

Aristotle

Next to Plato, Aristotle holds the title as one of the most influential thinkers in the West. Still it is probably his 'scientific' thinking which has the most influence in our daily lives. If, as Whitehead said, all of Western philosophy is a footnote to Plato, think that all Western science is a footnote to Aristotle. One of the main things we can say about Aristotle is that he absolutely loved the world around him. It filled him with awe and wonder.

We remember him philosophically because Aristotle represents a serious break in thought with previous philosophers (re: Socrates and Plato) and yet in the greater scheme of things he breaks little new ground in terms of the questions he is seeking to answer. His innovation comes in his belief in the foundation of knowledge. While he starts with and refines some of Plato's ideas, he abandons his mentor's view of higher, non-physical truths and seeks meaning within the world. He creates the analytical/deductive method, observing with the senses to understand and know something, creating the movement from *a posteriori* to *a priori* thinking. Where Plato was strictly in the immaterial as the foundation of knowledge for the material, Aristotle finds truth within the material world and sees the immaterial from there.

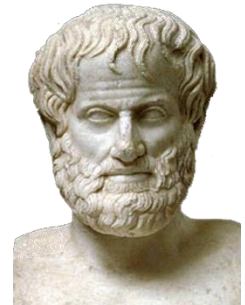


Figure 1: Bust of Aristotle

A Man, A Plan....

Surprisingly we know a lot about Aristotle's life. *A lot*. We will hit just the highlights though. His father was a physician to the king of Macedonia but he was orphaned early and eventually placed into Plato's Academy at 17. Plato himself was impressed with the lad, so impressed that he called him "*the mind of the school*", which probably sounds much more poetic in Greek.

After Plato's death, he found his thought too different from his mentor and therefore the school Plato had founded. Aristotle headed out, seeking his own way, hanging with other graduates and classmates (sounds like some teen-age coming of age movie). Eventually, he was summoned back to educate the young son of a certain Macedonian ruler named Phillip. This young man Alexander (356-323 BC), who eventually became known as 'the Great' (which sounds pretty good even in English), also went on to have some influence on the thinking patterns of a large number of people.

In connection with the ascendancy of Alexander, Aristotle made his way back to Athens to open a school in the Lyceum. Here he assembled a large library aided by money and materials sent by Alexander from all over the new empire.

Unfortunately for him, all good things must come to an end and with the death of Alexander the negative reaction to his rule swept Aristotle up. Similarly accused of crimes against the state like his mentor's mentor Socrates, he choose to not let Athens "*sin twice against philosophy*" (which sounds bad in both Greek and English) and unlike his grand-mentor, fled the city. Soon afterwards he got sick and died which may or may not prove Socrates' point.

Not a bad resume. His parentage places him squarely within the political system which the Academy that he attended sought to influence. His natural intellect and impressive mind guarantee him a seat there and influence in the regime. The peace and influence of Alexander ensured a wide effect of his thought. The idea of the library flourished, most famously later in Alexandria in Egypt and still survives

to this day, though not in Alexandria. Many of his thoughts, captured most probably from lecture notes, survive. The right man in the right place at the right time.

The Big Themes

What distinguishes Aristotle from earlier thinkers? Not much really but to be fair it is more than just his position in the historical timeline which calls our attention to him. Logic; Vices and virtues; understanding objects through Categories; final cause; Biology; Psychology; Rhetoric; Poetics. You name it he had a thought on it. He accomplished this volume of thought by breaking things down in to their components in order to better understand them. He was a *divider not a uniter* to paraphrase. Since knowledge was for more than just ethical living, he divided the 'sciences' (think of the word as meaning understanding/knowledge) up into three categories: the *theoretical*, the *practical* and the *productive*. Science gives us information, but that information has different ultimate *ends* which correspond to those three categories: *knowledge*, *conduct*, and the *making of 'beautiful' objects*.

For Aristotle, the material world (and therefore life) surrounds us and is larger than just our moral actions. The quantification and qualification of the universe around us requires a portion of our thought as well. At the same time that does not mean that knowledge for knowledge's sake is all there is to it, knowing also involves right action. That is to say, contrary to some opinions just because we can do something, we should not because it is not ethical, perhaps a rude awakening for those secular humanists who look to him as their hero.

Thought Exercise

Compare and contrast this understanding of knowledge and the purpose of knowledge with Plato's. What are its possible ramifications?

Aristotle Interrupted

But we digress. As stated previously, Aristotle wrote on a great many things. The following are notes on some of the works or lectures which are part of his main thought. Later we will explore these and other ideas but for now, a mere overview.

One final observation on the genius that is Aristotle was that he was truly the master of the opening line. He can succinctly sum up most of what he is thinking about in the first sentence of each of his works.

Metaphysics

"All men desire to know." (*Metaphysics 1:1*) This fundamental function within humans requires much thought. If Nature is the physical world around us, what is the nature of what is beyond Nature? What knowledge is best characterized as 'Wisdom', and how do we acquire it? While he takes a slightly different approach than Plato, the subject is similar.

