

Aristotle's Theory of Knowledge

Gregory Salmieri

Objectivist Summer Conference 2010
Las Vegas, Nevada

COURSE OUTLINE AND GUIDE TO SUPPLEMENTARY READINGS

LECTURE 1

1. Introduction
2. The several types and degrees of knowledge
Metaphysics A.1
Further reading: *Nicomachean Ethics* VI.3-7
3. Epistēmē and Demonstration
Posterior Analytics I.2, 24
Further reading on demonstration: *Posterior Analytics* I
Further reading on deduction: *Prior Analytics* I

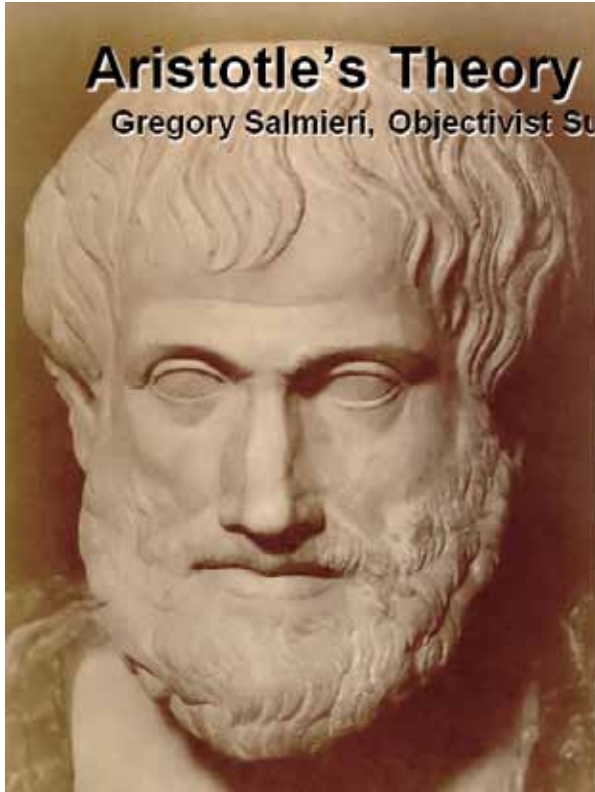
LECTURE 2

4. The Principles of Epistēmē
Posterior Analytics I.1-2, II.19
Further reading: *Metaphysics* Γ.3-8
5. Aristotle vs. Rationalism and Empiricism & some framing questions
6. The concepts of form and matter
Further reading: *Physics* I.7; *Generation and Corruption* I.1-5;
Metaphysics Z.10-12, H

7. How universal knowledge is possible of particular objects
Metaphysics M.10; *Posterior Analytics* I.11
8. The basis in reality for universals
Parts of Animals I.4, *History of Animals* I.1
9. Perception, Imagination, and Thought
On Memory and Recollection 1
Further Reading: *De Anima* II.5-III; *On Sense and Sensible Objects*,
De Interpretatione 1, 11.
10. Experience and the Coming to Be of Universals
Posterior Analytics II.19

LECTURE 3

11. Dialectic and the *Topics*
Topics (especially books I and VIII)
12. The things we seek in investigation (and the relations between them)
Posterior Analytics II.1-2
13. Definitions
Posterior Analytics II.7-10
Further reading: *Posterior Analytics* II.13; *Topics* IV, VI, VII.1-3
14. Organizing one's knowledge to facilitate demonstration & Forming New Concepts
Posterior Analytics I.5, I.14-15; *Topics* VIII.2
Further reading: *Prior Analytics* I.26-31
15. Speculations about first-level concepts
Physics I.1; *Parts of Animals* I.



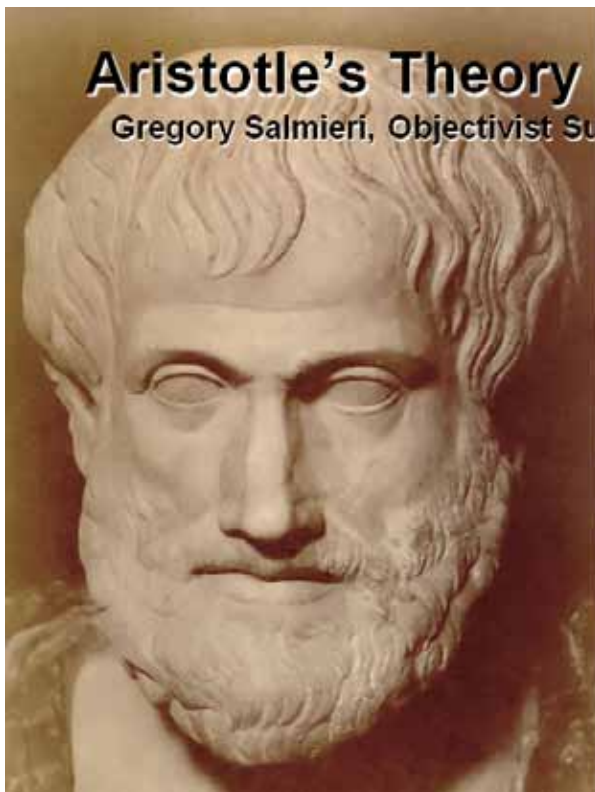
Aristotle's Theory of Knowledge

Gregory Salmieri, Objectivist Summer Conference 2010

"If there is a philosophical Atlas who carries the whole of Western civilization on his shoulders, it is Aristotle. "

"Aristotle's philosophy was the intellect's Declaration of Independence..."

"If we consider the fact that to this day **everything that makes us civilized beings, every rational value that we possess**—including the birth of science, the industrial revolution, the creation of the United States, even the structure of our language—is the result of Aristotle's influence, of the degree to which, explicitly or implicitly, men accepted his epistemological principles, we would have to say: never have so many owed so much to one man."



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Aristotelian Words Translated "Knowledge"			
Greek		Translations	
Verb	Noun	Verb	Noun
gignōskein γινώσκειν	gnōsis (-eis) γνώσις	g-know	g-knowledge
gnōrizeln γνωρίζειν			
eidennai εἰδέναι	eidēsis (-eis) εἰδησις	o-know	o-knowledge
epistasthai ἐπίστασθαι	epistēmē (-ai) ἐπιστήμη	e-know	e-knowledge

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Other Relevant Aristotelian Vocabulary			
technē (-ai) (τέχνη)		art, craft, skill, expertise	

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Type of Gnōsis	Animals Possessing it (according to <i>Metaphysics A.1</i>)
Perception	All animals
Memory	Some animals
Experience	Man and (to a lesser extent) some other animals with memory
Technē & Epistēmē	(Some) men

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Empeiria vs. Technē & Epistēmē

Metaphysics A.1 (980b22-981a11):

"Whereas the other animals live by imaginings and memories but have little experience, mankind lives by art and reasoning as well.

"Experience comes about for men from memories; for many memories of the same object culminate in a single capacity for experience."

"And experience is quite like science and art, but science and art come about through experience for men..."

"Art comes about when a single universal view about similar things comes about from many notions of experience.

"For, while it is the role of experience to have the view that this benefited Callias when afflicted with this illness, and Socrates too and many such particulars, it is the role of art to have the view that it benefited all such people, defined according to a single form when afflicted with this illness (e.g. phlegmatic or choleric people when burning with fever)."

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Empeiria vs. Technē & Epistēmē

Metaphysics A.1 (98a124-b10):

“[W]e think *o-knowing* and comprehending belong more to art than to experience, and we suppose the artist to be wiser than the experienced person. [...]

“This is because the former *o-know* the cause and the latter do not. For, while experienced people *o-know* the *that*, they don't *o-know* the *why*, whereas the others *g-know* the *why* and the cause.

“That's why we consider the master of each art more honorable and more *o-knowing* and wiser than the handymen, since he *o-knows* the cause of the products, whereas {the handymen} produce just as some of the inanimate things do, without *o-knowing* what they're producing—in the way that fire burns. [...]

“We consider the master of the art wiser, not in virtue of his action, but in virtue of having the doctrine and *g-knowing* the causes. Also, in general, the ability to teach is an indication of who knows and who does not. It's because of this that we hold art to be more scientific than experience; for artists are able to teach but the others are not.”

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Empeiria vs. Technē & Epistēmē

- Artists (and scientists) have *universal* knowledge.
 - Their knowledge is about defined forms or kinds of objects.
 - By contrast, someone who is merely experienced with a kind of object knows only about various particulars of that kind (though he is able to make projections about new particulars on the basis of his memories of old ones).
- Artists (and scientists) have *causal* knowledge.
 - They know the cause or "the why," whereas merely experienced people know only "the that."

<p>454,334,345,457 X 999,293,445,346</p>

Empeiria vs. Technē & Epistēmē

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- Artists (and scientists) have *causal* knowledge.
 - They know the cause or “the why,” whereas merely experienced people know only “the that.”
- (Because of their universality and causal depth) epistēmē and technē are *more intense* forms of g-knowing than the o-knowledge possessed by merely experienced people.
- Epistēmē and technē are uniquely human where as experience is available (though in a limited degree) to some animals.

An Objectivist Take on “Intense Gnōsis”

Objectivist Terminology

Aristotle’s Terminology

Thinking in principles

Thinking universally

An Objectivist Take on “Intense *Gnōsis*”

Objectivist Terminology

Aristotle’s Terminology

Thinking in principles

Thinking universally

Thinking in essentials

Thinking in essentials

Essence: *to ti ēn einai*

something’s “*being what it is*”

“what it is for [something] to be what it is”

As opposed to an “accident”—a feature of something which it needn’t have to be what it is, and which should be omitted in trying to understand it.

An Objectivist Take on “Intense *Gnōsis*”

Objectivist Terminology

Aristotle’s Terminology

Thinking in principles

Thinking universally

Thinking in essentials

Thinking in essentials

Thinking in fundamentals

Grasping principles (*archai*)

Archē: beginning, origin, starting-point, principle

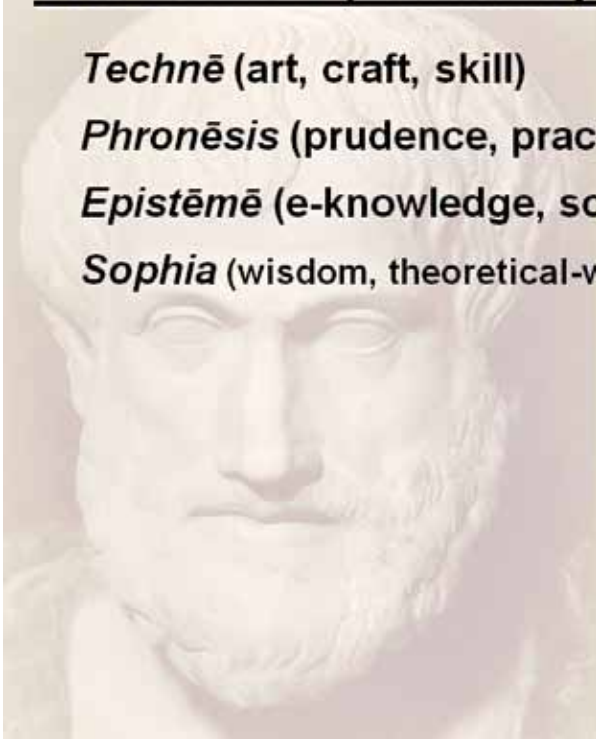
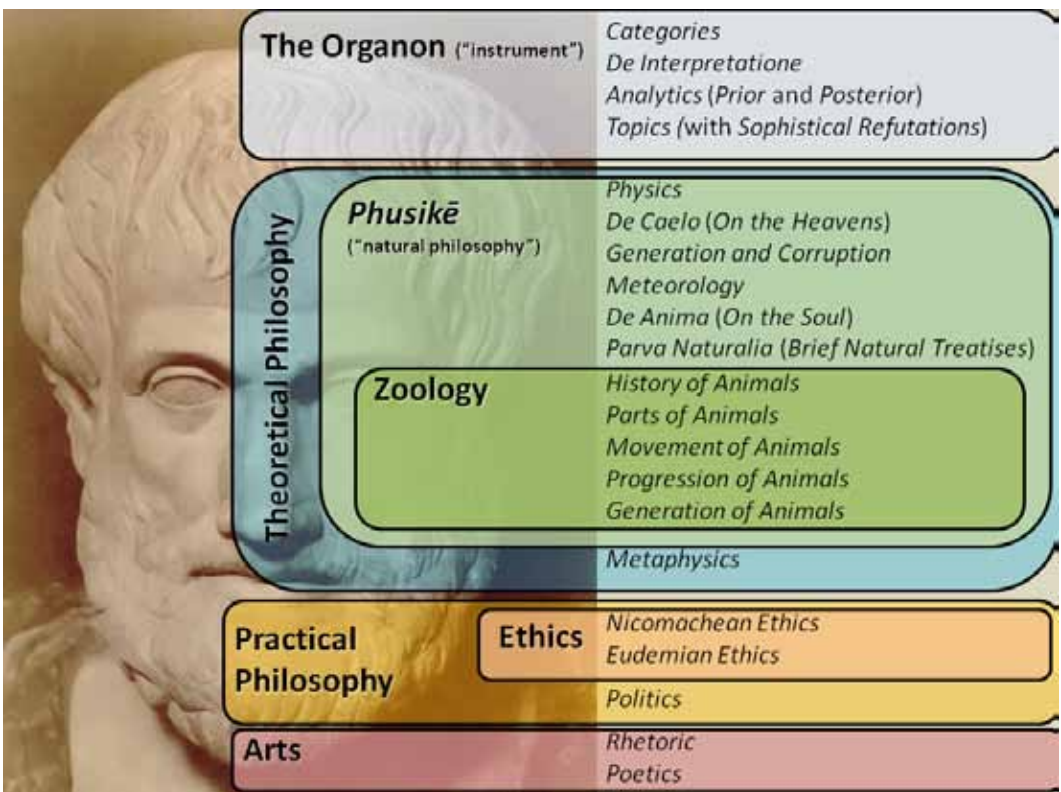
The Intense (Distinctly Human) Gnōseis

