cause right away.

But I just said that he treats the form as well as a cause. Another kind of cause. He calls it the formal cause.

That is to say, the essential nature of the kind of thing being produced is involved. If what we're talking about is the process whereby an acorn gradually grows into an oak tree, you see, the acorn has its form, which is the potential for the form of the oak tree. It is imminent within the acorn, this formal cause, you see.

And if it weren't of the nature of an acorn, it wouldn't produce an oak tree. So you have to have the formal cause in addition. But you notice that the nature of what results is due to the potential inherent in the thing with which it began.

So that there is in the nature of the formal cause something of an orientation to ends. An end orientation. He calls it a potential.

A potency for something. The result is that in addition to speaking of the nature of the thing, Aristotle adds a fourth kind of causal factor. The final cause.

The telos or goal. The end in view. The purpose.

And all four of these factors are involved. If, for instance, you're talking of the sculptor chiseling something out of stone, I already used that illustration to show that you have efficient cause, the chiseling work of the sculptor, and material cause, the stone rather than wood. But the formal cause, yes.

The essential thing that is involved. The form of whatever it is going to be. If it's a sculpture of, say, the thinker.

Have you seen Rodin's sculpture, The Thinker? Then, presumably, it's going to have the form of the thinker. The essence of the thinker portrayed in the, presumably, the posture of the person. But not only the form, but the purpose for which this is being done.

Why this sculpture? To adorn the Parthenon. And that will have something to say about the proportions involved. The angle of vision required.

And so forth. Now, the same is true with natural processes as with artifacts. And he always finds these four causal factors at work when he's speaking of reproduction, for instance.

The material cause is the mother's body. The efficient cause is the father. The formal cause is the essential nature of the father that the child is going to bear.

And so the final cause is to have offspring who are the spitting image of their old man. And that's not quite Aristotle's terminology, but it's the idea. So that you see, you have four causes.

Notice the chauvinistic kind of attitude to women again that came out in antiquity, you see. The woman is just the material cause. We've come a long way, I would hope.

So, these four causes. Now, watch for this, then, in all of his discussions. In fact, if you've been reading Book One of the Metaphysics, beyond those first two chapters that we commented on last time, you see that what he does in his commentary on his predecessors, which is what that book one is about, is to show the way in which the early pre-Socratics thought only of material causes.

Their question is, what is the basic stuff? Stuff. Matter. Thales said water.

Anaximenes said air. Heraclitus, fire. Empedocles, earth, air, fire, and water.

They're all talking about material causes. You see. Oh, efficient causes do begin to get into the act.

Particularly when you get to somebody like Empedocles, who talks of love and hate as moving forces, creating the cyclical outcome. And there's some hint, indeed, of formal cause, not clear, but it's anticipated in Heraclitus' Logos. Anaxagoras' Noose.

Mind. Pythagoras' Numbers. And, of course, Plano.

But that's where he was walking up a dead-end street, the way he was doing it. And so Aristotle takes issue with Plato, and with Pythagoras, whom he sees as the source for much of Plato's ideas along that line. So his discussion, you see, of the predecessors is all geared in this direction.

One thing that he claims his predecessors were not clear about was the necessity of the final cause. Oh, there's a hint, perhaps, in Anaxagoras. Yeah, the form, the essential nature of something for Plato, seems to imply that there is something which is its natural good.

That comes out especially in Plato's treatment of the human soul. But they're not clear that in every process, in nature as well as in human activity, in every kind of process, there is always a final cause. Aristotle sees this emphasis as his distinctive contribution to the developing metaphysical scheme thus far.

Introducing final causes. Now, you can see this if you take a look at what we have in the anthology. If you look, for instance, at page 300, his commentary on his predecessors is introduced with the enumeration of these causes.

Chapter 3, beginning at the bottom of the first column on 300. Evidently, we have to acquire knowledge of original causes or first principles. And causes are spoken of in four senses.

In one of these, we mean the substance, the essence. In another, the matter or substratum. In a third, the source of the change.

In a fourth, the cause of the opposite end of this is the purpose. The good, the end for all generations, and change. Now, when he says the substance, the essence, you remember that substance simply refers to the thing.

The essence, what it really is. So the essence of the thing, the nature of the thing, its form. That's one cause.

Then the substratum, that's the stuff that's acted upon. The matter, the material cause. The source of the change, yes, the efficient cause.

And then the purpose, the good end, final cause. So he has those four. And you notice that he proceeds in the next paragraph to discuss first philosophers who

thought that principles of the nature of matter were the only principles, the only causes.