Science (Physics)

What is the nature of Nature? Here he takes on some of the big ideas we have glanced at: motion; something or nothing; time and change; Biology and Psychology also fall into this realm. Here he looks at the question of what are some of the 'first principles' of Nature? The term 'natural philosopher' is used for a follower of science, one that has been dropped in favor of 'scientist'.

Logic

We have previously examined this idea, but let us now look at the term in terms of the man. Well, now comes the hard part. Sheepishly and with as much as the word is bandied about here, contritely, I must inform you that Aristotle never formally assign a work to it, nor did he actually use the word. It comes to us later, probably from Cicero. His word would be more correctly translated 'analytics'. Aristotle saw logic not so much as a science but a function of every human being and society. That is to say, it is, as we have proffered it to you, an *instrument* of science and the necessary basis of science. He took it for granted that it had to be understood and practiced in order to do any of the sciences.

Still we brazenly assign the moniker 'Aristotelian Logic' because he did wax at length on the subject as it was so important to his system. He introduces the syllogism as the basis for all reasoning.

The Soul

How different could this be from Plato, right? For Aristotle the study of the soul is Psychology (think *Psyche*); therefore the end of Psychology is to study and reach an understanding "*first of its essential nature and secondly its properties*" (*De Anima Bk. 1:7*). As he presents it, the study of how and why we understand is perhaps the greatest in rank of the sciences. In this way he still reflects Plato. What is the end of knowledge except that we should live better and our souls be saved?

Ethics (Nicomachean)

More than just a motivation, a system unto itself. Its formal name *Nicomachean* derives from the fact that it was most probably written down by his son, Nicomachus. For Aristotle, everything by all accounts is aimed toward the good, so it must be that the good is that toward which all is aimed. I wished I had said that and people would be quoting me instead of the first line of the *Ethics*. An interesting development is the non-relativistic notion that some goods are subservient to other goods, one that Epicurus rejects.

So what is the Good? Think back; virtue, as Plato saw it was involved the whole of the person working toward a synthesis of thought and deed. Aristotle, never content to let whole things be whole, dissects virtue back into two parts: *intellectual* (thoughts) and *moral* (actions).

Politics

Well everyone has an opinion right? Aristotle's opinion was that Politics was the science of the good, that of which Ethics speaks. In that sense and if we look at the categories of knowledge, this would be the most practical science. As with Plato, Aristotle puts high value on political thought because it is for the good of everyone.

Aristotle Unveiled

That brief overview gives very little in the way of depth. The ultimate problem in this venue not just for us in our limited format, and not just for the voluminous Aristotle, but for most philosophers, is the extent of their writings and thought. What to pick and choose? What to survey that will be good for later? What is good just to know in and of itself? Well, not easily answered questions, at least for this writer. In the meantime, I have never let ignorance stop me. Knowing that the extent of our treatment will be a mere pale shade compared to the works themselves, let us press on. To do that we must pierce

the veil; well maybe at best we can spend some time peeking beneath the curtain and come to understand some of the language and thought of Aristotle.

Like his mentor, Aristotle often invokes the *dialectical* method. Plato (and Socrates) employs it but in his earlier works leans toward the Socratic method because he really believes in drawing the answer out of the individual. Aristotle *dialogs* with other thinkers to work through the idea. Whereas Plato believes the answer lies within the individual, Aristotle believes the idea lies within the thinking, that it is more external, because it lies in the observation.

And The Categories Are...

We will first tackle the *idea* of Categories. This is an essential part of the understanding of not only Aristotelian thought but that of many later philosophers (like Kant 1724-1804). In a rash and completely generalized statement we can state that Socrates and Plato really did not care as to the minutiae when it came to thinking. They were more about the big ideas. Aristotle, on the other hand saw that *not* being exact led to errors in thinking and so he set out to formalize thought and thinking. Therefore it is not so much the ideas, but the methods that are new. Many people before him have mentioned many of the things he will explore, but his genius comes in providing a formal structure to the thinking about those things.

Aside from just an obvious glee about how the world is put together, he really wants to get down to a how we can think about things that will give us a consistent way to discuss them. Now on Aristotle's cue we must define the word *categories*. The Greek word is probably best transliterated as 'predicate' as in *subject* and *predicate*. So, at their simplest, categories are those things which can be the predicate or subject in a statement or an argument.

We might also say that one thing is predictable of or predicated on another, as in "*this sentence is predicated in the idea that I know what I'm talking about.*"

So how do categories help us and how are they determined? The two questions are actually the same question. The determining of categories helps us to understand them and vice versa. Okay, okay, I hear the cynics (small 'c') among you saying "*that sounds like a load of...categories.*" Were we not always taught that you cannot define a thing with itself? Did not Aristotle himself classify that as a logical fallacy? Well, yes. Okay you caught me.

The main problem with categorizing categories is that there are so many ways to do it and so many ways to understand it. Aristotle himself relies on categorizing yet his official list of categories seems to be fluid. The main point is that when we are thinking about things we are trying to get to their heart, not by stripping away everything but getting down to their basic definition and their definition to everything else, that is understanding the stuff that makes thing a thing and not something else. Along the way we do not abandon what we know about the thing, just come to greater understand of the thing in its larger context.

