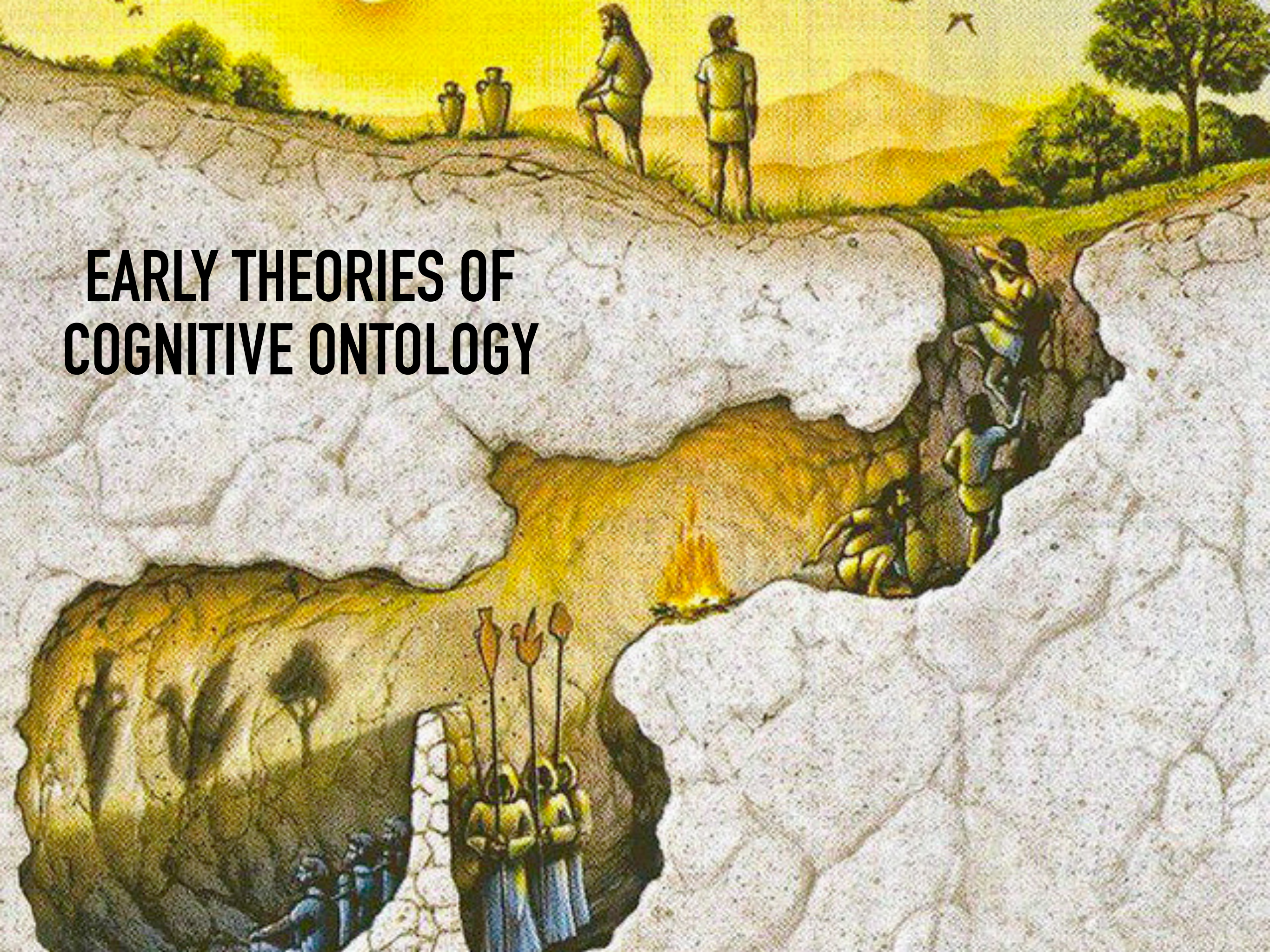


# EARLY THEORIES OF COGNITIVE ONTOLOGY





# COGNITION AND ANCIENT IDEALISM

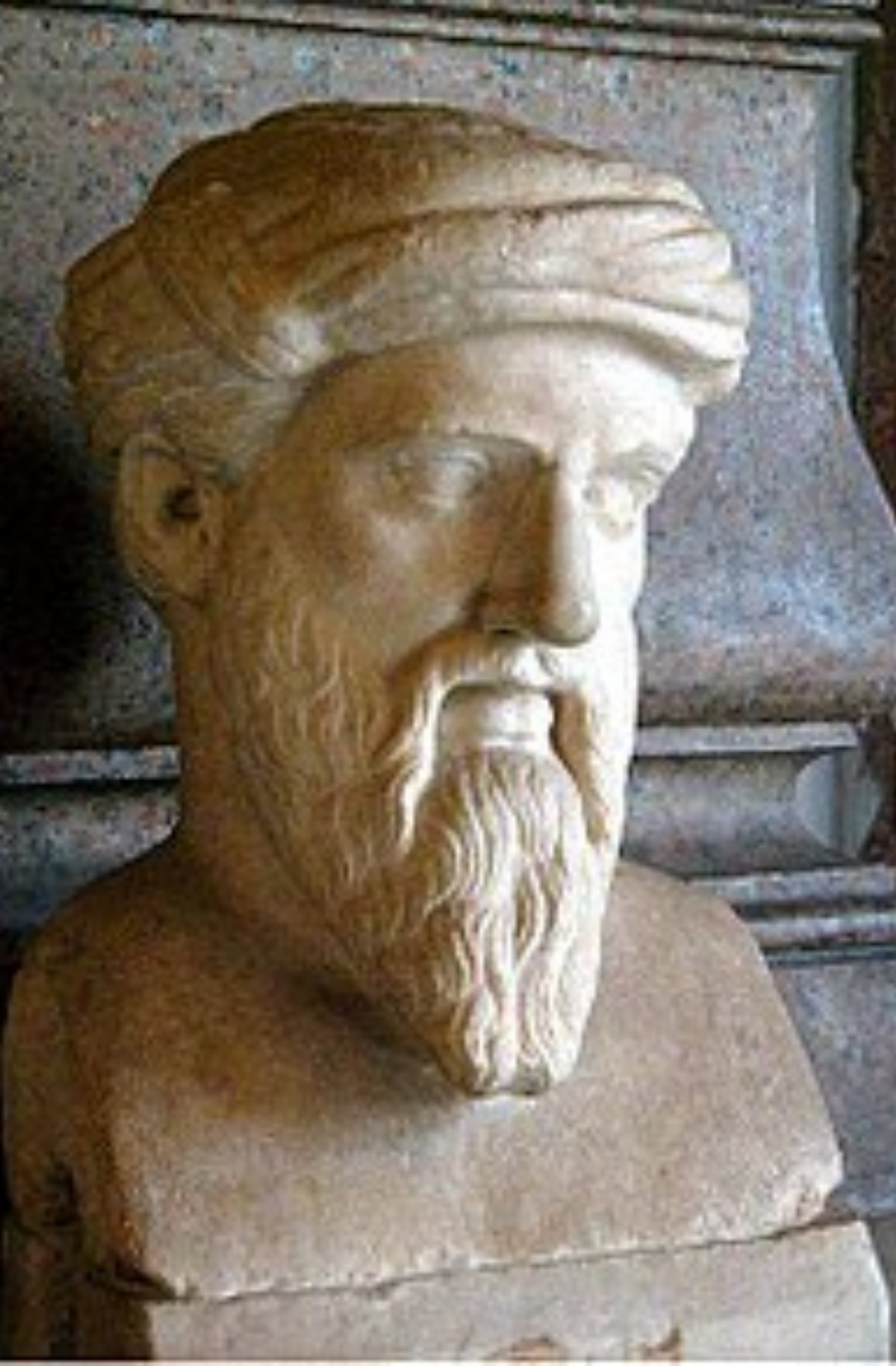
---

- Idealism is a school of thought that was prominent in Ancient Greek philosophy – from Pre-Socratic figures like Pythagoras to Socrates and Plato (and beyond)
- Idealists argue that the empirical world – the world of seemingly physical things – is illusory or at least less real than an ideal world
- But this is Philosophy! What does it have to do with Cognitive Science?!

# COGNITIVE SCIENCE AND IDEALISM

---

- These figures and their ideas matter to Cog. Sci. because they introduce, for the first time in Western civilization, a new notion
- We now call it “cognitive ontology” – the study of those entities, usually theoretical entities, that are required to give explanations of human cognitive abilities (i.e. to make certain judgments; or to produce certain utterances; or to perceive the world in a particular way; etc.)