And so he gets into those kinds of pre-Socratics. On page 302, in the middle of the first column, you find this statement, when one man said that reason was present throughout nature. Footnote 11 points us to Anaxagoras.

Remember Anaxagoras with his many, many seeds of every possible quality, ordered harmoniously by reason, noose, and mind. So there's a hint there of formal cause. Then he goes on to talk of Empedocles.

And on 303, chapter 5, the Pythagoreans come in for attention. And chapter 6, 305, Plato. Comes into focus.

And notice that his discussion of Plato does not go far before, at the very top of 306, he starts questioning the nature of participation. The Pythagoreans, he says, say that things exist by imitation of numbers. Plato says by participation.

But what the participation or imitation could be, they left an open question. That's the big problem. How particulars participate in forms.

What's the connection between the two? So he goes on from there, then on 306. Once again, to delineate the four causes in chapter 7, he reverts to those who speak of the first principle of matter. In the little four-line paragraph in 307, the source of movement, be it friendship and strife, like Empedocles or what, that's the efficient cause.

Then the essence or form in the next paragraph. And then the telos related to that follows. So what he's after comes through clearly again and again.

Now, switch forward, or yes, I think it's forward to the physics, if you would. Page 381. And you notice the same sort of thing once more.

He starts chapter 8 of book 2 of his physics by saying we must now consider why nature is to be ranked among causes that are final, purposeful. Okay. There is a natural teleology, purpose, and achieving essences in all of nature.

And we must consider what is meant by necessity when we're speaking of nature. Very, very clear about that. And the section that runs from 381 to 384 is talking simply of this kind of final causation.

The point is that Plato made form the cause of order and tried somehow to explain disorder and evil in terms of the resistance of nature's processes to form. You

remember his saying that while the creator, as it were, wound up the natural process, when he let it go, it started unraveling. You see.

So you get these two principles, the one and then the other, which is sometimes called the dyad. Well, Aristotle isn't satisfied with that. What is it that inclines physical things towards aims that are good, orderly, beautiful? If the forms are, as Plato said, transcendent entities, which have no power that they can exert, if material things are devoid of intrinsic form, how is it that material things tend in their development towards aims that are good, that provide order and beauty? How can we explain ordered, purposeful changes of that sort without imminent form? The innate endowment of things is what he's talking about, an inner teleology.

He talks of it as a natural potency, a natural potential, which in the process is being actualized, the actualization of potential. It is characteristic, according to Aristotle, of all change, all processes of change, natural or artificial, as the case may be. So that in one place, he says, nature never makes anything without a purpose.

Nature never makes anything without a purpose. And in another place, God and nature create nothing that has not its use. Its use, its purpose, its function.

Okay? So he sees purpose not only in humans consciously purposing in what we do, but he sees something like purpose, though unconscious, in natural processes, processes of unconscious beings. In the general way in which various kinds of processes produce ends, we see evidence that they, too, are end-oriented accordingly. Now, if there is then natural potential in everything, what an artist does, an artist does, is not to create, but to discover.

To discover natural potentials in the physical elements of this world. The musician doesn't create music; he discovers the potential in the physics of sound. You see? The sculptor doesn't invent some design or shape; he discovers the possibilities for it in the grain of the wood or in the texture of the stone and actualizes those potentials.

Art becomes a matter of discovery. There's a book on aesthetic theory, edited by a former graduate professor of mine, called Creation and Discovery. Creation and Discovery.

His thesis is that art is not simply creation. That's the romanticist, 19th-century romanticist glorification of human creative ability as if it were divine. You see? The artist's creativity is found in the capacity, simply, to conceive the possibilities inherent in the materials.

And to bring them to actuality. Discovery. Well, this business of nature's own potential, the inner potency, means that nothing occurs in nature, random, uncaused.

Now, sometimes the complexity of causes, efficient causes particularly, is such that there are, as it were, accidental, incidental causes, in addition to what would otherwise be the normal, natural course of events. And when there are these extraneous, accidental processes, he talks of chance. And so it's by chance that somebody has an accident on the way somewhere.

It was not intended by the person. By chance. A chance event is not an uncaused event.

It is simply that there is a complexity of extraneous causes, causes that are extraneous to the natural process that was initiated. And which come in and produce consequences, some of which are not the good that the process originally aimed at. Well, speaking of nature in those terms, speaking of nature in these terms, in process terms, is going to mean that he thinks of nature always in process, always in change, and time is of the very essence of nature.