Meaning, for 100

How do I categorize things, let me count the ways. We tend to think in generals and specifics. Sometimes the two can get in each other's way. The meaning of words, the concepts they represent need to be bounded, so that we can understand the context in which we use them. Aristotle starts out by addressing this problem using three words:

1. **Equivocally:** That is to say something has the same name as something else but the definition is different (equivalency) – *world*: the collection of people as well as the planet itself.
2. **Univocally:** Is the case when the name and the definition applied to that name are the same (oneness) – *car*: same whether it is a Ford or a Toyota.
3. **Derivatively:** Something derives its name from something else (inheritance) – *computer*: something which computes.

But how do we get meaning? What are the ways in which something is the thing on which other things depend? This *definition* is in a sense what a category is, that is, it is the thing on which others are based, or the bucket into which they fall. Hence we can talk about humans and birds as both being animals, even though they are not the same kind of animal. He tells us that the definition of something, that by which we know it as *it*, is what we have when we strip away everything which can exist apart from it. This is how I *know* a bird from a human.

Double Jeopardy

Okay, that seems obvious so why is definition and defining and categorizing things so important? Why did Aristotle feel the need to go in this direction? What aspect of Platonic thought caused him diverge from defining things by their Form? Taking three steps forward and two steps back we dance back to Plato and take a look at that central tenet of Platonic thought: the *Forms*. There are three theses about Forms which I conveniently left out till now for purposes of comparison:

1. **Individual:** Forms are individual things that express (and explain) all features common to the individuals that share that nature.
2. **Distinct from particulars:** General versus particular; the common nature (goodness, humanity) is distinct from any of the individual things that share it (good things, humans).
3. **Self-predicable:** The common nature must be predicable of the individual thing; Goodness is good, Humanity is human, etc.

From this Platonic definition, Aristotle, in a kind of Sherman and Peabody flight through the *Way-Back* machine, runs into the *Third Man* paradox:

Human is predicable both of Socrates and of *humanity*. So *human* must be distinct from both Socrates and *humanity*. So we need yet another common nature *human'* (*human prime*) distinct from *human* and from Socrates. And yet another nature again that is distinct from *human'*, *human* and Socrates. But this will go on forever, which means we really have no explanation for what makes Socrates human. He tells us the same problem would also occur with the notion "white".

Basically Aristotle counters with the idea of *Substance* and *Accidents*. Recall from our earlier brief discussions that *Substance* is that which makes something what it is – human for example, and *Accidents* are what distinguish the individual Substances from one another – hair color and height. This avoids the way-back argument because you distinguish things from one another not by some external 'form' but by their individual accidents; something *observable*. As an extra thought remember that definition-wise what for Aristotle could be a substance for one thing might be an accident for another, but that is where having categories helps us (more on that later).

Logic, for 500

Logic is the core tool or as Aristotle would call it, an *instrument (organon)* for all thinking. Heard that one before? That aside, as you can see from the discussion of Categories why their idea was necessary before he could even posit the idea of logical thinking, and that logical thinking would be required to define the categories. Go back and look at the *Square of Opposition* (Chapter 2) where you can see the categories at work.

Aristotle has works on both the *a priori* and *a posteriori analytics* (logic), as he would call them. This is not to re-hash all of the logic section, as helpful as that may be, but put it into context. For Aristotle the reasoning for anything in the theoretical sciences was based in true-false statements in relationship to one another. The idea of the syllogism, based on ‘truths’, is basically statements predicated about a subject, or more succinctly: *propositions*. Aristotle believed that the flaw in so many explanations was the lack of logic. The idea and imperative nature of logic meant that consistency is assured and that also ‘foundational truths’ or *demonstration* can be established. As with the categories, this just means that you do not have to go back a re-prove everything in order to proceed in an argument. You also avoid confusing yourself and committing a fallacy.

Language, for 1000

“*Spoken words are the symbols of mental experience and written words are the symbols of the spoken word.*” (*De Interpretatione* 16). Words have to be understood. The words we use for communicating ideas must be understood. Aristotle acknowledges that there are a variety of linguistic possibilities dealing with truths and the means of communicating them. These ideas, like so many others contained here, will be bounced about by later philosophers.

But for now, our discussion is not so much on the words themselves, but word forms and their definition such as nouns, verbs and the like (that is *language*). Truth and falsity are derived here by combining words together which, like thoughts, have neither validity nor non-validity in and of themselves, they just are. So this is a step beyond just the categories, which in and of themselves are neither true nor false but are so *only in context of an argument*; only in the context of predication, do they acquire some truth or falsity.

By reducing language down to these simple ideas, Aristotle makes it easier to create the categories for which Science and we ourselves are so indebted. But is there a down side? Does this reduce language to a very base and uninteresting phenomena in humans? Not for Aristotle. Remember, he really wants to understand things and he knows that you can be distracted when you start complicating matters by asking about different languages and colloquial words and phrases, etc. His motto is “*Stay on target....*” (Gold Five, *Star Wars*).