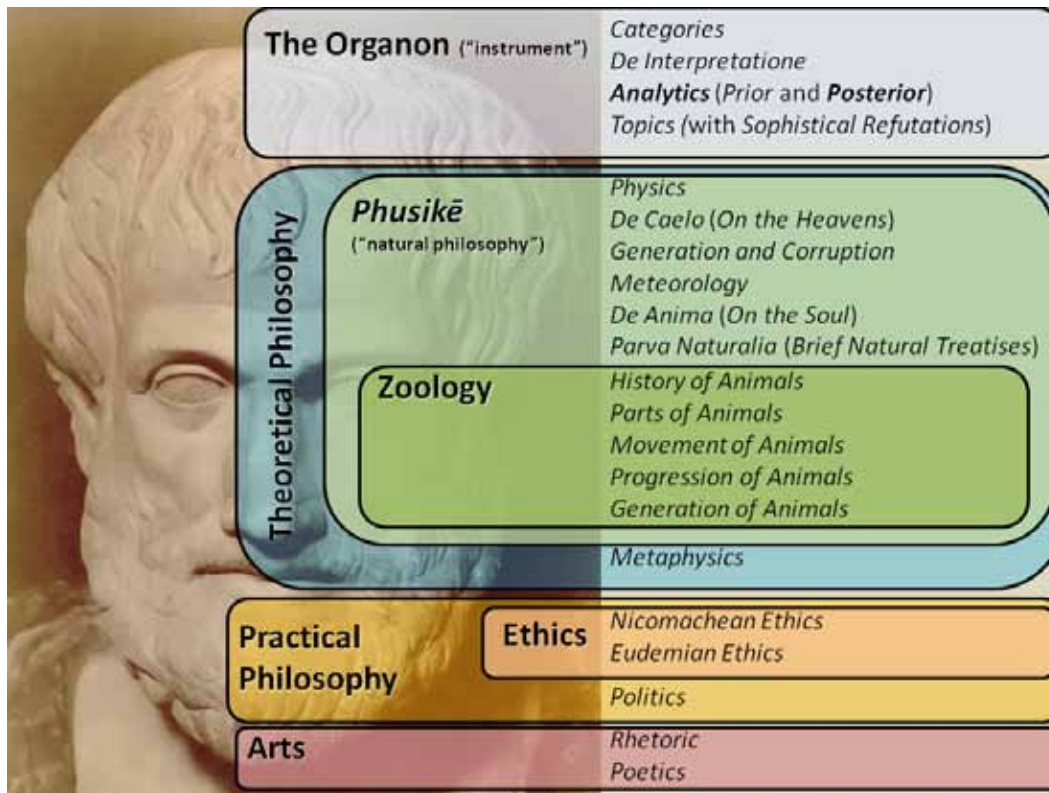
Technē (art, craft, skill)

Phronēsis (prudence, practical-wisdom)

Epistēmē (e-knowledge, science)

Sophia (wisdom, theoretical-wisdom, metaphysics)



Posterior Analytics' Theory of Epistēmē

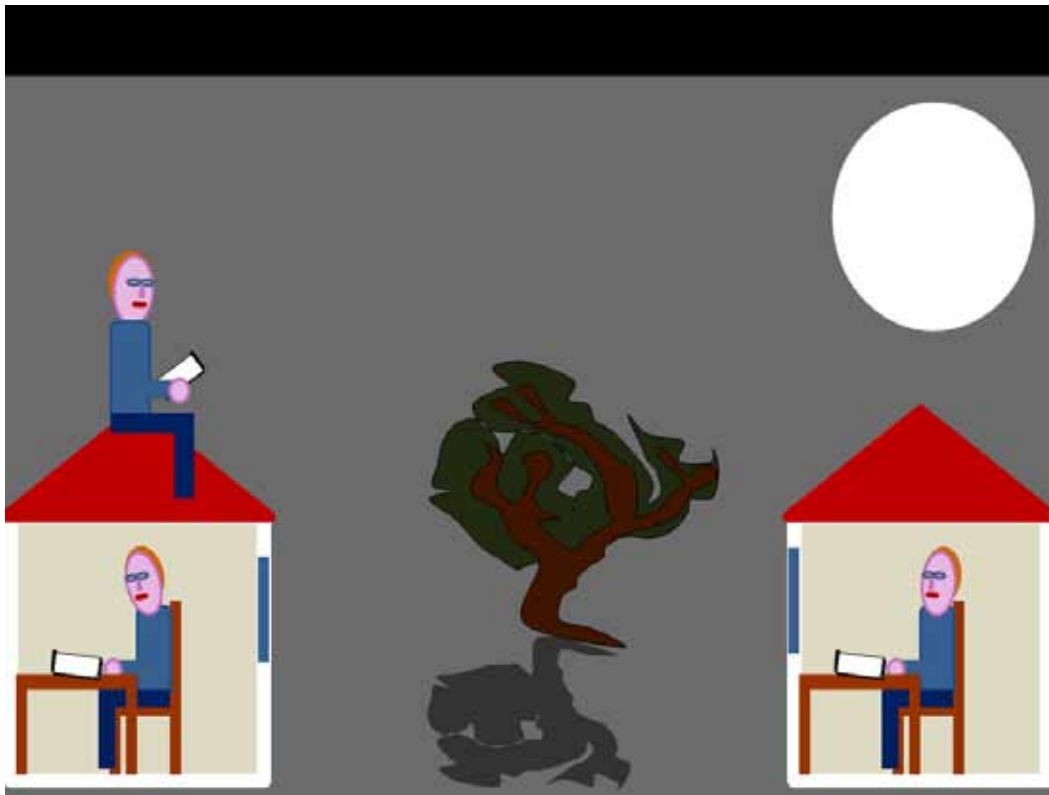
I.271b9-13: "We think someone e-knows something *simpliciter* (rather than in the sophistic manner, accidentally) whenever we think he g-knows:

- {i} the cause due to which the object exists,
- {ii} that this is its cause, and
- {iii} that it does not admit of being otherwise."

71b1-19: "We'll say later whether there is also another manner of e-knowing, but we do declare that people o-know through demonstrations.

"By 'demonstration', I mean a e-knowing deduction; and by 'e-knowing' I mean one that, by having it, a person e-knows something."

Topics I.1 100a25-27: "A deduction is an argument in which certain things being laid down, something other than these necessarily comes about through them.

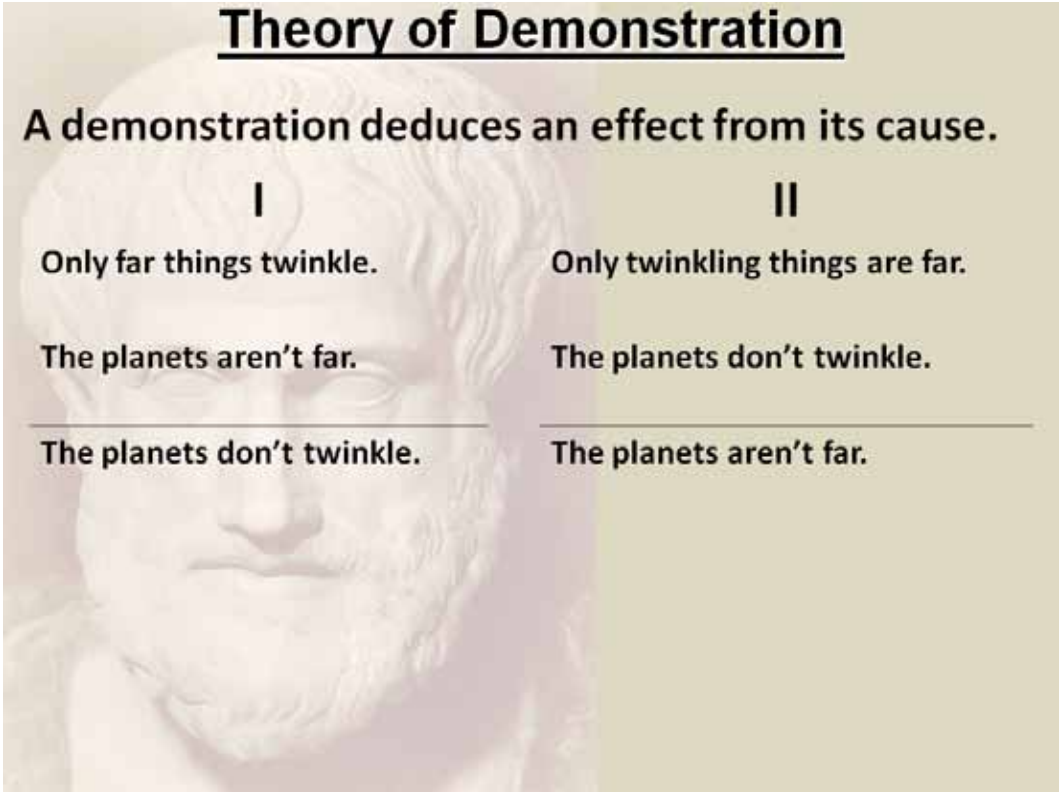




Theory of Demonstration

A demonstration deduces an effect from its cause.

<p>I</p> <p>Only far things twinkle.</p> <p>The planets aren't far.</p> <hr style="width: 80%; margin: auto;"/> <p>The planets don't twinkle.</p>	<p>II</p> <p>Only twinkling things are far.</p> <p>The planets don't twinkle.</p> <hr style="width: 80%; margin: auto;"/> <p>The planets aren't far.</p>
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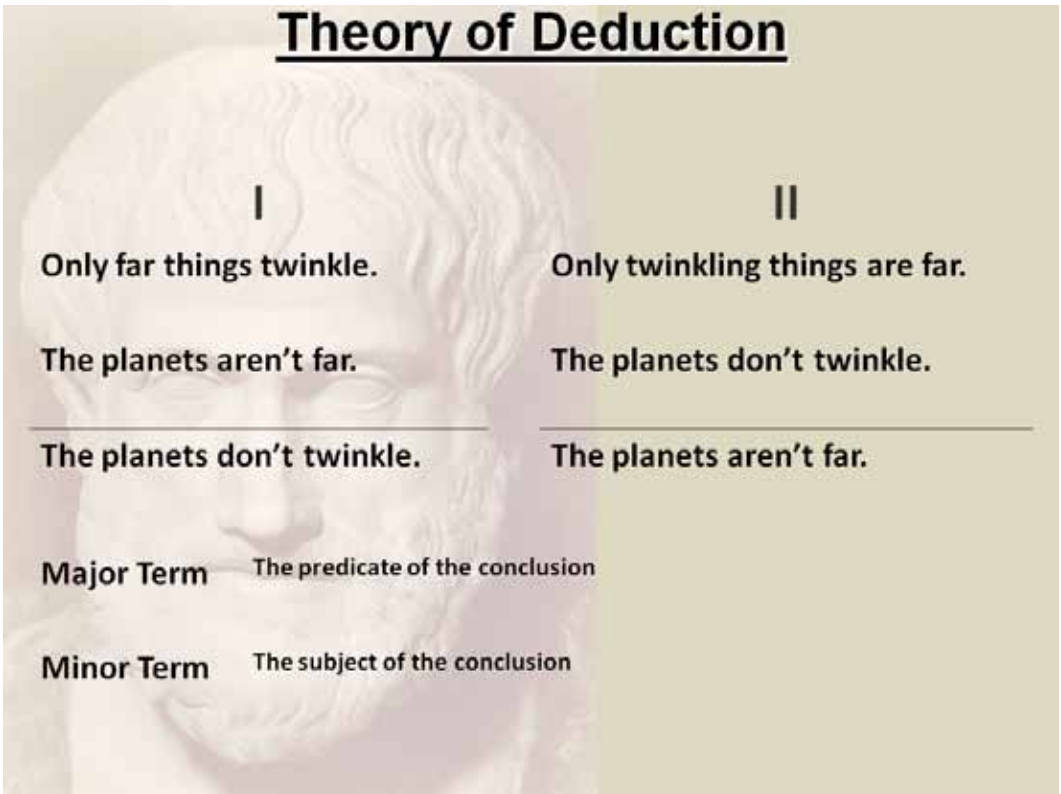


Theory of Deduction

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Major Term The predicate of the conclusion

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Something can be prior or better known either to us or by nature.

Things first *to us* are particular and near to perception.

Things first *by nature* are universal and far from perception.

Theory of Demonstration

A demonstration deduces an effect from its cause.

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In a demonstration, the middle term is prior (by nature) to the major term, and so (by its presence or absence) causes (the presence of absence of) the major.

Theory of Demonstration

“We'll say later whether there is also another manner of e-knowing, but we do declare that people o-know through demonstrations. [. . .]

“If, then, to e-knowing is as we've assumed, then demonstrative e-knowledge must be from {premises} that are:

- {i} true,**
- {ii} primary,**
- {iii} immediate,**
- {iv} better g-known than {the conclusions},**
- {v} prior to {the conclusion}, and**
- {vi} causes of the conclusions.**

For, this way, the principles will be appropriate to what is being proved. Without these {conditions}, there can be a deduction, but it cannot be a demonstration, for it will not produce e-knowledge.”

(*Posterior Analytics* I.2 71b17-25)

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(*Posterior Analytics* I.2 71b17-25)

“[A deduction] is a demonstration whenever the deduction proceeds through true and primary premises or our knowledge of the premises is originally derived from primary and true premises. (*Topics* I.1, 100a25)

The Principles of *Epistēmē*

Types of demonstrative principle (I.2 72a15 ff.):

Axiom: Needed “in order to learn anything at all.”

Thesis: “Is not needed if one is to learn anything at all” and is distinctive to a particular science.

Hypothesis: Says that something exists or is the case.

Definition: Says what something is.

The Intense (Distinctly Human) *Gnōseis*

Technē (art, craft, skill)

Phronēsis (prudence, practical-wisdom)

Epistēmē (e-knowledge, science)

Sophia (wisdom, theoretical-wisdom, metaphysics)

Nous (understanding, intelligence, intuition, comprehension)

***Nous* is the name for the state of g-knowing the principles.**

Summary of Aristotle's View of Epistēmē:

- A science (*epistēmē*) studies a domain.
- It is based on principles, of which our gnōsis (g-knowledge) is called "nous" (understanding).
- These principles include both the axioms governing all thought and the theses specific to the domain of the science.
- The theses include definitions of the terms in the science and hypotheses which state the fundamental facts in the domain.
- The other facts in the domain are demonstrated from these theses, and are thereby explained and e-known.

Empiricism: *Epistēmē* and *technē* are impossible, because it is impossible to reach principles from perception, and we have no independent means of knowledge.

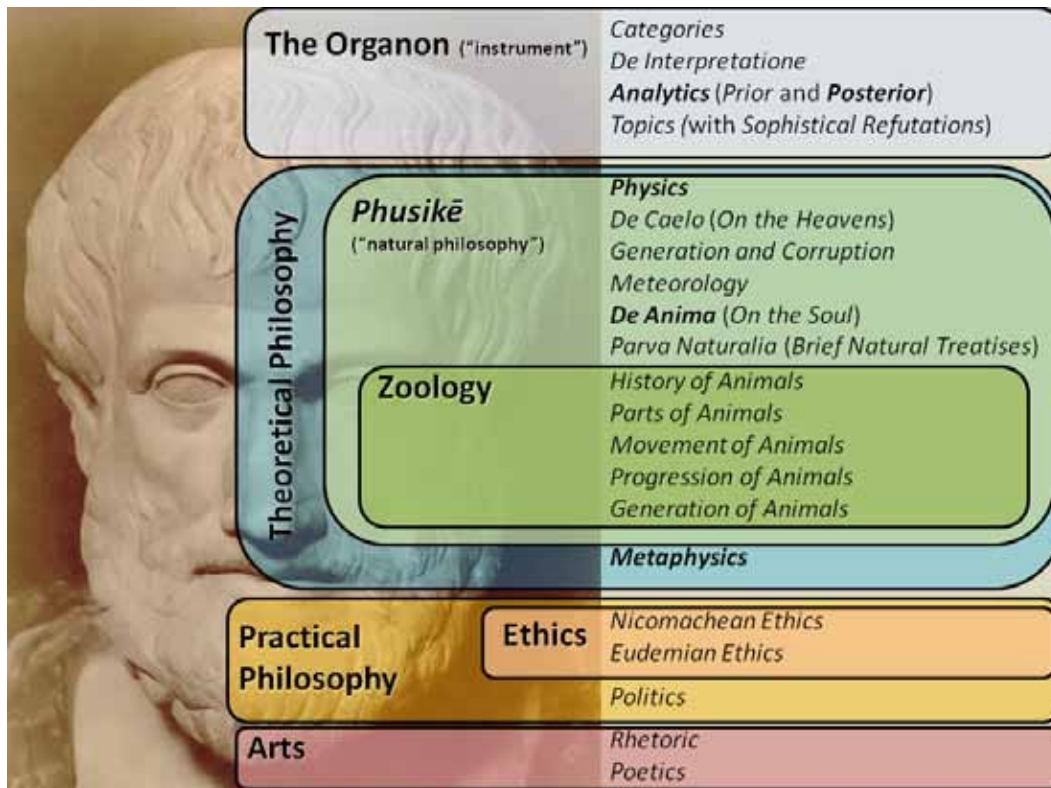
Rationalism (Platonism): *Epistēmē* is possible, but it is not of the perceptible world, because it is based on principles that are known independently of perception and pertain to non-perceptible objects.