Now, again, you get a bit of a contrast with Plato. Plato seems to think of time as ephemeral, something which is simply a shadow, a shifting, changing shadow of the eternal, unchanging, ever-present now. But for Aristotle, if changing processes are the very essence of things, then time is simply the way we measure processes of change.

He calls time the measure of motion. And so we talk of travelling so many miles an hour. Get it? Miles per hour, or feet per second.

Time. And that awareness of time as a continuum enables him to answer Zeno's paradoxes. You remember? The hare that never catches the tortoise? The chicken that never gets across the street? Yeah, because inasmuch as there is no such thing as simply motion, but always motion in relationship to time, Zeno left the time factor out, and just considered the kangaroo hops of motion, rather than how many hops per minute, second, or hour.

So, Aristotle's view of nature is then imminent teleology. Now, what he is saying about nature becomes tremendously important. Throughout the Middle Ages, the Platonic and Aristotelian view was accepted.

So it was held that there is a natural order to everything. That all natural processes have their appointed ends, goals. And that in the course of nature, these ends and goals come to their fulfilment.

Nature's own resources seem to accomplish the governance of world processes. Now, that's one of the things which, towards the end of the Middle Ages, some theologians and philosophers objected to. William of Ockham claimed that this prevents God's sovereignty over the processes of nature.

It means that God has to always be subservient to these essential, unchanging forms. Martin Luther, similarly, was influenced by William of Ockham. And I think John Calvin also, though not as extreme as Luther or Ockham, emphasized the direct sovereignty of God and his powerful action.

Rather than divinely created natural processes with their own potency. So, watch for this as we go along. While the model, the Plato-Aristotle model of real forms at work, provides a powerful conceptual framework for Judeo-Christian and Islamic theology throughout the Middle Ages.

It was also the focus of considerable opposition towards the end of the Middle Ages. And we'll have to trace that kind of thing. Okay, any questions thus far? Those four kinds of causes.

Clear enough, David? When you spoke of chance, you said that there were extraneous causes. Where did they come from? Nature, nature's processes. You might regard it this way.

Here is one natural process in which mosquitoes develop and make their way around. Here is another natural process in which a human being develops, making his way on a summer evening. The two intersect, and you know what happens.

You get bitten. Now, the mosquito and what it does are extraneous to the essential nature of the human being. There are intrinsic necessary causes.

There are also extraneous contingent causes. And it's the extraneous contingent ones that produce what he calls what is accidental rather than what is essential. Fair enough.

You know, and you can talk that way in the development of a human being as well. What example do I want to take? Yeah, the kind of diet accessible to your mother while she was carrying you. Affects the kind of physique you have subsequently.

Now, the natural genetic process has its end, okay. But then there are incidental processes which affect her diet and therefore have an effect on you. You can take his word cause used in this large sense as synonymous with his term principle.

Okay. Now, you remember he said that science is interested in the first principles of the science. What are the first principles? Well, what the scientist wants to do is to understand, for instance, in biology, the essential nature of life.

Okay. Biology, literally, is the science of life. The nature of life, and Aristotle, incidentally, was a biological vitalist.

Life is essentially something different from material chemical processes. Okay. He wants to understand the nature of life.

He wants to understand the material elements involved. He wants to understand the causal processes in our sense, the forces at work. Okay.

He wants to understand, he wants to be able to discern as well the telos, the purpose, the goal. What does this kind of biological process naturally lead to? So what the scientist is doing is trying to understand these principles as they can be defined within that particular science. His conception of science is that if you can formulate these principles, then you can deduce all sorts of things about particular cases.

So, his model of science is that you are formulating premises and deducing conclusions. Okay. Now that the conception of science dominated until the beginning of empirical methods in the 14th century.

Okay. And was modified, picked up, and modified by Descartes, who took mathematical reasoning as the model for science. Okay.

The first principles become axioms, self-evident truths from which all sorts of deductions are made, as in geometry. So very influential here in the philosophy of science. Now I say that you can think of causes as first principles.

You might try another synonym. They are explanatory factors. So that in explaining any kind of change, physical, biological, economic, political, moral, any kind of process of change, whatever.

You look for four different kinds of factors. In explaining anything that has emerged, like the institution of law, four factors are involved. Now, Thomas Aquinas gets this from Aristotle.

So that Aquinas in his treatise on law defines law as an ordinance of reason. That's the formal cause. For the common good, that's the final cause.

Made by him who has the power, the authority, that's the efficient cause. For the community, the material cause. Now essentially the same four causes all over again.