Final Jeopardy

“*This is the understanding of what knowledge is.*” And the question is “*What is Metaphysics?*” Close; how much did you wager? The question we were looking for “*is what knowledge for Aristotle*” (*epistemology*). Well, we know that it was important to him; we know that there are types of knowledge (*theoretical, practical, and productive*) but how did he see the sciences (the *instruments* of thinking) falling into those categories? Well here are some quick examples:

Metaphysics, physics and mathematics fall under the theoretical knowledge realm, that is to say their end aim is to provide knowledge that is of the thing itself not of the *thinker*. Alternatively, practical knowledge, in which ethics and politics fall, concentrates on action and it emerges from the *doer* not in some external reality.

Theoretical knowledge requires the understanding of the principles of and the application of deductive thinking or Logic, with the capital 'L'. Basically, how can you discuss/learn anything unless you have a definition of argumentation?

Productive knowledge kind of speaks for itself, but just in case the voice is too quiet I will boldly speak for it. Think back to Plato's *Ion*. How did he see 'practical' knowledge? For Aristotle it was not much different. He classified medicine, construction, and the like here, as Plato might say, 'the arts'.

Practical knowledge is an interesting distinction from productive knowledge in that these would seem to be 'productive' as anything practical would be productive, right? Not exactly; think of the root more in terms of 'practice' instead of 'pragmatic'.

Putting It Together

So as we begin to examine this great thinker, we have to stand in awe of the effect his formalized thought has on so much of what we think today. Ironically (if irony were not dead, but that is another class), at least to this observer, the modern atheistic idea of 'free-thinking' that our society seems to cling to and the ideas we often dismiss through modern science, are often at odds with what was embraced by the author of *Science*.

This was a massive presentation, and yet very incomplete. The ideas and notions which lie behind it press unseen like the water behind a dam. Aristotle cannot really be encapsulated without some loss, so some reading is required. What we seek here is to understand how important it was for Aristotle that distinctions be made, and not just arbitrarily, at the time you want to prove your point but at all times, such that the point remains valid from there on (one true always true and not open to interpretation). Defining and understanding things in relationship to one another gave them distinction but also kept them in the big picture. As for Plato, knowledge was the goal, and not just knowledge but *right* knowledge.

Plato felt reason alone was the means to wisdom. Aristotle really wants to add observation to the mix. He begins with our sense of wonder and awe of the world around us. In his system reality must count for something. As a consequence of this realism, things are knowable in and from themselves (thing *qua* thing). Think of it this way. As opposed to Plato who put the perfect as outside of the individual thing, Aristotle maintains that the perfect is held *within* every individual thing as opposed to some external place. This is a difference in *Epistemology* between the two.

"That which is there to be spoken of and thought of, must be."

Parmenides, *Fragment 6*

"I'm not talking about clams in general; I'm talking about each clam individually. I mean, how can you have each one generally? Well I guess you could, but it wouldn't be, like...what I mean."

Arlo Guthrie, *The Story of Reuben Clamzo and His Strange Daughter in the Key of A.*

CATEGORIES (*Chapters 1-6*)

1

- 1^a1 Things are said to be named 'equivocally' when, though they have a common name, the definition corresponding with the name differs for each. Thus, a real man and a figure in a picture can both lay claim to the name 'animal'; yet these are equivocally so named, for, though they have a common name, the definition corresponding with the name differs for each. For should any one define in what sense each is an animal, his definition in the one case will be appropriate to that case only.
- 1^a6 On the other hand, things are said to be named 'univocally' which have both the name and the definition answering to the name in common. A man and an ox are both 'animal', and these are univocally so named, inasmuch as not only the name, but also the definition, is the same in both cases: for if a man should state in what sense each is an animal, the statement in the one case would be identical with that in the other.
- 1^a12 Things are said to be named 'derivatively', which derive their name from some other name, but differ from it in termination. Thus the grammarian derives his name from the word 'grammar', and the courageous man from the word 'courage'.

2

- 1^a16 Forms of speech are either simple or composite. Examples of the latter are such expressions as 'the man runs', 'the man wins'; of the former 'man', 'ox', 'runs', 'wins'.
- 1^a20 Of things themselves some are predicable of a subject, and are never present in a subject. Thus 'man' is predicable of the individual man, and is never present in a subject. By being 'present in a subject' I do not mean present as parts are present in a whole, but being incapable of existence apart from the said subject.

Some things, again, are present in a subject, but are never predicable of a subject. For instance, a certain point of grammatical knowledge is present in the mind, but is not predicable of any subject; or again, a certain whiteness may be present in the body (for color requires a material basis), yet it is never predicable of anything.

1^a25

1^b Other things, again, are both predicable of a subject and present in a subject. Thus while knowledge is present in the human mind, it is predicable of grammar.