Aristotelianism: *Epistēmē* and *technē* are possible and are of the perceptible world, because *nous* of principles can be based on perception.

“Reason is the faculty that identifies and integrates the material provided by man's senses.” (Ayn Rand, “The Objectivist Ethics”)

Questions for Aristotle:

- (1) How can *epistēmē* which is of universals (rather than particulars) be of objects in the perceptible world, which are particulars?
- (2) How can *nous* of the principles come about from *gnōseis* (such as perception) that are less intense than it is.
 - (A) How could *nous* come about from perception? What are the natures of the states involved such that this is possible?
 - (B) What methods must I follow in order to achieve *nous* and *epistēmē*?



Points from Aristotelian Physics and Metaphysics:

- Coming to be requires a subject which underlies the change from not being the thing in question to being it.
- Anything that can come to be or pass away can be analyzed into matter (or potentiality), which is the subject, and form (or actuality), which the subject comes to have.
- To be matter is to be matter for something: the term most often refers to the matter for an entity, but it is also used for entities as matter for their attributes, and in other ways as well.
- Other translations for dunamis (potentiality): ability, capacity, capability, faculty, power, potency.
- Other translations for energeia (actuality): exercise, activity.
- Aristotle distinguishes between first and second actualities: A first actuality is an acquired capacity, which is the actualization of an underlying potentiality, but is itself actualized in its exercise.

Questions for Aristotle:

- (1) How can *epistēmē* which is of universals (rather than particulars) be of objects in the perceptible world, which are particulars?
- (2) How can *nous* of the principles come about from *gnōseis* (such as perception) that are less intense than it is.

Questions for Aristotle:

- (1) How can epistēmē which is of universals (rather than particulars) be of objects in the perceptible world, which are particulars?

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Metaphysics M.10 (1087a10-18):

“That all e-knowledge is universal [. . .] does contain the greatest puzzle of those we've discussed; however, though the statement is true in one way, it is not true in another.

“For e-knowledge is twofold, as e-knowing also is: one is in potentiality and the other in actuality.

“While the potential, being as matter, is universal and indefinite and is of the universal and indefinite, the actual is definite and of the definite, being a certain *this* of a certain *this*.”

Questions for Aristotle:

- (1) How can epistēmē which is of universals (rather than particulars) be of objects in the perceptible world, which are particulars?

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Questions for Aristotle:

(1) How can *epistēmē* which is of universals (rather than particulars) be of objects in the perceptible world, which are particulars?

- When exercised, an *epistēmē* is always knowledge of a definite, particular object.
- However, considered as a capacity, an *epistēmē* is “indefinite” (like matter) and what it knows is indefinite or universal.
- In other words: e-knowledge as a capacity is an ability to e-know any of the particulars of a certain kind.
- When exercising this ability, we e-know a certain particular insofar as it falls under the kind.

Questions for Aristotle:

(1) How can *epistēmē* which is of universals (rather than particulars) be of objects in the perceptible world, which are particulars?

Posterior Analytics I.11 (75a5-9): “It is not necessary that there be [Platonic] forms or some one thing besides the many if there is to be demonstration; however it is necessary that it be true to state one thing of many; for there will not be a universal if this is not so, and if there is not a universal, there will not be a middle, so that there will not be a demonstration. Therefore, there must be something one and same that applies to many non-homonymously.”

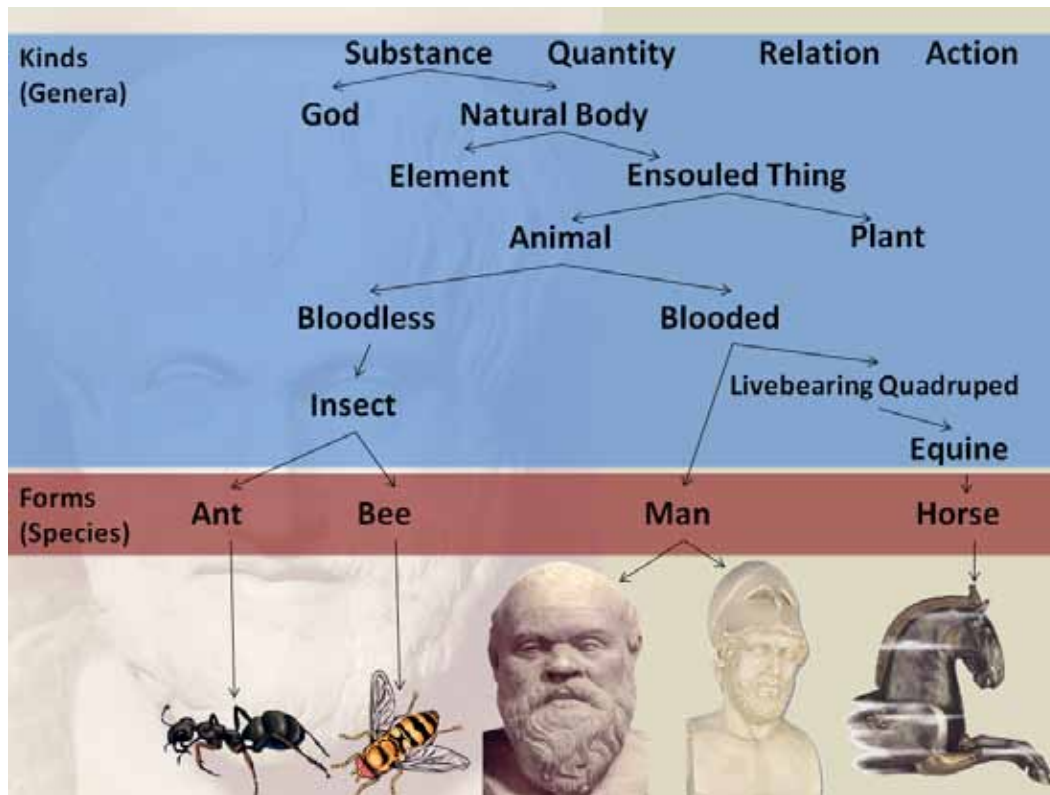
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Question: What makes it "true to state one thing of many"? What is the basis in reality for universal concepts?

<u>Greek</u>	<u>Latin</u>	<u>English</u>
genos (-ē) γένος	genus (-era)	Kind
eidos (-ē) εἶδος	Species	Form
diaphora (-ai) διαφορά	differentia (-ae)	Difference



Points About Aristotelian Kinds (or Genera):

- A genus (kind) is (intelligible) matter for its species (forms), with a species' differentia serving as the form, which specifies the indeterminate genus, and thereby makes the species the species it is.
- This hylomorphic (matter-form) relationship makes each species a unity, whereas it would not be if the differentia were independent of the genus.
- Forms of a kind (or species of a genus) are different rather than merely other; and this means there must be some respect in which they are commensurable and differ "in the more and the less."
- So differing in this way, is at least a part of the basis for grouping things into kinds—i.e., for forming concepts.

Questions for Aristotle:

- (1) How can *epistēmē* which is of universals (rather than particulars) be of objects in the perceptible world, which are particulars?
- (2) How can *nous* of the principles come about from *gnōseis* (such as perception) that are less intense than it is?

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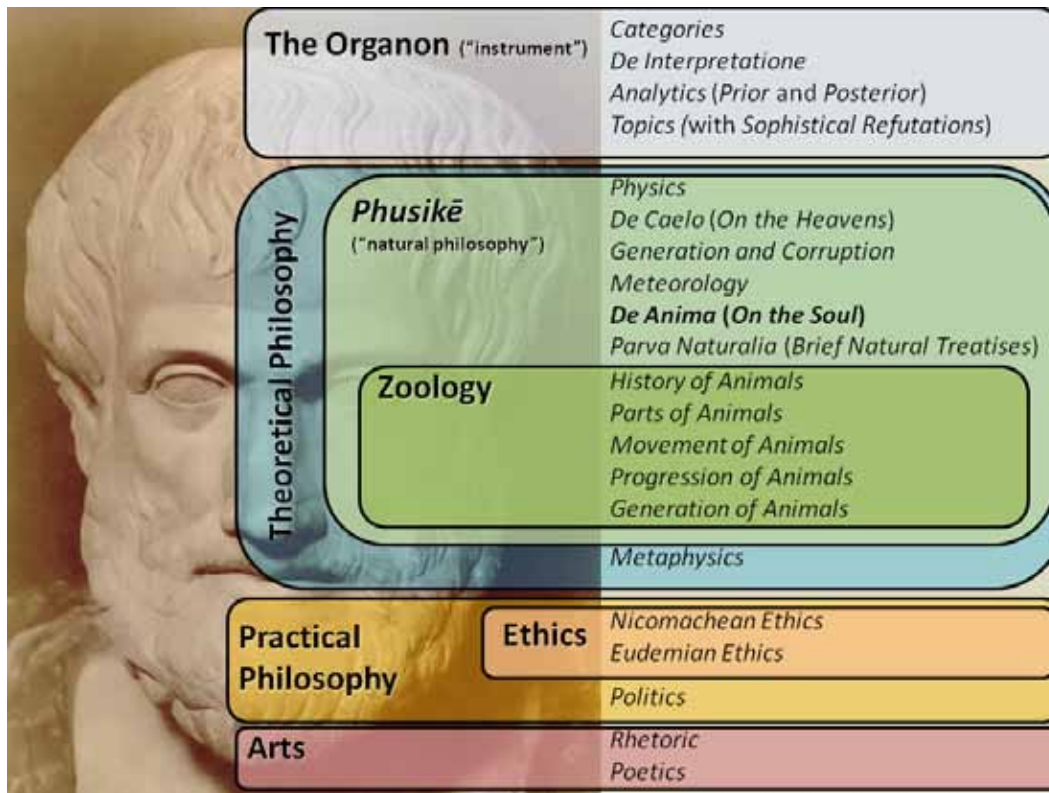
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 - (A) How could *nous* come about from perception? What are the natures of the states involved such that this is possible?
 - (B) What methods must I follow in order to achieve *nous* and *epistēmē*?

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The progression from perception to universals:

- Perception
- Memory
- Experience
- Principle of art or *epistēmē*



Points about Perception (From De Anima II.5-III.2):

- Perception is the reception of perceptible forms.
- Each sense is matter for a certain sensible (called its "proper" or "special sensible"): color for vision, sound for hearing, odor for taste, etc.
- The perceptual faculty as a whole (rather than any particular sense) is aware of the "common sensibles," motion and shape, and relates qualities in different sense-modalities.
- Perception is not (strictly speaking) true or false; but, in a looser sense, perception (of the special sensibles at least) is always true (or is less liable to falsity than any other faculty).

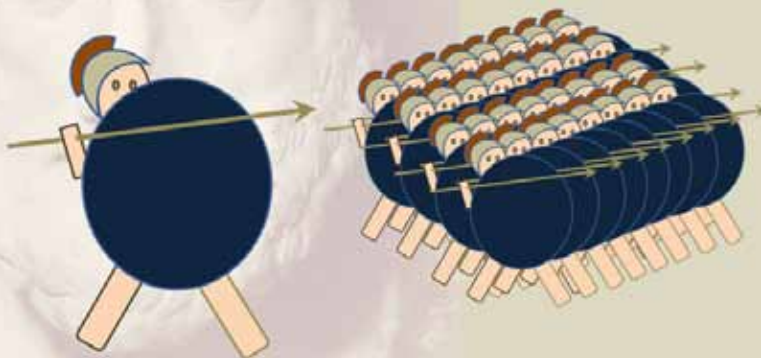
Phantasia (De Anima III.3):

- *Phantasia* (imagination) is the faculty of retaining after images from perception.
- These images are called *phantasmata*.
- Memory is a specialized sort of *phantasia* (see *On Memory and Recollection* for details).
- *Phantasmata* can be false (in the extended sense in which perception is true).
- Phantasmata serve the role in an psychology that beliefs serve in a man's.
- Men still have phantasmata.
- They are essential to thinking: "There is no thinking without an image." (*On Memory and Recollection* 449b31)

Thought (De Anima III.4-7)

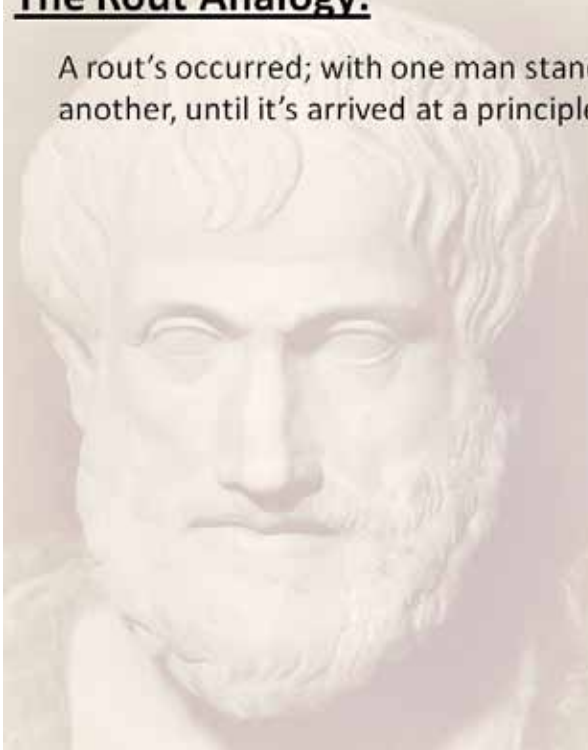
The progression from perception to universals:

- Perception
- Memory (retained perception)
- Experience (by the association of memories)
- Principle of art (arises from experience) or *epistēmē*