When Aquinas talks of divine creation, He's saying the creation has an efficient cause, God. The creation has a formal cause, the wisdom of God. Defining its essential nature, to be like God.

It has a final cause, to be like God in its every part. But it has no material cause. Creation was ex nihilo, out of nothing.

Well, that's Aquinas' use of it. But this framework governs medieval thought until the rise of mechanistic science. The scientific revolution of the 15th and 16th centuries.

And what happens there, I think you can readily see. Because that mechanistic science accepts efficient cause, sure, forces. Accepts material cause, sure, particles of matter.

Matter and motion, matter and the forces, Newtonian physics. But it has no interest in formal or final causes. So from Aristotle's viewpoint, Newtonian science is only half a science.

And then the fascinating further step that happens is as empiricism develops after Newton. In people like David Hume. David Hume says that empirically, using simple empirical methods.

We have no knowledge of efficient causes and no knowledge of material causes. So what was Hume's outcome? Skeptic about all knowledge of nature. We know nothing about matters of fact beyond our present experience.

But the starting point for the whole discussion is Aristotle's four causes. Does that help? A long answer to a short question, Carl. Anything else? Okay, let's press on a step further.

My exercise is erasing these boards. Being and its categories. Metaphysics, he has told us, is the science of being.

The science of being. But characteristic of Aristotle, here again. Is to ask what we mean when we say something is.

Talk of what is. Ascribe existence to something. Notice that the idea of being is used in a whole variety of different ways.

And these different ways in which we think of being, he refers to as categories of being. Categories of being. If you like, different ways in which we think about what is.

But also different ways in which things are. Okay? Now, one way, and the basic one, in which things are, is as substances. And that's his first category.

Substances. So that when we talk about things, we try to pin down the essence of the substance. But there are many other ways in which we can talk of things which are.

Look at page 314. And notice the list of categories that he offers us. 314.

This is in book 4 of his Metaphysics. Chapter 2. And at the top of the page, he says, There are many senses in which a thing may be said to be. Though it is all related to one central point.

One definite kind of thing. And it isn't said to be by a mere ambiguity. And he spells that out halfway down the column.

Some things are said to be because they are substances. Others because they are affections of substances. Others because they are a process towards substance.

Destructions or privations or qualities of substance. Productive or generative of substance. Or things that are relevant to the substance in relation to.

Or negations of one or another of these things in relationship to substance. Many, many different kinds of beings that he refers to. Now in part, this is simply his rather encyclopedic scientific interest.

Trying to classify everything about which we say it is. It's black. That's a quality.

It's round. That's a shape. It's over there.

That's a spatial location. It was here. That's a temporal reference.

On and on and on. Different ways in which we say something is. But these are not just categories of thought.

They are categories of thought, yes. But they are also categories of being. In other words, it's not just a game of playing with ideas speculatively.

This he takes to be descriptive of reality. You see? In our minds, we make these distinctions. But they are real distinctions.

So this has to do with the science of being. Now, whether you're speaking of beings of a biological sort, beings of a simply physical sort, beings of a historical sort, beings

of an economic or political sort, there are these categories of being qua being. The science of being gets to make these distinctions.

But that's not the... Oh, let me pick up on this for a moment. When we get to talking about his logic, we'll come back to these categories. Because he's very insistent that it's easy to slip a cog in a reasoning process, in a logical process.

And to slip from talking about being in one category and, without noticing, start talking of being in another category. And in that case, you're equivocating, you're using the term in two different senses. Tremendously important.

That violates the basic laws of thought. The basic one is the law of non-contradiction. That a thing cannot both be and not be something at the same time and in the same respect.

But if you change the respects in which you're talking about it, you're talking about something different. You're equivocating. Now, in addition to the categories of being, notice that I've just said he has laws of being which also correspond exactly to laws of thought.

Laws of thought that correspond to the laws of being. And turn there to page 316, where he, 316, 317, in fact, the ten pages after that, where he talks about the basic law of thought, the law of non-contradiction. That a cannot both be and not be at the same time and in the same respect.

A thing cannot both be and not be at the same time and in the same respect. Now, he calls this the most certain principle in the middle of the first column on 317. This is the most certain principle of all, regarding which it is impossible to be mistaken.

For such a principle must be both the best known and non-hypothetical. Principle which everyone must have who understands anything that is. That which everyone must know who knows anything.