1^b3

There is, lastly, a class of things which are neither present in a subject nor predicable of a subject, such as the individual man or the individual horse. But, to speak more generally, that which is individual and has the character of a unit is never predicable of a subject. Yet in some cases there is nothing to prevent such being present in a subject. Thus a certain point of grammatical knowledge is present in a subject.

3

1^b10

When one thing is predicated of another, all that which is predicable of the predicate will be predicable also of the subject. Thus, 'man' is predicated of the individual man; but 'animal' is predicated of 'man'; it will, therefore, be predicable of the individual man also: for the individual man is both 'man' and 'animal'.

1^b16

If genera are different and co-ordinate, their differentiae are themselves different in kind. Take as an instance the genus 'animal' and the genus 'knowledge'. 'With feet', 'two-footed', 'winged', 'aquatic', are differentiae of 'animal'; the species of knowledge are not distinguished by the same differentiae. One species of knowledge does not differ from another in being 'two-footed'.

1^b20 But where one genus is subordinate to another, there is nothing to prevent their having the same differentiae: for the greater class is predicated of the lesser, so that all the differentiae of the predicate will be differentiae also of the subject.

4

1^b25 Expressions which are in no way composite signify substance, quantity, quality, relation, place, time, position, state, action, or affection. To sketch my meaning roughly, examples of substance are 'man' or 'the horse', of quantity, such terms as 'two cubits long' or 'three cubits long', of quality, such attributes as 'white', 'grammatical'. 'Double', 'half', 'greater', fall under the category of relation; 'in the market place', 'in the Lyceum', under that of place; 'yesterday', 'last year', under that of time. 'Lying', 'sitting', are terms indicating position, 'shod', 'armed', state; 'to lance', 'to cauterize', action; 'to be lanced', 'to be cauterized', affection.

2^a4 No one of these terms, in and by itself, involves an affirmation; it is by the combination of such terms that positive or negative statements arise. For every assertion must, as is admitted, be either true or false, whereas expressions which are not in any way composite such as 'man', 'white', 'runs', 'wins', cannot be either true or false.

5

2^a11 Substance, in the truest and primary and most definite sense of the word, is that which is neither predicable of a subject nor present in a subject; for instance, the individual man or horse. But in a secondary sense those things are called substances within which, as species, the primary substances are included; also those which, as genera, include the species. For instance, the individual man is included in the species 'man', and the genus to which the species belongs is 'animal'; these, therefore-that is to say, the species 'man' and the genus 'animal',-are termed secondary substances.

2^a19 It is plain from what has been said that both the name and the definition of the predicate must be predicable of the subject. For instance, 'man' is predicted of the individual man. Now in this case the name of the species 'man' is applied to the individual, for we use the term 'man' in describing the individual; and the definition of

'man' will also be predicated of the individual man, for the individual man is both man and animal. Thus, both the name and the definition of the species are predicable of the individual.

2^a27 With regard, on the other hand, to those things which are present in a subject, it is generally the case that neither their name nor their definition is predicable of that in which they are present. Though, however, the definition is never predicable, there is nothing in certain cases to prevent the name being used. For instance, 'white' being present in a body is predicated of that in which it is present, for a body is called white: the definition, however, of the color 'white' is never predicable of the body.

2^a34 Everything except primary substances is either predicable of a primary substance or present in a primary substance. This becomes evident by reference to particular instances which occur. 'Animal' is predicated of the species 'man', therefore of the individual man, for if there were no individual man of whom it could be predicated, it could not be predicated of the species 'man' at all. Again, color is present in body, therefore in individual bodies, for if there were no individual body in which it was present, it could not be present in body at all. Thus everything except primary substances is either predicated of primary substances, or is present in them, and if these last did not exist, it would be impossible for anything else to exist.

2^b Of secondary substances, the species is more truly substance than the genus, being more nearly related to primary substance. For if anyone should render an account of what a primary substance is, he would render a more instructive account, and one more proper to the subject, by stating the species than by stating the genus. Thus, he would give a more instructive account of an individual man by stating that he was man than by stating that he was animal, for the former description is peculiar to the individual in a greater degree, while the latter is too general. Again, the man who gives an account of the nature of an individual tree will give a more instructive account by mentioning the species 'tree' than by mentioning the genus 'plant'.

2^b15 Moreover, primary substances are most properly called substances in virtue of the fact that they are the entities which underlie every.

else, and that everything else is either predicated of them or present in them. Now the same relation which subsists between primary substance and everything else subsists also between the species and the genus: for the species is to the genus as subject is to predicate, since the genus is predicated of the species, whereas the species cannot be predicated of the genus. Thus we have a second ground for asserting that the species is more truly substance than the genus.

2^b22 Of species themselves, except in the case of such as are genera, no one is more truly substance than another. We should not give a more appropriate account of the individual man by stating the species to which he belonged, than we should of an individual horse by adopting the same method of definition. In the same way, of primary substances, no one is more truly substance than another; an individual man is not more truly substance than an individual ox.