## PYTHAGORAS (580–496BCE)

.....

- Radical Idealist
- Held that the only things that are real are mathematical objects and their relations: numbers, perfect geometrical shapes, ratios, etc...
- Ask yourself: how do you know that  $2 + 2 = 4$ ?





## PYTHAGORAS (580–496BCE)

.....

- Not by sense experience
- We know it is always and necessarily true
- But we can never know something is always and necessarily true by sense experience

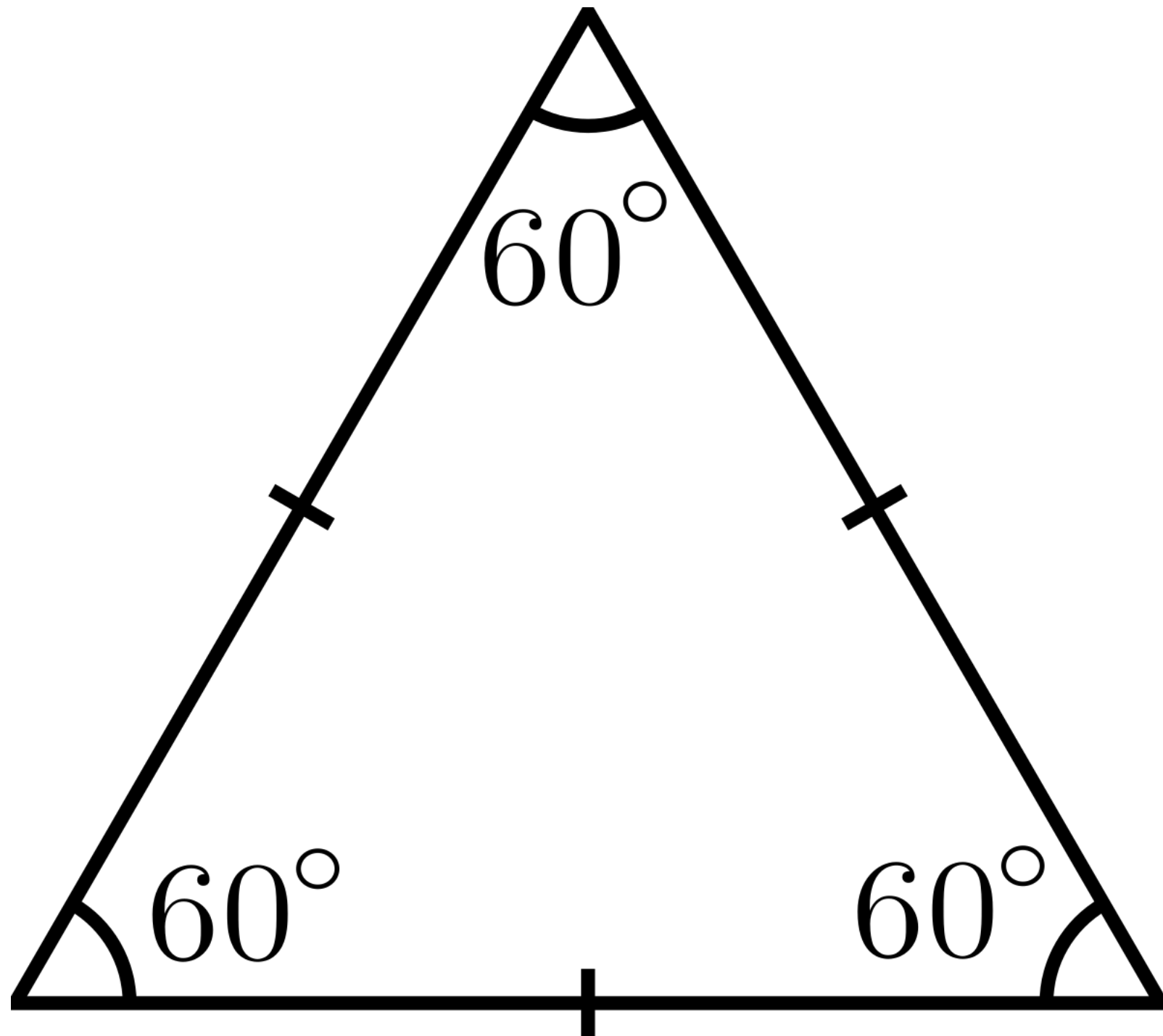
# PYTHAGORAS

---

- To know that  $2 + 2 = 4$  is always true by sense experience, you would have to add every set of two things with every other set of two things to confirm that they are four
- This is not how we do it
- Our mathematical cognition can only be explained if we have special acquaintance with special mathematical entities – numbers, operations, functions, geometrical objects, etc.