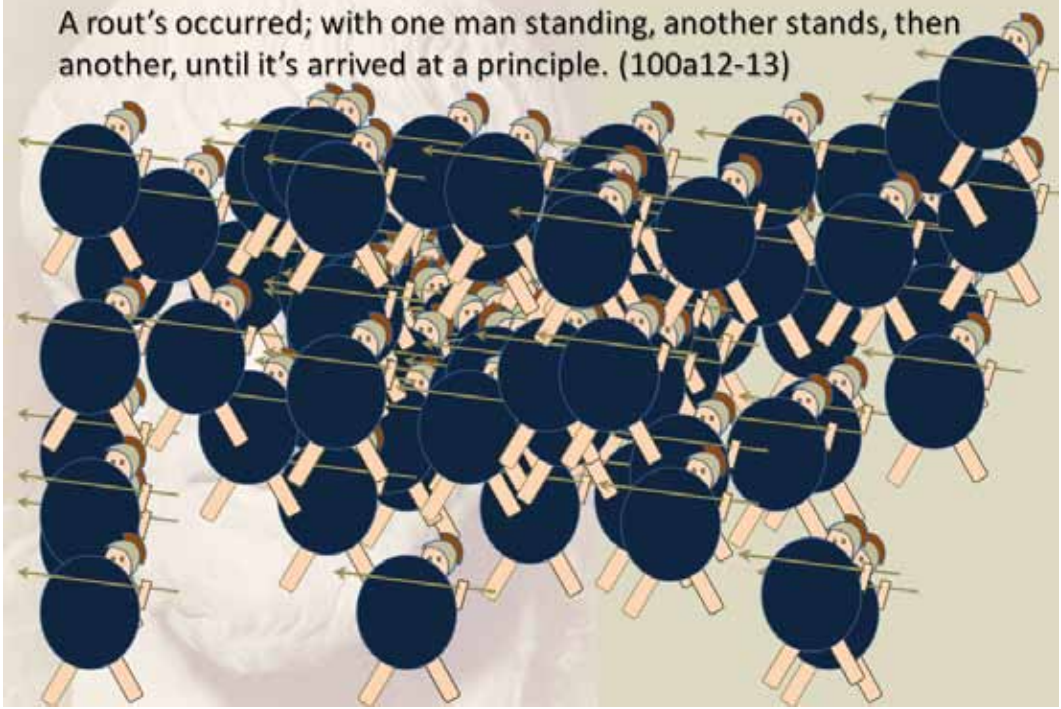
The Rout Analogy:

A rout's occurred; with one man standing, another stands, then another, until it's arrived at a principle. (100a12-13)



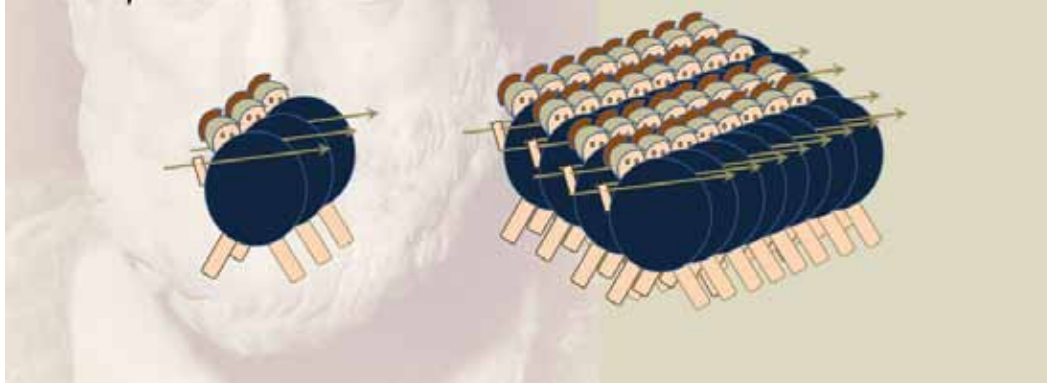
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The progression from perception to universals:

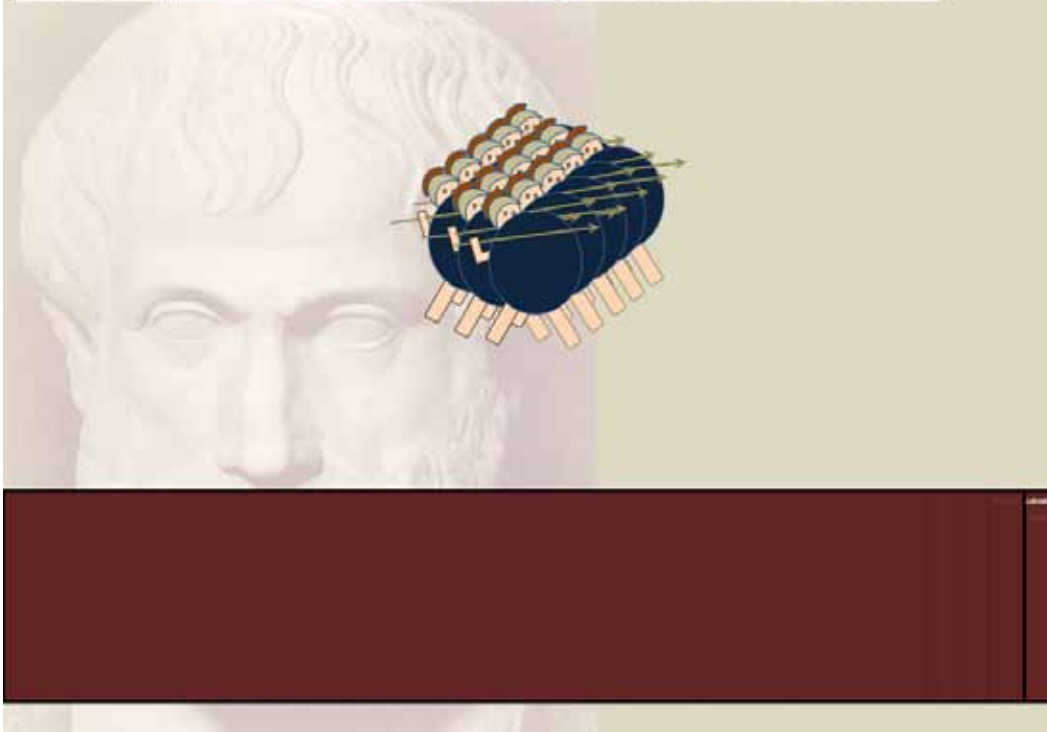
- Perception
- Memory (retained perception)
- Experience (by the association of memories)
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or *epistēmē*



The progression from perception to universals:

Let's state again what was just said, but not said plainly. For, with one of the undifferentiated things standing, the first universal is indeed in the soul... then in these something stands, until a partless and universal thing stands—e.g., such an animal until animal, and in this likewise. (100a14-b3)

The progression from perception to universals:



The progression from perception to universals:

For war		Bucephalus	4-legged	perceptual	Animal
For Racing		Secretariat			
Wise	Poor	Socrates	2-legged	rational	
Foolish	Rich	Callias			

Animal		
Man	Horse	Bird



Aristotle's Theory of Knowledge

Gregory Salmieri, Objectivist Summer Conference 2010

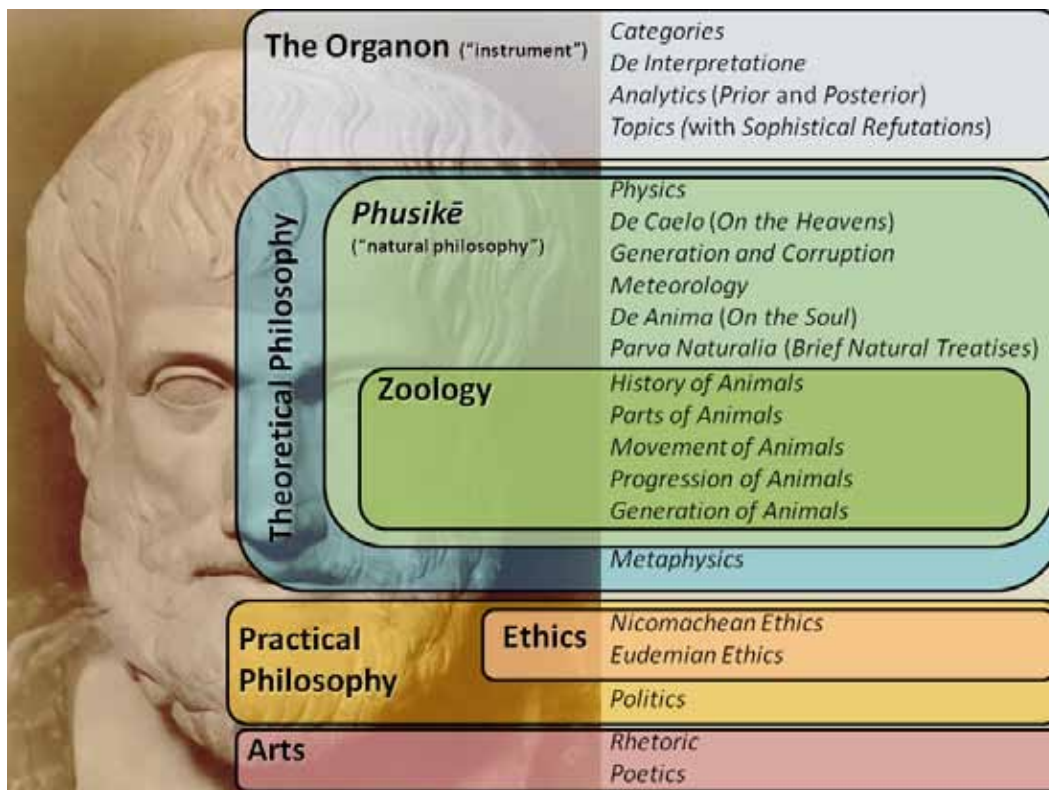
Cognitive State	Object	Method	Input Knowledge
<i>epistēmē</i> (e-knowledge)	effects	demonstration	principles (first by nature)
<i>nous</i> (understanding)	principles (fundamentals) Three types: Axioms Definitions Hypotheses	induction	perception (first to us)

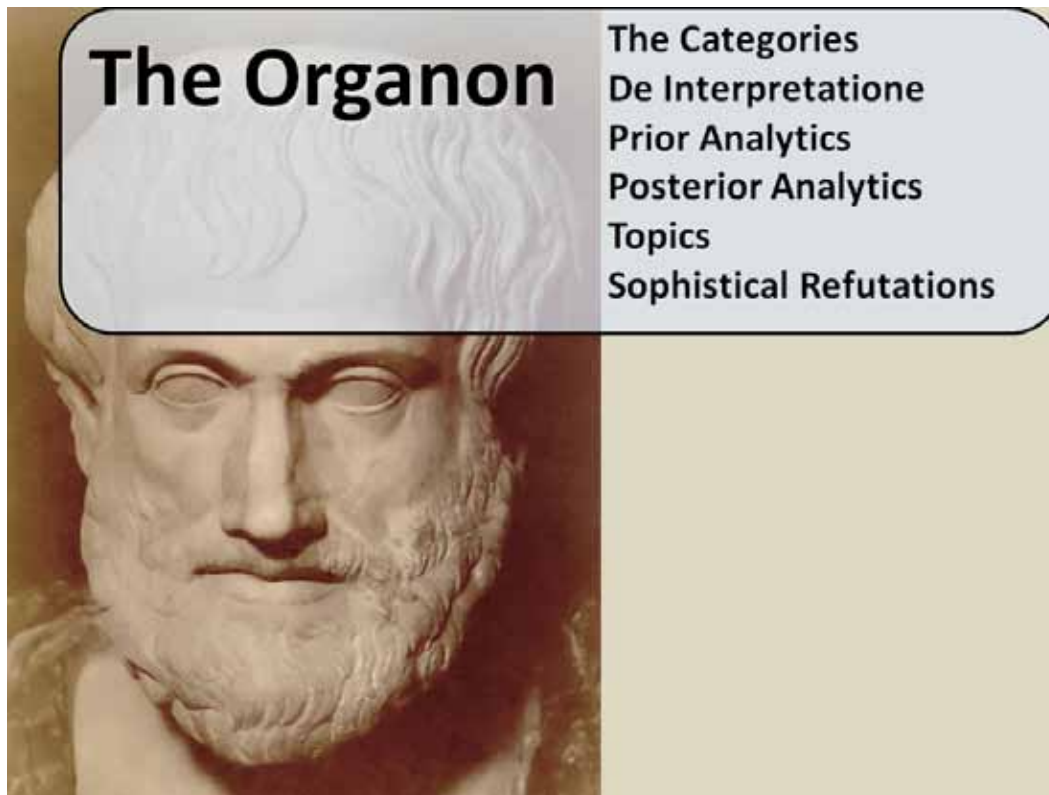
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Dialectic and the *Topics*:

- Dialectic is the art of arguing from reputable beliefs (*endoxa*), and is the subject of Aristotle's *Topics*.
- Uses of dialectic: training, casual encounters, and in connection with the principles of *epistēmē*.
- Some think Aristotle's method *is* dialectic and consists in making a body of received opinions maximally coherent.
- The *Topics* itself doesn't advise this.
- It is organized by types of predicate: accident, distinguishing characteristic, genus, definition.
- It gives a number of strategies to use in arguing for or against each type of predication.
- The strategies could work whether or not the premises are *endoxa*.

The Things We Seek (Posterior Analytics II.1-3):

1. The "that"

whether the sun is eclipsed or not
whether the earth moves

2. The "why"

why the sun is eclipsed
why the earth moves

1. If it is

whether there are centaurs
whether there are gods

2. What it is

what a god is
what a man is

Is there an eclipse?
Is there thunder?
Are there unicorns?
Are there gods?

Is the moon eclipsed (i.e., dark)?
Are the clouds noisy?
Do any horses have horns?
Are any animals immortal?

Seeking the Middle

Thunder (A certain) noise
Exhalation of air
Extinguishing of fire
Moist
The Clouds

Anything extinguishing a fire is noisy (in a certain way).

The clouds are extinguishing a fire.

The clouds are noisy (in that certain way).

Seeking the Middle

Thunder (A certain) noise
 Extinguishing of fire
 The Clouds

Anything extinguishing a fire is noisy (in a certain way).

The clouds are extinguishing a fire.

The clouds are noisy (in that certain way).

Types of Definition (From *Posterior Analytics* II.10):

(a) "An account of what a name or some other name-like account signifies."

e.g., "Thunder" means "a certain noise in the clouds."
 or "Unicorn" means "a horse with a single horn."

Types of Definition (From *Posterior Analytics* II.10):

<u>Demonstration</u>	<u>Definition</u>
Anything that extinguishes fire is noisy, and the clouds extinguish fire, therefore the clouds are noisy.	noise in the clouds due to the extinguishing of fire

(a) "An account of what a name or some other name-like account signifies."

e.g., "Thunder" means "a certain noise in the clouds,"
or "Unicorn" means "a horse with a single horn."

(b) "A sort of demonstration of what something is, but differently arranged."

e.g., Thunder is a "noise in the clouds due to the extinguishing of fire."
or A lunar eclipse is "a darkness of the moon due to the blockage of its sunlight by the earth."

(c) "The conclusion of a demonstration of what it is."

e.g., Thunder is "a certain noise in the clouds."
or A lunar eclipse is "a darkness of the moon."

(d) "An indemonstrable positing of what it is."

e.g., Thunder is "the extinguishing of fire."
or An eclipse is "a blockage of light."

Seeking the Middle

Thunder (A certain) noise
Extinguishing of fire
The Clouds

Anything extinguishing a fire is noisy (in a certain way).

The clouds are extinguishing a fire.

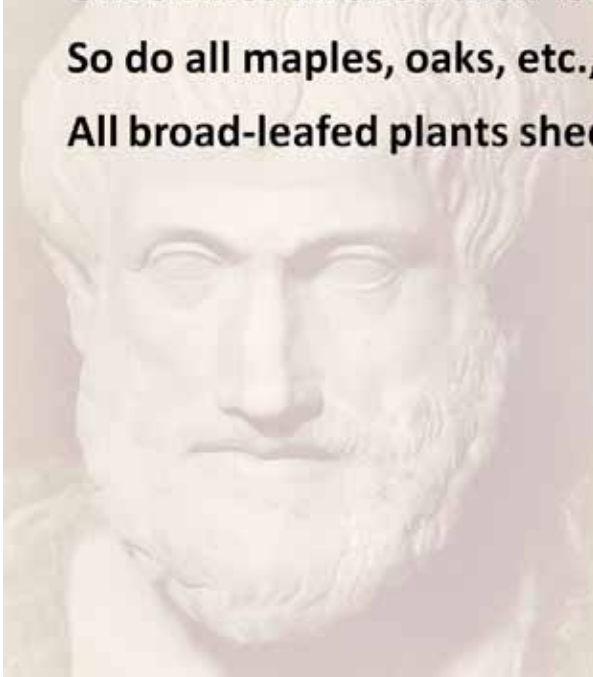
The clouds are noisy (in that certain way).