2^b29 It is, then, with good reason that of all that remains, when we exclude primary substances, we concede to species and genera alone the name 'secondary substance', for these alone of all the predicates convey a knowledge of primary substance. For it is by stating the species or the genus that we appropriately define any individual man; and we shall make our definition more exact by stating the former than by stating the latter. All other things that we state, such as that he is white, that he runs, and so on, are irrelevant to the definition. Thus it is just that these alone, apart from primary substances, should be called substances.

2^b37 Further, primary substances are most properly so called, because they underlie and are the subjects of everything else. Now the same relation that subsists between primary substance and everything else subsists also between the species and the genus to which the primary substance belongs, on the one hand, and every attribute which is not included within these, on the other. For these are the subjects of all such. If we call an individual man 'skilled in grammar', the predicate is applicable also to the species and to the genus to which he belongs. This law holds good in all cases.

3^a It is a common characteristic of all substance that it is never present in a subject. For primary substance is neither present in a subject

nor predicated of a subject; while, with regard to secondary substances, it is clear from the following arguments (apart from others) that they are not present in a subject. For 'man' is predicated of the individual man, but is not present in any subject: for manhood is not present in the individual man. In the same way, 'animal' is also predicated of the individual man, but is not present in him. Again, when a thing is present in a subject, though the name may quite well be applied to that in which it is present, the definition cannot be applied. Yet of secondary substances, not only the name, but also the definition, applies to the subject: we should use both the definition of the species and that of the genus with reference to the individual man. Thus substance cannot be present in a subject.

3^a21 Yet this is not peculiar to substance, for it is also the case that differentiae cannot be present in subjects. The characteristics 'terrestrial' and 'two-footed' are predicated of the species 'man', but not present in it. For they are not in man. Moreover, the definition of the differentia may be predicated of that of which the differentia itself is predicated. For instance, if the characteristic 'terrestrial' is predicated of the species 'man', the definition also of that characteristic may be used to form the predicate of the species 'man': for 'man' is terrestrial.

3^a29 The fact that the parts of substances appear to be present in the whole, as in a subject, should not make us apprehensive lest we should have to admit that such parts are not substances: for in explaining the phrase 'being present in a subject', we stated that we meant 'otherwise than as parts in a whole'.

3^a33 It is the mark of substances and of differentiae that, in all propositions of which they form the predicate, they are predicated univocally. For all such propositions have for their subject either the individual or the species. It is true that, inasmuch as primary substance is not predicable of anything, it can never form the predicate of any proposition. But of secondary substances, the species is predicated of the individual, the genus both of the species and of the individual. Similarly the differentiae are predicated of the species and of the individuals. Moreover, the definition of the species and that of the genus are applicable to the primary

3^b

substance, and that of the genus to the species. For all that is predicated of the predicate will be predicated also of the subject. Similarly, the definition of the differentiae will be applicable to the species and to the individuals. But it was stated above that the word 'univocal' was applied to those things which had both name and definition in common. It is, therefore, established that in every proposition, of which either substance or a differentia forms the predicate, these are predicated univocally.

3^b10 All substance appears to signify that which is individual. In the case of primary substance this is indisputably true, for the thing is a unit. In the case of secondary substances, when we speak, for instance, of 'man' or 'animal', our form of speech gives the impression that we are here also indicating that which is individual, but the impression is not strictly true; for a secondary substance is not an individual, but a class with a certain qualification; for it is not one and single as a primary substance is; the words 'man', 'animal', are predicable of more than one subject.

3^b17 Yet species and genus do not merely indicate quality, like the term 'white'; 'white' indicates quality and nothing further, but species and genus determine the quality with reference to a substance: they signify substance qualitatively differentiated. The determinate qualification covers a larger field in the case of the genus than in that of the species: he who uses the word 'animal' is herein using a word of wider extension than he who uses the word 'man'.

3^b24 Another mark of substance is that it has no contrary. What could be the contrary of any primary substance, such as the individual man or animal? It has none. Nor can the species or the genus have a contrary. Yet this characteristic is not peculiar to substance, but is true of many other things, such as quantity. There is nothing that forms the contrary of 'two cubits long' or of 'three cubits long', or of 'ten', or of any such term. A man may contend that 'much' is the contrary of 'little', or 'great' of 'small', but of definite quantitative terms no contrary exists.

3^b33 Substance, again, does not appear to admit of variation of degree. I do not mean by this that one substance cannot be more or less truly substance than another, for it has already been stated' that this is

the case; but that no single substance admits of varying degrees within itself. For instance, one particular substance, 'man', cannot be more or less man either than himself at some other time or than some other man. One man cannot be more man than another, as that which is white may be more or less white than some other white object, or as that which is beautiful may be more or less beautiful than some other beautiful object. The same quality, moreover, is said to subsist in a thing in varying degrees at different times. A body, being white, is said to be whiter at one time than it was before, or, being warm, is said to be warmer or less warm than at some other time. But substance is not said to be more or less that which it is: a man is not more truly a man at one time than he was before, nor is anything, if it is substance, more or less what it is. Substance, then, does not admit of variation of degree.

