Aristotle’s *Categories* and *Physics*

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**Aristotle as Metaphysician**

- Plato’s greatest student was Aristotle (384-322 BC).
- In metaphysics, Aristotle rejected Plato’s theory of forms and proposed his own theory of what makes things the kind of things they are.
- Most importantly, he rejected Plato’s claim that forms are distinct from the things that “share” in them.
- As a result, Aristotle gave natural science a central role in his philosophy and linked his metaphysics closely to the investigation of nature.
- Aristotle was the first practitioner of logic, which also had a deep influence on his metaphysical theory.
- In this segment, we will investigate two of Aristotle’ works:
  - *Categories* (logic)
  - *Physics* (natural science)

**Plato’s Account of Kinds**

- Plato’s general account of how a thing is of a kind:

  \[
  \begin{array}{c|c|c}
  \text{Form} & \text{causes} & \text{Thing} \\
  \text{Quality} & \text{in} & \text{Thing}
  \end{array}
  \]

- An example of how a thing (some wine in a goblet) is of a kind (cold):

  \[
  \begin{array}{c|c|c}
  \text{Coldness itself} & \text{causes} & \text{The wine’s coldness} \\
  \text{in} & \text{The wine}
  \end{array}
  \]
Aristotle’s Basic Account of Kinds

- Aristotle’s general account of how a thing is of a kind:

<table>
<thead>
<tr>
<th>Something</th>
<th>said of</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being</td>
<td>in</td>
</tr>
</tbody>
</table>

- So in the above example:

<table>
<thead>
<tr>
<th>Cold</th>
<th>said of</th>
</tr>
</thead>
<tbody>
<tr>
<td>The wine’s cold temperature</td>
<td>in</td>
</tr>
</tbody>
</table>

- We will go through the new features of Aristotle’s account one-by-one.

In a Subject

- While Plato said that a “quality” is in a subject, Aristotle says that “a being” is in a subject because beings other than qualities can be in a subject, including:
  - Quality (white),
  - Quantity (two feet long),
  - Relative (larger),
  - Where (in the Lyceum),
  - When (yesterday),
  - Being in a position (sitting),
  - Having (has shoes on),
  - Acting on (cutting),
  - Being acted on (being cut).

- A being which is in a subject:
  - Is not part of the subject (as a hand is part of a man),
  - Cannot exist separately from the subject it is in.

Said of a Subject

- We discover from grammar what is said of (or “predicated of”) a subject.
- The general schema for being said of a subject is: x [some verb] ________.
- The standard case is where we say something of a subject because of what is in it.
– A cold temperature is in the wine, so we say,
– “The wine is cold.”
– And “cold” is said of the wine.

• We may also say something about what is said of something.
– “Man” is said of Socrates,
– Man is an animal,
– So, “animal” is said of man.
– And “animal” is also said of Socrates.

Genus and Species

• We may schematize the last example.

<table>
<thead>
<tr>
<th>Animal</th>
</tr>
</thead>
<tbody>
<tr>
<td>said of</td>
</tr>
<tr>
<td>Man</td>
</tr>
<tr>
<td>said of</td>
</tr>
<tr>
<td>Socrates</td>
</tr>
</tbody>
</table>

Socrates’s rationality and locomotion in Socrates

• “Man” can be said of many individual things, and it will be called a “species.”
• “Animal” can be said of many species, and it will be called a “genus.”
• Species and genera are distinguished from other species and genera, respectively, by “differentia.”
• Man is an animal which is different from all other animals by being rational, so rationality is the differentiating feature of man.

Substance

• Substance is that which is not in a subject.
• Thus substance applies to:
  – Individual, Socrates,
  – Species, man,
  – Genus, animal
• What is also not said of any subject is primary substance: individual things.
• The species or genera said of a primary subject are secondary substance.
• Other things said of a primary substance are not substance, because they do not reveal what it is.
• Since all other things are either in or said of primary substance, none would exist without primary substance.
Features of Substance

- Substances seem to be “thises,” and primary substances certainly are “thises.”
  - This is Socrates.
- Substances have no contraries and only individual substances can receive contraries.
  - A pale color can never become dark,
  - But Socrates can be pale and become dark.
- Substance does not admit of degrees.
  - Man is never more or less man.
- An individual substance has a nature, which is an internal principle of change and stability.

The Nature of a Thing

- The nature of a thing may be conceived in two ways:
  - As the matter that makes it up.
    * The flesh and bones of an animal.
  - As its form.
    * The soul of an animal.
- The form is more the nature than is the matter.
- We call a thing the kind of thing it is when it actually has the form, not when it potentially does.
  - What is potentially flesh and bone is not an animal unless it acquires the form that makes it flesh and bone.

How to Study Nature

- The mathematician studies pure quantities.
- The student of nature studies matter, and uses mathematics to understand mathematical “coincidents” of matter.
  - The student of astronomy studies the shapes of the heavenly bodies, e.g., whether they are spherical.
- Form must also be studied by the student of nature, just as it is studied by the craftsman.
- In the crafts, we study the means that bring about certain ends, and by analogy the study of nature will concern means and ends.
The Four Causes

• In inquiring about natural change, we ask four kinds of questions about causes:
  – What is the matter from which it arises? (“material cause”)
  – What is the form that constitutes its nature? (“formal cause”)
  – What agent produced it? (“efficient cause”)
  – What is its end? (“final cause”)

• In many cases, the same thing may answer more than one of the questions.
  – What something is for (the end) is the same as what kind of thing it is (the form).

Teleology and Necessity

• Aristotle claims that nature acts for a purpose, rather than from blind necessity.
• If nature did not act for a purpose, its ends would be brought about by chance.
  – The specialized functions of the parts of animals would be the products of chance.
• But to be brought about by chance is to be unusual, which the products of nature are not.
• Nature works teleologically, as do crafts: there is an end (telos) which nature has the means to bring about.

In Defense of Teleology

• Apparent irregularities in nature can be explained as the result of failure to achieve the end, rather than by chance.
• Moving toward an end does not require deliberation, so nature does not need to deliberate in order to achieve its ends.
  – The causes that are needed for the production of a thing need only be material.
• Necessity is found in the end, rather than in the antecedent conditions that produce something.