Organizing Knowledge to Facilitate Demonstration:

Olive vines all shed their leaves.

So do all maples, oaks, etc., etc.

All broad-leafed plants shed their leaves.

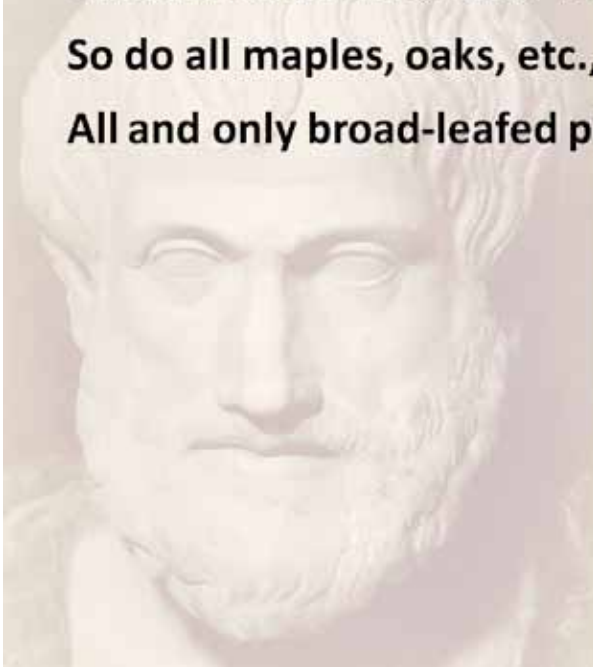


Organizing Knowledge to Facilitate Demonstration:

Olive vines all shed their leaves.

So do all maples, oaks, etc., etc.

All and only broad-leafed plants shed their leaves.



Organizing Knowledge to Facilitate Demonstration:

Olive vines all shed their leaves.

So do all maples, oaks, etc., etc.

All and only broad-leaved plants shed their leaves.

Multiplications in which two is a factor yield an even product.

So too with multiplications in which four is a factor, or six, or eight, or ten, etc.

All and only multiplications in which there is an even factor, yield even products.

Organizing Knowledge to Facilitate Demonstration:

Olive vines all shed their leaves.

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Multiplications in which two is a factor yield an even product.

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All and only multiplications in which there is an even factor, yield even products.

Organizing Knowledge to Facilitate Demonstration:

The Objectivist movement has had acrimonious splits.

The abolitionist movement has had acrimonious splits, as did the communists, and the founding fathers, and most religious sects, and the animal rights movement, and the environmentalist movement, etc.

Radical ideological movements are prone to acrimonious splits.

Organizing Knowledge to Facilitate Demonstration:

Radical ideological movements are prone to acrimonious splits.

Radical ideological movements fight to implement moral principles.

There is a lot of occasion for (honest or dishonest error) in the implementation of principles.

Therefore radical ideological movements will be prone to disagreement as to what particular actions to fight for or endorse.

Disagreements about what to do split a group into factions.

Therefore, ideological movements are prone to split into factions.

Each of the factions into which radical ideological movements split think the actions or inactions of the other are immoral.

There is acrimony between parties who view one another as immoral.

Therefore there will be acrimony between the factions into which a radical ideological movement splits.

When to Form Concepts:

Posterior Analytics I.5: “We must not overlook {the fact that} erring often occurs and what’s proven does not belong primitively universally, {though} it seems to be proven universally primitively. We make this mistake when either {i} there is nothing from higher to take besides the particulars or {ii} there is {something} over objects that differ in form but it is unnamed, or {iii} one chances to prove an existent as a whole in part; for the demonstration does belong to the things in {the} part and will be of everything; but, just the same, the demonstration will not be of this primary universal.”

The Need to Form New Concepts:

Posterior Analytics II.14: “Though we now we speak in terms of the common names that have been handed down, it is necessary to inquire not only in these cases. Rather also, if any other common attribute should be observed, then, after extracting it, {enquire into} what it follows and what follows it.”

Topics VIII.2: “In some inductions [. . .] it is not easy [to ask for the universal] because a common name has not been laid down for every likenesses; rather, whenever {anyone} needs to secure the universal, he says ‘{it’s} so in all such things.’ But this is among the most difficult things to distinguish— which of the things put forward are ‘such’ and {which} aren’t. [. . .] That’s why one must try oneself to make up a name covering all such things [. . .]”

What About First-Level Concepts?

Physics I.1: “At first the complex things especially are clear and obvious to us; but later, by division of these, their elements and principles become known. That’s why one must proceed from universals to particulars; for the whole is most known in accordance with perception and the universal is a certain whole; for the universal embraces many things as parts. In a certain manner, the same thing happens with names relative to accounts; for, e.g., circle also signifies a certain whole indeterminately, but the definition divides it into the particulars. And children at first address all men as fathers and women as mothers, but later distinguish each of them.”

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For war		4-legged	perceptual	Horse	Animal
For Racing					
Wise	Poor	2-legged	rational	Man	
Foolish	Rich				

SUPPLEMENTAL READINGS

These are my translations of some selections from Aristotle's corpus that are discussed or alluded to in the course. They are arranged in the order in which they are first addressed in the lectures. Consult the Course Outline to see which selections are relevant to which portions of the course. I recommend reading *Metaphysics A* before listening to the first lecture and reading the other texts after listening to the lectures in which they (or the issues they address) are discussed.

Some basic bibliographic information: Aristotle's treatises come down to us from antiquity divided into books, and these books have been divided by modern editors into chapters. In the case of most treatises, modern scholars generally refer to the books by roman numerals, rather than by the Greek letters by which they are identified in the manuscripts. However, it is typical to refer to the books of the *Metaphysics* by their letters to avoid an ambiguity caused by an irregularity in their numbering. I follow that practice here. I have also followed the practice of including "Bekker numbers" in the margins. These numbers refer to the pages, columns (a or b) and lines, of Immanuel Bekker's 19th Century Greek edition of Aristotle's corpus, and are reproduced in all quality translations, so as to make it easy to reference precisely a passage.

A point about the translation: In one or two cases I have transliterated Greek words rather than translating them, and I have prefixed letters to "know" (and related words) to distinguish between different Greek terms that the word can be used to translate. The relevant terms are discussed in the lectures and identified in the vocabulary list.

Metaphysics A.1

All men naturally desire to o-know. A sign is our love of the senses; for even apart from use, we love them because of themselves—vision most of all. For we choose sight above all the others not only so that we can act, but also when we're not intending to act. This is because, of all the senses, it is the one that gives us the most g-knowledge and reveals many differences. 980a21
25

Now, animals have perception at birth by nature; but, in some of them, memory does not come about from it, whereas it does come about in others. Because of this, the latter animals are more intelligent and better learners than those that are not able to remember. (Those that are unable to hear voice are intelligent without learning {by instruction}—bees, for example, and any other such animal that there may be; those that have both memory and this sense do learn.) 980b21
25

Whereas the other animals live by imaginings and memories but have little experience, mankind lives by art and reasoning as well. Experience comes about for men from memories; for many memories of the same object culminate in a single capacity for experience. 981a

And experience is quite like science¹ and art, but science and art come about through experience for men; for "experience made art," as Polus aptly put it, "but inexperience luck". Art comes about when a single universal view about similar things comes about from many notions of experience. For, while it is the role of experience to have the view that this benefited Callias when afflicted with this illness, and Socrates too and many such particulars, it is the role of art to have the view that it benefited all such people, defined according to a single form when afflicted with this illness (e.g. phlegmatic or choleric people when burning with fever). 10

¹ The word translated "science" here is elsewhere rendered "e-knowledge."

In fact, relative to acting, experience seems no different from art. On the contrary, the experienced succeed more than those without experience who have a doctrine.² The cause is that, while experience is g-knowledge of the particulars, art is {g-knowledge} of the universals; and actions and occurrences are all about the particulars. For one doesn't heal man when doctoring (or else one does so incidentally); rather one heals Callias or Socrates or someone else spoken of in this way, who happens to be a man. So, if someone without experience has a doctrine and g-knows the universal, but is g-ignorant of the particular under it, he will often mistake the treatment; since treatment is particular.

Nevertheless we think *o-knowing* and comprehending belong more to art than to experience, and we suppose the artist to be wiser than the experienced person. (In every case of being more *o-knowing*, wisdom is implied.) This is because the former *o-know* the cause and the latter do not. For, while experienced people *o-know* the "that", they don't *o-know* the "why", whereas the others g-know the "why" and the cause. That's why we consider the master of each art more honorable and more *o-knowing* and wiser than the handymen, since he *o-knows* the cause of the products, whereas {the handymen} produce just as some of the inanimate things do, without *o-knowing* what they're producing—in the way that fire burns. (Whereas the inanimate things produce each of these things by nature, the handymen do so by habit.) We consider the master of the art wiser, not in virtue of his action, but in virtue of having the doctrine and g-knowing the causes. Also, in general, the ability to teach is an indication of who knows and who does not. It's because of this that we hold art to be more scientific than experience; for artists are able to teach but the others are not.

Further, we hold that no perception is wisdom, although perception is in fact the most authoritative g-knowledge of particulars. However, it doesn't tell us the "why" of anything—for example, it doesn't tell us why fire is hot, but only that it's hot.

So, although, at first, the people who discovered any art besides the common perceptions were marveled at not only because there was some use for the discoveries but because they were wise and as different from the others, later when more arts had been discovered and some were aimed at necessities and others at recreation, the people who discovered the latter were always supposed to be wiser than the ones who discovered the former, because their sciences were not aimed at use. When all of these things had been established, those of the sciences that aim neither at pleasure nor at necessities were discovered. This happened first in those places in which people first had leisure; that's why the mathematical arts were established first in Egypt; for there the priestly class was allowed to be at leisure.

The difference between art and science and the other similar kinds has been discussed in the *Ethics*, the purpose of bringing it up here is to establish the point that everyone supposes that what's called wisdom aims at the first causes and the principles; so that, just as was said earlier, while the experienced person seems to be wiser than the possessor of any perception whatever, the possessor of art seems to be wiser than the possessor of experiences, the masters seem to be wiser than the handyman, and the theoretical disciplines seem to be wiser than the productive. So it's clear, then, that wisdom is scientific knowledge of certain principles and causes.

Posterior Analytics I.1

² The word I'm translating here "doctrine" is "*logos*," which I elsewhere translate "account." The word translated "reasoning" above derives from it.

All teaching and all intellectual learning come about from pre-existent g-knowledge. This is clear from surveying of all the cases: for the mathematical sciences are developed in this manner, as are all of the other arts. Similarly with arguments, both deductive and inductive; for both effect their teaching through things that are already g-known: the former assume things which we're supposed to grasp, whereas the latter prove the universal through the particular's being clear. (Rhetorical {arguments} also persuade in the same way; for they either {do so} through examples, which is induction, or through enthymemes, which is just deduction.)

There are two ways in which one it is necessary to already g-know: sometimes it is necessary to presuppose that something exists {or is the case}, sometimes one must grasp what something spoken of is, and sometimes {one must do} both. E.g.: that everything is either asserted or denied truly {we must presuppose} to be the case; {we must grasp} that "triangle" signifies this; and {in the case of} the unit {we must do} both—{we must already know} what it signifies and that it exists; for is it not in a similar way that each of these is clear to us.

One can get to g-know {something} when one {already} g-knows some prior thing and acquires the other {prior things} at the very same time as the g-knowledge—e.g., {someone acquires knowledge of} whatever happens to fall under a universal of which he has g-knowledge {at the very same time that he acquires the g-knowledge that it falls under the universal}. For he already o-knew that a triangle has angles equal to two right angles, but he got to g-know that this {figure} in the semicircle was a triangle, at the same time as he was lead {to the conclusion that the figure's angles are equal to two right angles}. For in some cases the learning occurs in this manner, and the last {term} does not get g-known through the middle; {this occurs} whenever they are already particulars and are not {said} of any subject.)

Before being lead {to the conclusion} or having the deduction, perhaps one should be said to e-know in one manner but not in another. For without having o-known if {the figure} existed at all, how could he have o-known simpliciter that it had {angles equaling} two right angles? But it's clear that he e-knows it in a way, since he e-knows it universally, but he doesn't e-know it simpliciter. Otherwise the puzzle in the *Meno* will arise: he will learn nothing or what he {already} o-knows. For we should not argue as some do in attempting to resolve {the puzzle}: "Do you or do you not o-know that all pairs are even?" When you affirm it, they produce some pair that you didn't think existed, and so didn't {think} was even. For they resolve {the puzzle} by declaring that one does not o-knows of every pair that it's even; rather {they declare that one knows it of} what one knows to be a pair. However, they o-know that of which they have a demonstration and about which they've assumed, and they assumed not about everything that they o-knew to be a triangle or a number, but about all triangles and numbers simpliciter; for no such propositions (about that which one o-knows to be a number or that which one o-knows to be rectilinear) are assumed, but rather {propositions} applying to every case. But there's nothing to stop one from e-knowing in a way what he is learning, while being g-ignorant in {another} way; for the absurd {position} is that that there's some way in which one {already} o-knows what one's learning, but that one {already knows it} in the very way and to the very extent that he is learning it.