4^a

4^a10 The most distinctive mark of substance appears to be that, while remaining numerically one and the same, it is capable of admitting contrary qualities. From among things other than substance, we should find ourselves unable to bring forward any which possessed this mark. Thus, one and the same color cannot be white and black. Nor can the same one action be good and bad: this law holds good with everything that is not substance. But one and the selfsame substance, while retaining its identity, is yet capable of admitting contrary qualities. The same individual person is at one time white, at another black, at one time warm, at another cold, at one time good, at another bad. This capacity is found nowhere else, though it might be maintained that a statement or opinion was an exception to the rule. The same statement, it is agreed, can be both true and false. For if the statement 'he is sitting' is true, yet, when the person in question has risen, the same statement will be false. The same applies to opinions. For if anyone thinks truly that a person is sitting, yet, when that person has risen, this same opinion, if still held, will be false. Yet although this exception may be allowed, there is, nevertheless, a difference in the manner in which the thing takes place. It is by themselves changing that substances admit contrary qualities. It is thus that that which was hot becomes cold, for it has entered into a different state. Similarly that which was

white becomes black, and that which was bad good, by a process of change; and in the same way in all other cases it is by changing that substances are capable of admitting contrary qualities. But statements and opinions themselves remain unaltered in all respects: it is by the alteration in the facts of the case that the contrary quality comes to be theirs. The statement 'he is sitting' remains unaltered, but it is at one time true, at another false,

4^b according to circumstances. What has been said of statements applies also to opinions. Thus, in respect of the manner in which the thing takes place, it is the peculiar mark of substance that it should be capable of admitting contrary qualities; for it is by itself changing that it does so.

4^{b4} If, then, a man should make this exception and contend that statements and opinions are capable of admitting contrary qualities, his contention is unsound. For statements and opinions are said to have this capacity, not because they themselves undergo modification, but because this modification occurs in the case of something else. The truth or falsity of a statement depends on facts, and not on any power on the part of the statement itself of admitting contrary qualities. In short, there is nothing which can alter the nature of statements and opinions. As, then, no change takes place in themselves, these cannot be said to be capable of admitting contrary qualities.

4^{b12} But it is by reason of the modification which takes place within the substance itself that a substance is said to be capable of admitting contrary qualities; for a substance admits within itself either disease or health, whiteness or blackness. It is in this sense that it is said to be capable of admitting contrary qualities.

4^{b16} To sum up, it is a distinctive mark of substance, that, while remaining numerically one and the same, it is capable of admitting contrary qualities, the modification taking place through a change in the substance itself.

4^{b19} Let these remarks suffice on the subject of substance.

6

4^{b20} Quantity is either discrete or continuous. Moreover, some quantities are such that each part of the whole has a relative

position to the other parts: others have within them no such relation of part to part.

4^{b24} Instances of discrete quantities are number and speech; of continuous, lines, surfaces, solids, and, besides these, time and place.

4^{b25} In the case of the parts of a number, there is no common boundary at which they join. For example: two fives make ten, but the two fives have no common boundary, but are separate; the parts three and seven also do not join at any boundary. Nor, to generalize, would it ever be possible in the case of number that there should be a common boundary among the parts; they are always separate. Number, therefore, is a discrete quantity.

4^{b31} The same is true of speech. That speech is a quantity is evident: for it is measured in long and short syllables. I mean here that speech which is vocal. Moreover, it is a discrete quantity for its parts have no common boundary. There is no common boundary at which the syllables join, but each is separate and distinct from the rest.

5^a A line, on the other hand, is a continuous quantity, for it is possible to find a common boundary at which its parts join. In the case of the line, this common boundary is the point; in the case of the plane, it is the line: for the parts of the plane have also a common boundary. Similarly you can find a common boundary in the case of the parts of a solid, namely either a line or a plane.

5^{a6} Space and time also belong to this class of quantities. Time, past, present, and future, forms a continuous whole. Space, likewise, is a continuous quantity; for the parts of a solid occupy a certain space, and these have a common boundary; it follows that the parts of space also, which are occupied by the parts of the solid, have the same common boundary as the parts of the solid. Thus, not only time, but space also, is a continuous quantity, for its parts have a common boundary.

5^{a15} Quantities consist either of parts which bear a relative position each to each, or of parts which do not. The parts of a line bear a relative position to each other, for each lies somewhere, and it would be possible to distinguish each, and to state the position of each on the plane and to explain to what sort of part among the rest each was

contiguous. Similarly the parts of a plane have position, for it could similarly be stated what was the position of each and what sort of parts were contiguous. The same is true with regard to the solid and to space. But it would be impossible to show that the arts of a number had a relative position each to each, or a particular position, or to state what parts were contiguous. Nor could this be done in the case of time, for none of the parts of time has an abiding existence, and that which does not abide can hardly have position. It would be better to say that such parts had a relative order, in virtue of one being prior to another. Similarly with number: in counting, 'one' is prior to 'two', and 'two' to 'three', and thus the parts of number may be said to possess a relative order, though it would be impossible to discover any distinct position for each. This holds good also in the case of speech. None of its parts has an abiding existence: when once a syllable is pronounced, it is not possible to retain it, so that, naturally, as the parts do not abide, they cannot have position. Thus, some quantities consist of parts which have position, and some of those which have not.