# WHAT IS A TRIANGLE?

---



# PYTHAGORAS

---

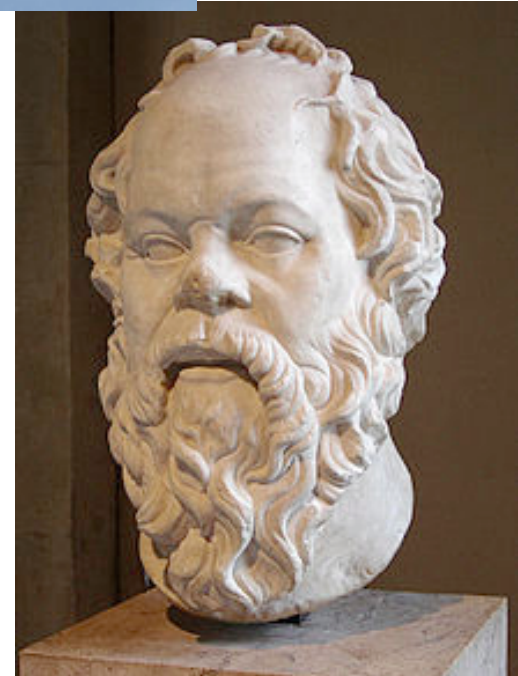
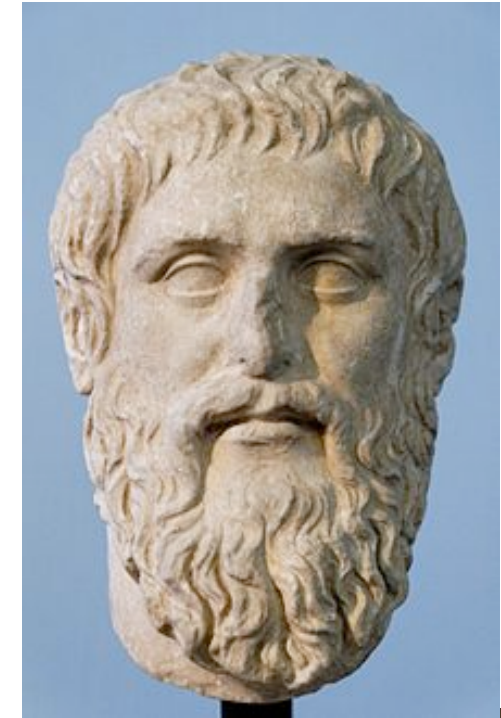
- But no triangle you have ever seen or made yourself has been a perfect triangle
- The lines will not be perfectly straight
- The lines will take up space (they will be wide), whereas perfect geometrical lines are not
- The interior angle-sum will not equal 180 degrees
- So if you know triangles, and their ideal characteristics, you didn't learn them from sense-experience



# PLATO AND SOCRATES

---

- Plato (427-347 BCE, as near as we can tell) was the son of Athenian aristocrats
- Also a student of Socrates (470-399 BCE)
- Most of what we know about Socrates comes from Plato's dialogues, in which Socrates features as a prominent character



# COGNITION AND THE FORMS

---

- The ontology of cognition requires us to *posit* special entities: The **Forms**
- They are much more like what we would call “universals” or “concepts” (though they are not psychological in character)
- EXAMPLE: you are all well acquainted with red things: red houses, red cars, red shirts, etc.
- But what about *REDNESS*—the universal property that all of these particular concrete things share?