Posterior Analytics I.2

We think someone e-knows something simpliciter (rather than in the sophistic manner, incidentally) whenever we think he g-knows {i} the cause due to which the object exists, {ii} that this it is its cause, and {iii} that it does not admit of being otherwise. It's clear, then, that e-knowing is something of this sort; for those who do not e-know {but think they

do} think that they are in such a condition, whereas those who do e-know indeed are in it. So, that which is e-known simpliciter cannot be otherwise. 15

We'll say later whether there is also another manner of e-knowing, but we do declare that people o-know through demonstrations. By "demonstration", I mean a e-knowing deduction; and by "e-knowing" I mean one that, by having it, a person e-knows something. If, then, to e-know is as we've assumed, then demonstrative e-knowledge must be from {premises} that are {i} true, {ii} primary and {iii} immediate, and {iv} better g-known than, {v} prior to, and {vi} causes of the conclusions. For, this way, the principles will be appropriate to what is being proved. Without these {conditions}, there can be a deduction, but it cannot be a demonstration, for it will not produce e-knowledge. 20

{i} They must be true, since one cannot e-know something that is not the case--e.g., that the diagonal {of a square} is commensurable {with the sides}. {ii} {Demonstrations} must be from primary and indemonstrable {premises}, since otherwise one wouldn't e-known without a demonstration of {the premises} (for to e-know a demonstrable thing non-incidentally is to have the demonstration). 25

{The premises} must be causes and better g-known than and prior to {the conclusions}: {iv} {they must be} causes, since we e-know {something} whenever we o-know {its} cause; {v} {they must be} prior if they're causes; {vi} and they must be already g-known, not only in the sense of our grasping them, but also of our o-knowing that they are the case. 30

Things are prior and better g-known in two ways: for what is prior by nature and what is prior to us are not the same, nor what is better g-known {by nature} {the same as} what is better known to us. By "prior and better g-known to us", I mean those things that are nearer to perception, whereas {by "prior and better known"} simpliciter, I mean those that are further from it. The most universal things are furthest, whereas the particulars are nearest, and these are opposite to one another. 72a

{To proceed} from primaries is {to proceed} from proper principles; for I mean the same thing by "primaries" and "principles". {iii} A principle of a demonstration is an immediate premise, and it's immediate if there are no others prior to it. 5

A proposition is one side of a contradiction, one thing {asserted or denied} of one thing. A dialectical {proposition} takes either side indifferently, whereas a demonstrative one determinately takes one side, since it's true. An assertion is one side of a contradiction. A contradiction is an opposition between which, in itself, there is nothing. The side of a contradiction that {asserts} something of something is an affirmation, whereas {the side} that takes something from something is a denial. 10

By "thesis", I mean an immediate principle of deduction that cannot be proved, but which is not needed in order to learn anything; by "axiom", {I mean} one that is necessary to learn anything (for there are some such things; and we are accustomed to calling such things especially by this name). A thesis that takes one of the sides of a contradiction--I mean {one that asserts} that something is or that it is not the case--is a hypothesis; whereas one that does not is a definition. For a definition is a thesis (for an arithmetician lays it down that a unit is what is indivisible with respect to quantity), but it is not a hypothesis (for what a unit is and a unit exists are not the same). 15

Since one is convinced and o-knows an object by means of having the sort of deduction we call a demonstration, and such a deduction exists by means of the {premises} from which it {proceeds} being the case, one must not only already g-know the primaries (whether all or some), but indeed must {already g-know them} better {than he knows the conclusion}. For something always holds better of that because of which it holds {of something else}--e.g., that because of which we love {something} is better loved {than it}. 25

Thus, if we o-know and are convinced because of the primaries, then we o-know them better and are more convinced of them, since it is because of them that {we o-know and are convinced of} the posterior things. 30

One cannot be more convinced of anything than he is of something he o-knows, unless he happens either to o-know it or to be better situated {with respect to it} than if he o-knew {it}. But this {impossible situation} will come about unless something is already g-known when one gets convinced by a demonstration; for one must be more convinced of the principles (whether all or some) than of the conclusion. Before someone can have e-knowledge through a demonstration, not only must he get to g-know the principles better and be more convinced of them than he is of what is being proved, also it must be that none of the opposites of the principles, from which there could be a deduction of the erroneous contrary, is more convincing or better g-known to him {than the principles are} (since someone who e-knows *simpliciter* must be immovable in his conviction). 35
72b

Topics I.1 excerpt

A deduction is an argument in which, certain things having been laid down, something other than these necessarily comes about through them. It is a demonstration whenever the deduction is through true and primary {premises} or it is from {premises} of the sort that have the origin of knowledge about them though primary and true {premises}. 100a25
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Posterior Analytics I.24

Since some demonstrations are universal and others particular, and some are affirmative others negative, it is disputed which are better; and there is the same {sort of dispute} about those {demonstrations} that are said to demonstrate and those that demonstrate by leading to an impossibility. First let's inquire about the universal and particular and affirmative and negative, and then, once we've made this clear, let's speak about those which are said to prove and those which are to the impossible. 85a13
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Some, inquiring by a certain path, may think that the particular {demonstration} is better. For: if the demonstration in accordance with which we more e-know is the better demonstration (for this is the virtue of a demonstration); and {if} we e-know each thing more when we o-know it in accordance with itself than when {we o-know it} in accordance with something else (e.g.; {we more e-know} musical Coriscus when {we o-know} that Coriscus is musical than when {we o-know} that man is musical, and likewise in other [cases]); and {if} the universal {demonstration} shows because something else (not {the object} itself) has turned up (e.g. {it shows} that the isosceles {has angles whose sum is equal to that of two right angles} not because of isosceles but rather because of triangle), whereas the particular {demonstration shows this to be} because of {the the object term} itself; {then}, if indeed the {demonstration} in accordance with {the object} itself is better, and {if} the particular {demonstration} is such more than the universal), the particular demonstration will also be better. 85a20
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Moreover: if, though the universal is not anything besides the particulars, the demonstration instills the belief that that in accordance with which it demonstrates is some such thing (i.e., some natural thing that pertains among the existents—e.g., a triangle besides the several {triangles}, a figure besides the several {figures}, a number besides the several numbers); and {if} a {demonstration} about something that exists is better than one about

something that doesn't, and one by which one is not fooled {is better} than by which one is; and {if} the universal {demonstration} is such {as to fool one}—for, in proceeding, {universal demonstrations} show as they do with proportion—e.g., that anything that's a certain "such" is a proportion, which {"such"} is neither line nor number nor solid nor plane, but rather something besides these); now if this {thing besides line, number and the rest} is more universal but less about something that exists than the particular {term}, and {if} it instills a false belief, then the universal {demonstration} will be worse than the particular. 85b

On the other hand: first, is the first argument {any} more {applicable} to the universal {demonstration} than to the particular? For, if two rights pertains not *qua* isosceles but *qua* triangle, o-knowledge that isosceles {has two rights} is less o-knowing than o-knowledge that triangle {has two rights}. And generally, if one then proves something that is not {true of a triangle} *qua* triangle, it will not be a demonstration, but if {one proves} something that is {true of triangles}, the o-knowledge of each *qua* each belongs most to o-knowing. If indeed triangle extends beyond {isosceles}, and the account is the same (i.e., "triangle" is not a homonym) and the two {right angles} belong to every triangle, then it is not the triangle *qua* isosceles but rather the isosceles *qua* triangle which has these angles. Thus universal o-knowledge is more o-knowing *qua* belonging {to the object} than particular {o-knowledge is}. Therefore the universal {demonstration} is better than the particular. 5 10

Again, if the universal is some single account and not homonymous, it will be no less one {thing} than the particular; rather {it will be} even more {one thing}, insofar as the imperishable are amongst these {viz. the universals} and the particulars are more perishable, and still there's no need to suppose this to be something apart from these {particulars} because it reveals a one—not any more than {we need to suppose this} with the other things that don't signify something {that exists independently} but {signify} either a quality or a relation or an action. 15

Therefore, if {a false belief is instilled}, the cause is not the demonstration but the audience.

Moreover, if a demonstration is a deduction showing a cause and the "why", and {if} the universal is more causal (for that to which something belongs in itself is itself a cause for itself); then the {universal} demonstration is better; for it is more of the cause and the "why". 20

Again, we seek the "why" to this extent, and then we think there's o-knowing {of a thing} when it neither comes about nor exists because of something else; for the last already is an end and a limit in this way. E.g.: For what's sake did he come? So as to get money, {and he wanted} this so as to return what he owed, {and he wanted to do} this so as not to be unjust; and going on in this way, when it's no longer due to another or for the sake of another, we say it's due to this as an end that he came (both that it is and that it came to be); and then we o-know most why he came. If indeed it's the same in the case of all causes and whys, and {if}, in the case of any cause such as is for something's sake, we o-know it most in this way; then in the other {cases} also we o-know most when this {i.e. what's known} no longer holds because of anything else. So then, when we g-know that the external {angles} equal four {right angles} because {it's} isosceles, it still remains {to ask} why the isosceles {is like this}; {and the answer is} because {it's} a triangle, and this {has external angles equal to four right angles} because it's a rectilinear figure. If there is no longer another why, then we most o-know. But then it's also universal; therefore the universal is better. 25 30 35

Again, to whatever extent {a demonstration} is particular, it tends towards the infinite, and the universal {tends} towards the simple and the finite. But, while, *qua* infinite {things} are not e-knowable, *qua* delimited they are e-knowable. Therefore things are more e-knowable *qua* universal than *qua* particular. But of more demonstrable things there's more of a demonstration; for relative {terms} increase simultaneously. Therefore the universal {demonstration} is better, since it's also more of a demonstration. 86a

Again, if {a demonstration} in accordance with which one o-knows this and something else is preferable to one in accordance with which one knows only this, and {if}, in having the universal, one also o-knows the particular, but one does not o-know the universal in this way, then this will be preferable. Thus, again, to prove more universally is to prove through a middle that is nearer to the principle. What's immediate is nearest; it's a principle. So if a demonstration from a principle is more precise than one not from a principle, one that's more from a principle {is more precise} than one that's less. But the universal is more such, {so} the universal will be superior. E.g.: if you needed to demonstrate A of Δ , middles of which are B and Γ ; B is higher, so that the {demonstration} through this is more universal.

However, Some of these arguments are rationalistic. It is clearest that the universal is more authoritative, because, {in} having the prior of the propositions, one also o-knows the posterior in a way—i.e., we have {the posterior proposition} potentially; e.g. if someone o-knows that every triangle {has} two rights, then {he} o-knows also that isosceles {does}, because {it's} a triangle; but one who has this premise in no way o-knows the universal, neither potentially nor actually. And while the universal is thinkable, the particular terminates in perception.

Posterior Analytics II.19

It's clear now what deduction and demonstration are and how they come about. And these things are clear at the same time about demonstrative e-knowledge, since it's the same thing. How we g-know principles and what the state of g-knowing them is will soon be clear, after we've raised a puzzle.

It was said earlier that it is not possible to e-know through demonstration unless one g-knows the first principles (the immediate ones). Someone might be puzzled about knowledge of the immediate and whether or not it is the same, and whether or not there's e-knowledge of each, or e-knowledge of one but some other sort of g-knowledge of the other, and whether the states come about in us without being inherent in us, or else are inherent in us but have been overlooked. On the one hand it's absurd to say that we have {g-knowledge of the principles}, since it follows that people who possess g-knowledge more precise than demonstrations over look it. But on the other hand, if we acquire {this g-knowledge} without having had it before, how would we get to g-know and learn it other than from g-knowledge that we already had? That's impossible, as we already said in the case of demonstration. Accordingly, it's clear that we don't already have such {g-knowledges}, and that they don't come about in us despite our being g-ignorant and having no state whatsoever. Therefore, while we must have some capacity, we don't have to have one that's like {this g-knowledge} or that's more honorable than it or more precise.

And evidently this holds indeed for all animals. For they have an innate discerning capacity, which is called perception. Since perception is inherent, a retention of the perceptible comes about in some of the animals, but it does not come about in others. So, in the case of those animals for whom it doesn't arise (either at all or about that which for it doesn't arise), they have no g-knowledge outside of perceiving; but for those who have

perceived in which it inheres, it is still in the soul. 100a

Once many such things have come about, a certain difference comes about. For some animals an account arises from the retention of such things, for others it does not. So, while memory (as we call it) comes about from perception, experience comes about from many memories; for numerically many memories are a single experience. A principle of art or e-knowledge arises from experience (or from the whole of the universal that has settled in the soul—the one besides the many, which is the same in all these things). It's a principle of art if it's about things that come about, and a principle of e-knowledge if it's about things that exist. 5

Indeed the states {by which we g-know the principles} are neither present in us determinately nor do they come about from other states that are more g-knowing. Rather they come about from perception. It's like a battle: a rout's occurred, with one man standing, another stands, then another, until it's arrived at a principle. And the soul is such as to be capable of undergoing this. 10

Let's state again what was just said, but not said plainly. When one of the undifferentiated things is standing, the first universal is indeed in the soul (for while one perceives the particular, perception is of the universal—e.g., of man rather than Callias the man); then something among these things stands, until a partless and universal thing stands. For example, "such an animal" stands until "animal" does, and then the same thing happens in this. Now it's clear that it's necessary for us to get to g-know the first things by induction; for perception too instills the universal in this way. 15 100b

Since, of the intellectual states by which we have truth, some are always true and others admit the false (e.g. belief and reckoning admit the false, science and comprehension always true), and there isn't any kind more precise than e-knowledge or *nous*, and the principles of demonstration are better g-known, and all e-knowledge involves an account, there cannot be e-knowledge of the principles; since it's not possible for anything to be truer than e-knowledge or *nous*, there must be *nous* of the principles; this follows both from this inquiry and because demonstration's principle isn't demonstration, so e-knowledge's principle isn't e-knowledge. So if we don't have any other true kind besides e-knowledge, then *nous* would be e-knowledge's principle. And the entirety will be related to the entire object as the principle is related to the principle. 5 10 15

Metaphysics M.10

There is a certain puzzle both for those who speak of Forms and for those who do not speak {of them}, and it was mentioned previously at the beginning in the *Discussions of Puzzles* {i.e., in *Metaphysics* B}; let's speak {about it} now. 1086b14 15

If one doesn't posit substances to be separated and {to be so} in such a manner as particular existents are said {to be}, one will destroy substance as we wish to speak of it; but if one posits separate substances, how will one posit their elements and principles? On the one hand, if they are particular and not universal, there will be {only} as many existents as elements, and the elements will not be e-knowable. For, let the syllables in speech be substances and their elements be the elements of substances. Now it's necessary for "BA" to be one and for each of the syllables to be one. Since these things are not universal and {one} in form, rather each is one in number and a certain *this* and not co-named {with any other}. 20 25

Anyway, they posit each "*that* which something is" {to be} one. But if the syllables {are this way} then so too are the things out of which they are. Therefore, there will not be more than one "A", nor any of the other elements according to the same account on which none of the syllables {can be}. However, if so, there won't be other existents besides the elements, but 30

rather only the elements. Anyway, the elements won't be e-knowable; for they're not universal and e-knowledge is of universals; this is clear from demonstrations and definitions (for a deduction does not come about that this triangle has {an angle-sum equal to} two right {angles} unless every triangle has {angles equal to} two right {angles}, nor that this man is an animal unless every man is an animal). However, if the principles are universal, then the substances out of them also are universal, else non-substances will be prior to substance; for, while a substance is not universal, the element and the principle are universal, and a principle or the element is prior to that of which it is the element or principle. All this follows rationally when they both make Forms out of elements and expect there to be some one thing, besides the substances that have the same form, which is separated. But, just as in the case of the elements of speech, if nothing prevents there being many "A"s and "B"s without there being any A Itself and B Itself besides the many, then there will be (as far as this goes) infinitely many like syllables.

That all e-knowledge is universal, so that it's necessary also for the principles of existents to be universal and not separated substances, does contain the greatest puzzle of those we've discussed; however, though the statement is true in one way, it is not true in another. For e-knowledge is twofold, as e-knowing also is: one is in potentiality and the other in actuality. While the potential, being as matter, is universal and indefinite and is of the universal and indefinite, the actual is definite and of the definite, being a certain this of a certain this. It is rather incidentally that sight sees the universal color, since the color that it sees is a color, and what the grammarian contemplates, a certain "A", is an "A". If the principles are universal, it's necessary for what is from them also to be universal, just as in the case of demonstration; but if this is so, nothing will be separate or a substance. It's clear rather that, while e-knowledge is universal in a way, in a way it is not.

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Posterior Analytics I.11 excerpt

It is not necessary that there be forms or some one thing besides the many if there is to be demonstration; however it's necessary that it be true to state one thing of many; for there will not be a universal if this is not so, and if there is not a universal, there will not be a middle, so that there won't be a demonstration. Therefore, there must be some one and the same thing applying to many non-homonymously.