- 5^a37 Strictly speaking, only the things which I have mentioned belong to the category of quantity: everything else that is called quantitative is a quantity in a secondary sense. It is because we have in mind some one of these quantities, properly so called, that we apply
- 5^b quantitative terms to other things. We speak of what is white as large, because the surface over which the white extends is large; we speak of an action or a process as lengthy, because the time covered is long; these things cannot in their own right claim the quantitative epithet. For instance, should any one explain how long an action was, his statement would be made in terms of the time taken, to the effect that it lasted a year, or something of that sort. In the same way, he would explain the size of a white object in terms of surface, for he would state the area which it covered. Thus the things already mentioned, and these alone, are in their intrinsic nature quantities; nothing else can claim the name in its own right, but, if at all, only in a secondary sense.
- 5^b11 Quantities have no contraries. In the case of definite quantities this is obvious; thus, there is nothing that is the contrary of 'two cubits

long' or of 'three cubits long', or of a surface, or of any such quantities. A man might, indeed, argue that 'much' was the contrary of 'little', and 'great' of 'small'. But these are not quantitative, but relative; things are not great or small absolutely, they are so called rather as the result of an act of comparison. For instance, a mountain is called small, a grain large, in virtue of the fact that the latter is greater than others of its kind, the former less. Thus there is a reference here to an external standard, for if the terms 'great' and 'small' were used absolutely, a mountain would never be called small or a grain large. Again, we say that there are many people in a village, and few in Athens, although those in the city are many times as numerous as those in the village: or we say that a house has many in it, and a theatre few, though those in the theatre far outnumber those in the house. The terms 'two cubits long', "three cubits long,' and so on indicate quantity, the terms 'great' and 'small' indicate relation, for they have reference to an external standard. It is, therefore, plain that these are to be classed as relative.

- 5^b30 Again, whether we define them as quantitative or not, they have no contraries: for how can there be a contrary of an attribute which is not to be apprehended in or by itself, but only by reference to something external? Again, if 'great' and 'small' are contraries, it will come about that the same subject can admit contrary qualities at one and the same time, and that things will themselves be contrary to themselves. For it happens at times that the same thing is both small and great. For the same thing may be small in comparison with one thing, and great in comparison with another, so that the same thing comes to be both small and great at one and the same time, and is of such a nature as to admit contrary qualities at one and the same moment. Yet it was agreed, when substance was being discussed, that nothing admits contrary qualities at one and the same moment. For though substance is capable of admitting contrary qualities, yet no one is at the same time both sick and healthy, nothing is at the same time both white and black. Nor is there anything which is qualified in contrary ways at one and the same time.
- 6^a

6^a4 Moreover, if these were contraries, they would themselves be contrary to themselves. For if 'great' is the contrary of 'small', and the same thing is both great and small at the same time, then 'small' or 'great' is the contrary of itself. But this is impossible. The term 'great', therefore, is not the contrary of the term 'small', nor 'much' of 'little'. And even though a man should call these terms not relative but quantitative, they would not have contraries.

6^a11 It is in the case of space that quantity most plausibly appears to admit of a contrary. For men define the term 'above' as the contrary of 'below', when it is the region at the center they mean by 'below'; and this is so, because nothing is farther from the extremities of the universe than the region at the center. Indeed, it seems that in defining contraries of every kind men have recourse to a spatial metaphor, for they say that those things are contraries which, within the same class, are separated by the greatest possible distance.

6^a19 Quantity does not, it appears, admit of variation of degree. One thing cannot be two cubits long in a greater degree than another. Similarly with regard to number: what is 'three' is not more truly three than what is 'five' is five; nor is one set of three more truly

three than another set. Again, one period of time is not said to be more truly time than another. Nor is there any other kind of quantity, of all that have been mentioned, with regard to which variation of degree can be predicated. The category of quantity, therefore, does not admit of variation of degree.

6^a26 The most distinctive mark of quantity is that equality and inequality are predicated of it. Each of the aforesaid quantities is said to be equal or unequal. For instance, one solid is said to be equal or unequal to another; number, too, and time can have these terms applied to them, indeed can all those kinds of quantity that have been mentioned.

6^a31 That which is not a quantity can by no means, it would seem, be termed equal or unequal to anything else. One particular disposition or one particular quality, such as whiteness, is by no means compared with another in terms of equality and inequality but rather in terms of similarity. Thus it is the distinctive mark of quantity that it can be called equal and unequal.

Translation by E. M. Edghill

Making Sense Of It All: *Categories* Thought Sheet

Thought Point	Points of Thought
Describe this Lecture Section	
Main Point (What is he talking about?)	
What is a Category?	

What are the attributes of a Category?	
What does <i>predicated</i> mean?	
What is Substance?	
What are the two types of Substance?	
What is Quantity? Why is it separate from Substance?	