# THE FORMS

---

- Unlike concrete red things, REDNESS is not spatially located
- It does not exist in time, either—it is *eternal*
- Also, It doesn't change
- A red thing might turn brown, but REDNESS never changes

# THE FORMS

---

- Let's see how Plato sees the general picture by looking at the Allegory of the Cave from his *Republic*
- <http://www.youtube.com/watch?v=N6LUptADIww>



# THE FORMS—THE “DIVIDED LINE”

---

- In the *Republic*, the Allegory of the Cave is preceded by a discussion of the “divided line”
- This is Plato’s way of distinguishing between two levels of reality—physical reality (between A and C), and formal reality (between C and E)

# The Sun

**The light and power of  
The Sun:**

the world of sight and  
of things seen

# The Good

**Offspring or Influence of  
The Good**

the world of mind and of things thought

**A**

**B**

**C**

**D**

**E**

images such  
as shadows  
and  
reflections

objects such  
as animals,  
trees and  
manufactured  
things

thought-images,  
ideas, such as  
Ideal Squares and  
Cubes

**Ideas or Ideals**  
such as Perfect Beauty,  
Justice and Goodness

The changing world of the Senses

mathematical  
thought

dialectic thought

conjecture

belief

understanding

exercise of reason

**OPINION**

**KNOWLEDGE**



# THE DIVIDED LINE

---

- For Plato, true knowledge is the product of rational thought (dialectic) directed at Truth and Goodness
- I.e. thought about the world of the Forms
- But all cognition partakes in the Forms
- Our cognitive ontology requires more than empirical/physical objects

# THE PHAEDO

---

- The *Phaedo* is the final dialogue in what is sometimes called The Trial and Death of Socrates
- The other dialogues, in order, are:
  1. *Euthyphro*: takes place before Socrates' trial, outside of the Court
  2. *Apology*: Socrates' defence at Court, leading to his death sentence
  3. *Crito*: A wealthy friend of Socrates, named Crito, tries to convince Socrates that he should flee Athens because the Court has been unjust in his trial



# THE PHAEDO

---

- By the *Phaedo*, Socrates is dead by his own hand
- He has consumed hemlock, to carry forth the death sentence passed on him by the Athenian Court
- He was charged and convicted of disparaging the gods and corrupting the youth of Athens
- It covers Socrates' last day, and his reasons for thinking that a philosopher should not fear death or the afterlife

# THE PHAEDO

---

- Phaedo is a student of Socrates', and was at his death bed
- He is recounting the events of Socrates' final day to a Pythagorean philosopher named Echecrates
- Phaedo is recounting a discussion between Socrates and the Theban philosophers Cebes and Simmias, who were students of Socrates as well, and part of his inner circle



# WHY NOT FEAR DEATH?

---

- According to Socrates, philosophy is a preparation for death
- Philosophers should not fear death, for it is merely a release of the soul from the prison of mortal bodies
- Upon (bodily) death, the soul, which is immortal, is able to return to the realm of the Forms — where it has direct cognitive access to the Forms

# IMPERFECTION ARGUMENT

---

- Generally regarded as a very strong argument for a rich and generous cognitive ontology
- It states that our ordinary judgments of imperfection presuppose the existence of the perfect Forms, and our innate knowledge of the Forms

# IMPERFECTION ARGUMENT

---

- We do not learn a concept like EQUALITY based on sense experience. Why not?
  1. We have never seen two things that are exactly and perfectly equal in length (weight, height, etc.)
  2. We must already possess the perfect concept of EQUALITY if we are to assess, say, two sticks as being imperfectly (i.e. “very nearly, but not quite”) equal



# IMPERFECTION ARGUMENT

---

- Here is the full argument:
  1. We perceive sensible objects to be *F* (say, equal in length to some stick)
  2. Every sensible object is, at best, **imperfectly *F***
  3. We are aware of this imperfection in the objects of perception
  4. We perceive objects to be imperfectly *F*

# IMPERFECTION ARGUMENT

---

5. To perceive something as imperfectly *F*, one must have in mind something that is perfectly *F*  
E.g., we have an idea of *equality* of length that all sticks (and other objects with a notable length) only imperfectly exemplify
6. So we have in mind something that is perfectly *F*
7. Thus, there **exists** something that is perfectly *F* (e.g., *Equality*), that we have in mind in such cases
8. Therefore, there is such a thing as **the *F* itself** (e.g., *the Equal itself*, or the Form *EQUALITY*), and it is distinct from any sensible object (or pairs of sensible objects)

# IMPERFECTION ARGUMENT

---

- Seeing imperfect instantiations of a Form is an opportunity to recollect the perfect Form itself
- Such recollection is presupposed by our judgments of imperfect instantiation
- Folks still hold views like this one in Cognitive Science
- They are called **concept innatists/nativists**