75a5

Metaphysics I excerpts

But difference (*diaphora*) and otherness (*heterēs*) are distinct. For {something that is} other and that which it is other than are not necessarily other *in something* (for everything exists is either other or the same {as everything else}), whereas {something that is} different differs from something *in something*, so there must be something the same in which they differ. This same thing is a kind or form; for every different thing differs either {i} in kind or {ii} in form:

1054b22

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{i} the things {that differ} in kind {are} those for which the matter is not common and there is not coming-to-be into one another—e.g., whatever is in another figure of predication;³ {ii} {the things that differ} in form {are} those things whose kind is the same (kind meaning that same thing which both of the different things are said to be with respect to substance. 30

Contraries are different, and contrariety is a certain difference. The rightness of this supposition is clear from induction; for all are evidently different and they are not merely other—rather, in some cases, the kind is other and, in other cases, it's in the same column of predication, so that they're in the same kind and are the same-in-kind. (It's distinguished in other works {what is} the same or other in kind.) Since the differing things can differ from one another in the more and the less, there is some greatest difference, and I call this contrariety. It is clear from induction that contrariety is the greatest difference. For, while things that differ in kind do not have a way to one another (rather, they keep entirely apart and are incommensurable), comings-to-be for things that differ in form are from contraries as extremes; and the distance between extremes is greatest, so that between contraries must be as well. 35 1055a 5

For this is what I call a kind: the one same {thing} said of both {forms} that is different non accidentally (whether matter or otherwise). For not only must the common {thing} belong—e.g., both are animals—but this same animal must be other for each—e.g., horse for this one, but man for that one. That's why the common {thing} is other in form {for one} than {it is} for the rest. In themselves, then, this one will be such an animal and that one will be such an animal—e.g., this one {will be} a horse, and that one {will be} a man. Necessarily, therefore, this difference is an otherness of the kind. For I call a “difference of the kind” an otherness that makes it itself different. 1057b38 1057a 5

Parts of Animals I.4

Someone might puzzle over why men have not denominated, by some one name encompassing both at once from above, one kind, which comprises those of the animals that are aquatic and those that fly. For there are some characteristics common to these (and to all other animals). Nevertheless, they are correctly distinguished in this way {viz., as they presently are, without an overarching kind}. For, whatever differs in accordance with degree and the more and the less has been yoked together under one kind, whereas whatever is analogous {has been kept} separate. I mean, for example, that bird differs from bird by more or by degree (for one has long feathers, another short feathers), whereas fish differs from bird by analogy (for what is feather in one is scale in the other). But it isn't easy to implement this in every case; for many animals have traits that are analogously the same 644a12 15 20

Since substances are the last forms, they are undifferentiated with respect to form (e.g. Socrates, Coriscus). It is necessary either to state what belongs universally first or to say the same thing many times, as was stated. The universals are common; for we call what belongs to many a universal. There is a puzzle about which {of these} we should treat. For, on the one hand, the thing that's uncuttable in form is a substance, so it would be better, if someone could, to study separately {each of} the particulars and uncuttables in form, just as {one studies} man—{one would} not {study} birds in this way, for this kind has forms; rather {one would study} that bird (among the uncuttables)—e.g., either sparrow or crane or some such. 25 30

³ By the “figures of predication,” Aristotle means what have come to be called the metaphysical categories—substance, quality, quantity, action, relation, etc. Blue, a quality, is *other than* brotherhood, a relation, but the two do not *differ*, because there is no respect in which they can be compared.

Perhaps, then, it is right, on the one hand, to speak in common, in terms of kinds, whenever {a kind} is spoken of that has been well defined by men and that has a single common nature and has forms in it that are not very different (e.g., {the kinds} bird and fish, and any other {kind} there may be that, though unnamed, comprises the forms in it like a kind), and, on the other hand, wherever there is not such {a nature}, {perhaps it is right to speak} particularly (e.g., about man, and {likewise} if there is any other such {form}). 644b
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Roughly, kinds have been defined by the shapes of the parts and of the whole body, when they bear a likeness—e.g., the {members} of the bird kind are so related {to one another}, as are the fish and the softies and the shellfish. For the parts of these differ not by analogous likeness, as a man's bone is related to a fish's thistle, but by excess in bodily traits—e.g. by largeness, smallness, softness, hardness, smoothness, roughness, and such things—on whole by excess and deficiency. 10

We have stated, then, how the inquiry into nature must be received, and in what manner the study of these things might come to be methodical and easy. Further, about division, {we've stated} in what manner it is possible by participating in it to grasp things usefully, and why in one way it is impossible and in another vacuous. Having determined these things, let's speak about what's next, making this a starting-point. 15

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History of Animals I.1 excerpt

By "kind," I mean, e.g., bird and fish; for each of these has difference with respect to kind, and there are many forms of fishes and birds. But, roughly [speaking], the majority of the parts differ in themselves by oppositions of their traits—e.g., color and figure—one thing having a trait more that another has less; still, {other parts differ} by multiplicity and fewness, and by largeness smallness, and, generally, by excess and deficiency. {...} But, so to speak, most parts, and the ones out of which the entire mass is composed, are either the same or differ by opposition and by excess and deficiency—for we can count the more and the less as a sort of excess and deficiency. 486b15

On Memory and Recollection 1 excerpt

We've spoken about imagination earlier, in *De Anima*, and there is no thinking without an image—for what happens is the same in thinking as in diagramming. In the latter case, making no use of the triangle's being of a determinate quantity, we nevertheless draw it determinately with respect to quantity. It's the same way with the thinker: if he thinks {something that's} not sized, he sets a sized thing before his eyes, but does not think it *qua* sized; but if its nature is among the sized things but indeterminate, he sets {before his eyes} a determinate sized thing but thinks it *qua* sized only. 449b30
450a
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Posterior Analytics II.1

The things we seek are equal in number to the things that {having found them} we know. We seek four things: the *that*, the *why*, *if it is*, and *what it is*. For, on the one hand, when we seek whether this or that is so, putting it in a number of words (e.g., whether the sun is 89b23
25

eclipsed or not), we seek the *that*. A sign of this is that we stop when we discover that it's eclipsed; and if we o-know from the beginning that it's eclipsed, we do not seek whether it is. On the other hand, when we o-know the *that*, we seek the *why*. E.g., o-knowing that it's eclipsed and that the earth moves, we seek the *why* it's eclipsed or *why* it moves. 30

So, then, these are the things we seek in this way, but we seek some things in another manner. E.g. "whether there is there or is not a centaur or god"—I mean, whether or not it is *simpliciter*, rather than whether or not it is {for example} white. And when we g-know that it is, we seek what it is—e.g., "Then what is a god?" or "What is man?" 35

Posterior Analytics II.2

These and this many are the things we seek and that, once we've found {them}, we o-know. When we seek the *that* or *if it is simpliciter*, we are seeking whether there's a middle term for it or not. By contrast, when we g-know either the *that* or *if it is* (either in part or *simpliciter*), then we seek the *why* or the *what it is*, at which point we're seeking what the middle {term} is. 90a
Here's what I mean by "the *that* in part" or "{the *that*} *simpliciter*": first, "in part" is "Is the moon eclipsed or waxing?" (for we ask if it is or is not something); second, "*simpliciter*" is if the moon or night is or is not. 5

Therefore it follows that in all searches one seeks either whether there is a middle {term} or what the middle is. For, the middle is the cause, and in all cases this is what's sought. "Is it eclipsed?" "Is there some cause or not?" After g-knowing that there is one, we seek what this is. For the cause of a thing's existence—not of its being this or that, but rather of it's being *simpliciter*, or else of it's being not *simpliciter* but being one of the things it is in its own right or incidentally—is the middle. By "*simpliciter*" I mean the subject (e.g., the moon, the earth, the sun, or a triangle), and by "one of..." I mean, e.g., an eclipse, equality, inequality, or whether it's in the middle or not. 10

For in all of these cases, it is evident that the *what it is* and *why it is* are the same. "What is an eclipse?" "Privation of light from the moon by the earth's obstructing." "Why is there an eclipse?" or "Why is the moon eclipsed?" "Because the light is absent, since the earth is obstructing." "What is a harmony?" "A numerical proportion between sharp and flat {notes}." "Why do the sharp and flat harmonize?" "Because the sharp and flat have a numerical proportion." "Do the sharp and flat harmonize?" "Is their proportion in numbers?" Assuming that it is, "What is the proportion?" 20

It's clear that the search is for the middle whenever the middle is perceptible. For, if we haven't perceived it, we search—e.g. {we seek} whether there's a middle for the eclipse or not. But, if we were on the moon, we would not seek either whether it's going on or why; rather these two would be clear simultaneously. For we would come to o-know the universal from perceiving. For perception would perceive that the earth is now obstructing (for it's clear that the moon is now eclipsed); and from this the universal would arise. So, as we say, o-knowing the *what it is* and *why it is* are the same—but this is either *simpliciter* (and not one of the things that belongs to it) or it's one of the things that belongs to it (e.g., that it has two rights or that it's greater or less). 30

Posterior Analytics II.7

Then how will the definer prove the substance or the “what it is”?⁴ For {he} will not make it clear, as {one does} in demonstration, from items agreed to exist that, {since} they exist, it is necessary for something else to exist (for that {would be} a demonstration); nor, as {one does} in induction, {will he make it clear}, though the particulars being clear, that everything is thus by nothing’s being otherwise; for {induction} doesn’t prove *what it is*, but rather that it is or is not. What other way remains? For he surely certainly prove {the definition} by perception or by pointing. 92a35

Again, how will he prove the “what it is”? For anyone who o-knows what man (or anything else) is necessarily also o-knows also that it exists. (For no one o-knows what a non-existent thing is—on the contrary, though {one o-knows} what the account or name signifies when I state “goatstag”, it is impossible to o-know what a goatstag is). But, then, if one proves *what it is* and *that it is*, how will one prove {these two things} by the same account? For both a definition reveals some single thing, and a demonstration does to, but what man is and that man exists are distinct. 5 10

Further, we say that everything that something is must be proved through demonstration, except for {its} substance. But to exist isn’t anything’s substance, for existence isn’t a kind. Therefore, there will be demonstration that it exists. And this is just what the sciences do now. For, though the geometer assumes what “triangle” signifies, he process that it exists. So what will the definer prove other than what the triangle is? Therefore {if that’s right}, someone will o-know by definition what it is {even} if he doesn’t know that it exists. But that’s impossible! 15

And it’s evident that those who define in accordance with the current manner of definitions do not thereby prove that it is. For, even if there is something equidistant from the middle; why does what’s being defined exist? And why is this a circle? For one could say that this was {the definition of} mountain-copper {rather than a circle}. For definitions do not reveal that what’s described is possible nor that the definitions are of what they say they are. Rather, one can always ask why. 20 25

Then, if the defined proves either *what it is* or what the name signifies, and there isn’t any {proof} of *what it is*, then the definition would be an account signifying the same as a name. But that’s absurd. For, first, there would {on this view} be {definitions} of non-substances and of things that don’t exist; for one can signify things that don’t exist. Moreover, all accounts would be definitions; for one can lay down a name for any sort of account, so that we would all converse in definitions and the *Iliad* would be a definition! Still, no demonstration would demonstrate that this name reveals *this*, nor, therefore, will definitions reveal this. 30

From these things, therefore, it appears that definitions and deductions are not the same, nor is there deduction and definition of the same thing. With regard to these things, {it appears} that definitions neither demonstrate nor prove anything; nor can one g-know the *what it is* by either definition or demonstration. 35

⁴ Aristotle sometimes uses the word “substance” (*ousia*) interchangeably with the “essence” (*ti ēn einaī*) and both derive from noun forms of the verb to be.

Posterior Analytics II. 8-9

Next we must inquire into which of these things has been said correctly, and which 93a
incorrectly, and what a definition is, and whether there is in a way demonstration and
definition of what something is or in no way at all.

We've that o-knowing what something is and o-knowing the cause of whether it is are
the same, and {that} the cause is an account of this—that something is—, and this is either the 5
thing itself or something else, and {that}, if {it's} something else, {it's} either demonstrable
or indemonstrable. So, if it is something else and it admits of demonstration, necessarily the
cause is a middle and the proof is in the first figure (for what's proven is universal and
predicable).⁵

In a way, then, there would be {demonstration of what something is}—{the way }
that's now been examined: proving by means of another thing that it is. For the middle of a 10
what it is is necessarily a *what it is* and {the middle} of a distinguishing characteristic {is
necessarily} a distinguishing characteristic.⁶ Thus one proves one but not the other of the
things that it is for the same object to be what it is. It was said earlier that this manner {of
proof} would not be a demonstration; rather it is a rationalistic deduction of what something
is. 15

But let's discuss the manner in which definitions do admit of demonstration, stating
the issue again from the beginning. For just as we seek the *why* when we have the *that*—
sometimes they become clear simultaneously, but it is not possible to get to g-know the *why*
prior to the *that*—, it's likewise clear that it's not possible to get to g-know what it is for
something to be without knowing that it is; for it's impossible to o-know what something is if
one is g-ignorant as to whether it exists. But as to *if it is*, sometimes we have it incidentally
and other times when we have something of the object itself—e.g.: {in the case of} thunder, 20
that there's a certain noise in the clouds; {in the case of} eclipse that there's a certain privation
of light; {in the case of} man, that there's a certain animal; and {in the case of} soul, that it
moves itself.

In the case of anything about which we o-know accidentally *that it is*, we necessarily have
nothing relative to the *what it is*; for we don't {really} o-know *that it is*; and to seek *what it is*, 25
not having *that it is*, is to seek nothing. But in the case of anything of which we have some {o-
knowledge of what the thing is}, it is easier. Hence, to the extent that we have the *that it is*, so
we also have something related to the *what it is*.

When we have something of the *what it is*, first let it be like this: eclipse in the A
position, moon in the C position, and the earth's interception in the B position.⁷ So then, to ask
whether it's eclipsed or not is to seek the B—does it exist or not? This doesn't differ
simpliciter from inquiring whether there is an account of it; and, if there is, we claim it's 30
eclipsed.

Or: we ask of which side of the contradiction is the account—of having two right
{angles} or of not having them. When we discover it, we simultaneously o-know the *that* and
the *why*, if we proceed through middles; but if not, we know the *that* but not the *why*. Moon is
C, eclipse A, and in the B position is the full moon's not being able to produce a shadow, 35
although nothing visible is between it and us. Accordingly, if B (not being able to produce a
shadow, though nothing is between it and us) belongs to C, and A (being eclipsed) belongs to

⁵ Aristotle is here using some technical terms from his logic to describe the structure of the deduction in question.

⁶ The point being made is that, for a deduction to prove that the major term was the definition of the minor, the middle would also have to be a definition of the minor, and if the deduction was to prove that the major was a distinguishing characteristic of the minor, it would need to do so through a middle that was also a distinguishing characteristic of the minor.

⁷ In speaking of the A, B, and C positions, Aristotle is envisioning a syllogism where A is the major, B the middle and C the minor term.

this, then, while it's clear *that* it's eclipsed, not clear *why*, and, while we o-know *that there is* an eclipse, we do not know *what it is*.

When it's clear that A belongs to C, to seek why is to seek what B is—whether it's interception or rotation of the moon or extinction. And this is the account of the other extreme—e.g., in this case of A; for the eclipse is the earth's interception. 93b

What is thunder? Fire's extinction in a cloud. Why is there thunder? Because the fire in the cloud is extinguished. Cloud is C, thunder A, and the B is fire's extinction. B belongs to C, 5 the cloud, (for the fire is extinguished in it), and A, a noise, belongs to this; and indeed B is the account of A, the first extreme. If there is, in turn, another middle for this, it will be from the remaining accounts. 10

It has been stated how the *what it is* is taken and becomes g-known: there are neither deductions nor demonstrations of the *what it is*, however it is clear that it is taken and comes to be known though deduction and demonstration; without demonstration, one cannot g-know the *what it is* of something whose cause is something else; there is no demonstration of this, as 15 we stated when discussing the puzzles.