Evidently, then, such a principle is the most certain. It is that the same attribute cannot at the same time belong and not belong to the same subject and in the same respect. Now, there's his classic statement of the law of non-contradiction.

You cannot be tall and not tall at the same time and in the same respect. You cannot be here and not here at the same time and in the same respect. You could say my mind is somewhere else, but your body sure is here at the same time and in the same respect.

So, he's very insistent on that. He adds that at the top of the second column, it's impossible for anyone to believe the same thing to be and not to be. To be true and to be false at the same time and in the same respect.

Either it's true, or it's false. It can't be both at the same time and in the same respect. Once in a while, when you ask me a question, you may pose the question, " Is it this way or is it not? And you may notice I'll say yes, because I want to get you used to thinking that it can be A or non-A in different respects.

In different respects. But not at the same time and in the same respect. Okay? Now, the question is, can a principle like this be demonstrated? Can you provide proof for this law of logic? He said, well, no, you can't really in the usual sense of a positive demonstration.

Because you have to assume the law of logic in order to prove the law of logic. But, while we can't give a positive proof without circularity, he offers a negative demonstration. A negative proof.

Locke, on 318, halfway down the first column, says the starting point of such an argument is not that our opponent says something either is or is not, but that he says something which is significant. Say something that means something. If he's really going to say anything, that's necessary, isn't it? If he means nothing, then he's not capable of reasoning either for himself or with another.

If one grants this, demonstration will be possible, for we already have something definite. The person responsible for the proof is not he who demonstrates, but he who listens. While disowning reason, he listens to reason.

So forth. Now, next column, right across. Let it be assumed then, as was said at the beginning, that the name has a meaning and one meaning.

It's impossible, then, assuming the word man has only one meaning, it's impossible that being a man should mean not being a man. You see? Cannot mean two opposite things. And if being a man cannot mean not being a man, then you cannot both be and not be a man at the same time and in the same respect.

His point is this about the negative demonstration. You try to say something. Anything.

Okay? Carl, say something. A proposition, an assertion. The rug is red.

The rug is red. Now, do you mean that the rug is red or that it is not red? That it's red. You mean that it cannot be both red and not red at the same time and in the same respect.

You're assuming it. Now, supposing Carl had said the law of non-contradiction is false. You see, and I would say to him, Carl, do you mean that the law of non-contradiction is false? Or do you mean that it is not false? Either it's false, or it's not false.

But if you say it's not false, you don't mean that it's not false. You see? If the law of non-contradiction is false, in order to make that assertion, you have to deny that it is false. It cannot be false and not false at the same time and in the same respect.

If you mean that it's both false and not false, you're not saying anything. I don't know what you mean. In other words, in order to say anything meaningful, you have to assume and follow the law of non-contradiction.

You know? Not only do you have to assume it to argue it, but you also have to assume it to deny it. You see? And if the denial of it is self-contradictory, because you have to assume it in order to deny it, if denying it is self-contradictory, then there's only one alternative. It must be true.

You see? Put that in the form of a simple disjunctive syllogism. The law of non-contradiction is either true or false. If the assertion that the law of non-contradiction is false turns out to be self-contradictory, if the falsity is self-contradictory because you have to assume the law of non-contradiction in order to deny it, OK? If the falsity is self-contradictory, then the falsity is itself false.

And the only alternative then is that the law must be true. No other alternative, right? If asserting the falsity involves you in a self-contradiction, then asserting the falsity is false. If asserting falsity is false, if falsity is false, then, logically, the thing's true.

Now that's Aristotle's proof. He calls it a negative demonstration of the law of non-contradiction. And he would challenge you, and I would too, to say anything in violation of the law of non-contradiction that means anything.

Now it's sometimes said that Eastern thought does that. Show us. Show us something that means something.

Oh sure, people can utter gobbledygook that doesn't mean anything, but show us something that means something. That can be both true and false at the same time and in the same respect. Now, some people have said that Hegel, with his dialectic thesis, antithesis, and synthesis, denies the law of non-contradiction.

I can only say they've never read Hegel's logic. Because explicitly, he doesn't deny it. He simply says it's trivial.

It's trivial because if you're dealing with a historical process, you're not dealing with things at the same time, but at different times. So the thesis applies at one time, and at a subsequent time, the antithesis may apply. You see? So you can have a and non-a, but at different times, not at the same time, and in the same respect.

Hegel was interested in different times. He was doing a philosophy of history. So the law of non-contradiction is basic.

And all logic is built on that. All communication, cognitive communication, all uses of language, are built on that. The law of non-contradiction.