20

Posterior Analytics II.9

While the cause of some things is something distinct {from themselves}, the cause of others is not. So, it's clear that some cases of *what it is* are immediate and principles, for which both being and *what it is* must be supposed or made evident in some other manner (just as the arithmetician makes his principles evident; for he supposes both what the unit is and that it is). 25 But for things that have a middle (i.e., for things for which there is some different cause of {their} substance), one can, as we stated, reveal {what they are} though demonstration, though the *what it is* is not demonstrable

Posterior Analytics II.10

Since a definition is said to be an account of what something is, it's evident that one sort {of definition} will be an account of what a name (or some other name-like account) signifies— 93b29 30 e.g. what "triangle" signifies.

When we've got *that it is*, we seek *why it is*; but it is difficult to grasp in this way something of which we don't o-know that it is. The cause of the difficulty was stated earlier, that we don't o-know whether it is or not, or rather know this only accidentally. (An account is one in either of two ways: either by contact as the *Iliad* is, or by revealing one thing non- 35 accidentally.)

While the afore stated will be one definition of definition, another definition will be an account revealing why something is. So, while the prior type signifies but does not prove, it's 94a evident that the latter type will be like a demonstration of *what it is*, despite differing from a demonstration in how it's put. For stating why it thunders and what thunder is are different; for in the one case you say: "Because the fire is being extinguished in the clouds." But what is thunder? "The sound of fire being extinguished in clouds." So the same account is said in different manners; and the former way it's continuous demonstration, while the latter it's a 5

definition. (Again, a definition of thunder is “noise in the clouds”; and this is a conclusion of a demonstration of what it is.)

The definition of an immediate {existent} is an indemonstrable posit of what it is. 10
Therefore, one {sort of} definition is an indemonstrable account of *what it is*, one is a deduction of *what it is* differing in arrangement from a demonstration, and a third is a conclusion of a demonstration of *what it is*.

It is evident from what's been stated both how there is demonstration of *what it is* and how there is not, and of what sorts {of definitions} there is demonstration and of what sorts there is not, and, further, in how many ways “definition” is said, and how {a definition} proves the *what it is* and how it does not, and of what sorts {of definitions} there are proofs 15 and of what sorts there are not, and, further, how they relate to demonstrations and how they can be the same as demonstrations and how they cannot.

Posterior Analytics I.5 excerpt

We must not overlook {the fact that} erring often occurs and what's proven does not belong 74a4
primitively universally, {though} it seems to be proven universally primitively.⁸ We make this 5
mistake when either {i} there is nothing from higher to take besides the particulars or {ii}
there is {something} over objects that differ in form but it is unnamed, or {iii} one chances to
prove an existent as a whole in part; for the demonstration does belong to the things in {the} 10
part and will be of everything; but, just the same, the demonstration will not be of this primary
universal.

By “demonstration of this primary” I mean *qua* this, when *qua* of a primary universal.
If someone proved that {the lines that are} perpendicular {to a given line} don't meet, the
demonstration might be thought to apply to them because it is applicable to all perpendiculars.
But this is not so: it holds not because they are equal in this way, but *qua* equal in anyway.⁹ 15
And if there were no triangles other than isosceles, then {having an angle sum equal to two
right angles} would be thought to belong {to them} *qua* isosceles. And that the proportion
alternates {would be thought to hold} *qua* numbers and *qua* lines and *qua* solids and *qua*
times: at one time it used to be proved separately, even though it can be proved of everything
by a single demonstration. Because all of these things (numbers, lengths, times, and solids), 20
don't make up a single named thing, they used to be taken separately. Now, however, it's
proved universally. What they hypothesize to hold of them universally does not hold *qua* lines
or *qua* numbers, but *qua* this {i.e., *qua* the unnamed universal}.

For this reason, even if someone proved of each triangle, either by a single demonstration
or by different ones, that each has {an angle-sum equal to that of} two right angles, {proving 25
this} separately of the equilateral, the isosceles, and the scalene, he would not yet o-know of
the triangle that it had two right angles, except in the sophistic manner, nor would he o-know
it of triangles universally, not even if there are no other triangles besides these. For he would
not o-know [it] *qua* triangle, nor of every triangle, or rather {he'd know it of every triangle
only} in number, but not of every {one} with respect to form, even if there were none of 30
which he did not o-know {this}.

⁸ A “primitive universal” is the most universal subject of which a given predicate holds. For example, the predicate perceiving holds universally of men, since all men perceive, but man is not a *primitive* universal here, because there is a more universal subject (which subsumes man) of which perceiving also holds universally—namely, animal. There is no more universal subject than animal to which perceiving belongs, so animal is a primitive universal with respect to perceiving, and perceiving belongs to animal primitively universally.

⁹ That is, any pair of lines that intersect a given line at the same angle as one another will be parallel, regardless of whether the angle they intersect the line at is a right angle.

Posterior Analytics II.14

In relation to having the problems,¹⁰ you ought to excerpt from the both the anatomies 98a
and divisions, and {you ought} to excerpt in such a way that, supposing the kind common to
everything—e.g. {supposing animal} if the things being studied are animals—{you excerpt}
what belongs to all animals, and having taken this, then excerpt what follows all {instances
of} the first of the remaining things—e.g., if this is bird, what follows all birds—and in this 5
way always {excerpt what follows} the nearest thing; for it's clear that we will already be
poised to say why the things that follow belong to what's under the common thing—e.g., why
they belong to man or to horse. Let animal be in the A position, {let} B {be} the things that
follow every animal, and {let} certain animals be in the C, D, and E positions. Then it's clear 10
why B belongs to D, for it's because of A. Likewise in other cases, and always the same
account applies to the lower things.

Though we now we speak in terms of the common names that have been handed
down, it is necessary to inquire not only in these cases. Rather also, if any other common
attribute should be observed, then, after extracting it, {enquire into} what it follows and what
follows it—e.g., having a “vase”¹¹ belongs to the {animals} that possess horns {as does} not 15
being amply-toothed, then {inquire into} what follows horn-possessing. For it's clear why
what was mentioned belongs to these things; for it belongs to horn-possessing.

Again, another manner is excerpting with respect to analogy. For one cannot take one
same thing that squid-stuff, fish-spine, and bone should be called; but there will be things that
follow these also, as though there were some such single nature. 20

Topics VIII.2 excerpt

While in some inductions it is possible to ask for the universal, in some it is not easy 157a21
because a common name has not been laid down for every likenesses; rather, whenever
{anyone} needs to secure the universal, he says “{it's} so in all such things”. But this is
among the most difficult things to distinguish—which of the things put forward are “such” 25
and {which} aren't. And, besides this, {people} often lead one another astray with respect to
the accounts, some claiming things to be alike which are not alike while others dispute the
likeness of things that are alike. That's why one must try oneself to make up a name covering
all such things, so that it won't be permissible for the defense to dispute {on the grounds} that 30
the cited thing is said in an unlike {way}, nor for the questioner to allege that {it's said in a}
like {way} to what's been said, since many of the things said {in an} unlike {way} appear to
be said {in a} like {way}.

¹⁰ A “problem,” in this context is something to be demonstrated.

¹¹ “Vase” is a literal translation of Aristotle's name for one of the additional stomachs (or stomach-compartments or stomach-like organs) that cows have and human beings lack.

Physics I.1

Since, in all disciplines in which there are principles or causes or elements, o-knowing and e-knowing occurs from g-knowing of these (for we think there's g-knowing of each thing when we g-know the primaries and the primary principles all the way to the elements) it's clear that we must try to distinguish first the principles of the e-knowledge of nature. 184a10
15

By nature, the path is from what's more g-known to us and more obvious to what's more obvious and more g-known by nature; for what's g-known to us and {what's g-known} *simpliciter* are not the same. That's why it's necessary to proceed in this manner from what is more unobvious by nature but more obvious to us to what's more obvious by nature and more g-known. 20

At first the complex things especially are clear and obvious to us; but later, by division of these, their elements and principles become g-known. That's why one must proceed from universals to particulars; for the whole is most known in accordance with perception and the universal is a certain whole; for the universal embraces many things as parts.¹² In a certain manner, the same thing has happens with names relative to accounts; for, e.g., circle also signifies a certain whole indeterminately, but the definition divides it into the particulars.¹³ 25
And children at first address all men as fathers and women as mothers, but later distinguish each of them.

¹² It is odd that Aristotle should speak here of perception as being of the universal, since, he normally says that perception is of particulars and thought of universals. Interpreters differ as to Aristotle's meaning here. My own view is that Aristotle is playing with the language. Universal, etymologically means "of a whole," and normally by the whole he means the whole comprising the many particulars that fall under the universal—e.g. the whole "man," which comprises the many particular men. By nature, this whole is known prior to the particular men, because it on the basis of one's universal knowledge of man, that one can understand particular features of particular men or types of men. In this passage, though, I think Aristotle is referring to an individual man as a whole; and using the word "particular" to refer to the various aspects of a man, such as his being a man, or a father, or an animal. Just as one divides down from the universal man to get knowledge of particular men, so, in order to reach the universal man, one needs to "divide" individual men by distinguishing among their various attributes.

¹³ That is, the term circle refers to circles as wholes, whereas the definition singles out particular aspects of them.

Aristotelian Words for Knowing			
Greek		English Translations	
Verb	Noun	Verb	Noun
gignōskein γιγνώσκειν	gnōsis (-eis) γνώσις	g-know , recognize, be familiar with, be aware of	g-knowledge , awareness, familiarity, recognition
gnōrizein γνωρίζειν			
eidenai ειδέναι	eidēsis (-eis) εἰδήσις	o-know	o-knowledge
epistasthai ἐπίστασθαι	epistēmē (-ai) ἐπιστήμη	e-know , scientifically know, understand	e-knowledge , science, understanding

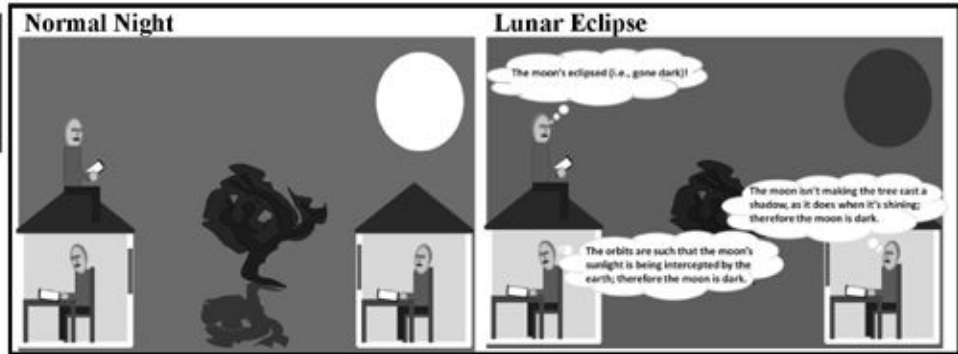
Other Vocabulary From Lecture 1	
technē (-ai) / τέχνη	art, craft, skill, expertise
empeiria (-ai) / ἐμπειρία	experience, knack
aitia (-ai) / αἰτία	cause, explanation
logos (-oi) / λόγος	account, doctrine, theory, ratio, proportion, reason
katholou / καθόλου	universal, of a whole, on the whole
ti esti / τι ἐστι	what it is, quidity, whatness
ti ēn einai / τὸ τί ἦν εἶναι	essence, what it is for X to be what it is, X's being what it is
sumbebēkos / συμβεβηκός	accident, coincident, incident, attribute
archē (-ai) / ἀρχή	principle, starting-point, origin, beginning
phronēsis / φρόνησις	prudence, practical wisdom, intelligence
sophia / σοφία	wisdom, theoretical wisdom
haplos / ἀπλός	<i>simpliciter</i> , simply put, absolutely, without qualification
nous / νοῦς	understanding, comprehension, intuition, intellection, reason, mind intellect, intelligence

Vocabulary from Lecture 2		
Greek	Latin	English
hupokeimenon (ὑποκείμενον)	subjectum	underlier, subject
genos (-ē) / γένος	genus (-era)	kind
eidos (-ē) / εἶδος	species	form
diaphora (-ai) / διαφορά	differentia (-ae)	difference
dunamis (-eis) / δύναμις		ability, capability, capacity, potentiality, potency, faculty, power
energeia (-ai) / ἐνέργεια		activity, actuality, exercise
phantasia / φαντάσια		imagination, visualization
phantasma (-ta) / φαντάσμα		image
ousia (-ai) / οὐσία		substance, entity , being, essence

Vocabulary from Lecture 3	
Greek	English
endoxon (-a) / ἔδοξος	reputable opinions, received opinions, common beliefs
aporia (-ai) / εἰδός	puzzle, impasse, dilemma, problem
idion (-a) / ἴδιον	distinguishing characteristic, proprium, property, peculiarity,

<h1>Aristotle's Corpus</h1> (excluding works that are probably not genuine)	
The Organon / Aristotle's Logic	
	<i>Categories</i> <i>De Interpretatione</i> <i>Analytics (Prior and Posterior)</i> <i>Topics (with Sophistical Refutations)</i>
Theoretical Philosophy / Epistēmē	Phusikē (Natural Philosophy)
	<i>Physics</i> <i>De Caelo</i> <i>Generation and Corruption</i> <i>Meteorology</i> <i>De Anima</i> <i>Parva Naturalia (Sense and Sensible Objects; Memory and Recollection; Sleep and Waking; On Dreams; On Divination in Sleep; On Length and Shortness of Life; On Youth, Old Age, Life and Death, and Respiration; On Respiration)</i>
	Zoology
	<i>History of Animals</i> <i>Parts of Animals</i> <i>Movement of Animals</i> <i>Progression of Animals</i> <i>Generation of Animals</i>
	Sophia (Wisdom)
	<i>Metaphysics</i>
Practical Philosophy / Politikē (Statesmanship or Politics) / Phronēsis	Ethics
	<i>Nicomachean Ethics</i> <i>Eudemian Ethics</i> <i>Politics</i>
The Arts	<i>Rhetoric</i> <i>Poetics</i>

Is the product even or odd?
 454,334,345,457
~~X~~ 999,293,445,346



Two Deductions	
I	II
Only far things twinkle.	Only twinkling things are far.
<u>The planets aren't far.</u>	<u>The planets don't twinkle.</u>
The planets don't twinkle.	The planets aren't far.

Questions for Aristotle:

- (1) How can *epistēmē* which is of universals (rather than particulars) be of objects in the perceptible world, which are particulars?
- (2) How can nous of the principles come about from *gnōseis* (such as perception) that are less intense than it is.
 - (a) How could nous come about from perception? What are the natures of the states involved such that this is possible?
 - (b) What methods must I follow in order to achieve nous and *epistēmē*?

Cognitive State	Object	Method	Input Knowledge
<i>epistēmē</i> (e-knowledge)	effects	demonstration	principles (first by nature)
<i>nous</i> (understanding)	principles (fundamentals) Three types: Axioms Definitions Hypotheses	induction	perception (first to us)