



# Agrippa's Trilemma



**Aristotle, the founder of the study of Logic, was the first to notice a sharp distinction between two very different types of reasoning...**

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# Deduction and Induction

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# A deductive argument is...

an argument where the author of the argument intends to show that its conclusion *must* be true if its premises are true;

ie an argument in which it is impossible for the conclusion to be false if the premises are true;

ie an argument in which the truth of the premises **NECESSITATES** the conclusion.

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# Examples of deductive reasoning

- A. All bats are mammals. But no mammals are birds. So it must be that no bats are birds.
  - B. If it is raining, then the lawn is wet. It is raining. Therefore, certainly the lawn is wet.
  - C. Either we will eat burritos or we will eat fried rice. We will not be eating burritos. Therefore, necessarily we will eat fried rice.
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## An inductive argument is...

an argument where the author of the argument intends to show that if its premises all are true, then its conclusion is not certain to be true, but rather it is probably or likely true;

ie, it is unlikely that the conclusion is false if the premises are all true.

Inductive arguments aim to show we have good reasons to accept the conclusion despite the lack of *complete* certainty.

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# Examples of inductive reasoning

- A. It has been sunny for 10 days in a row. There are no clouds in the sky. So, probably it will be sunny tomorrow.
  - B. We randomly interviewed 600 students at El Camino College, and 400 of them said they drink coffee in the morning. Therefore, it is probable that  $\frac{2}{3}$  of the student population at ECC drink coffee in the morning.
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## Common Types of Inductive Reasoning

- Generalization from a sample
  - Analogical arguments
  - Arguments from Authority
  - Inference to the Best Explanation
  - Hypothesis Testing
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**In this course, given the time period we are covering, we will focus on deductive reasoning...**

# Assessing Arguments

## A deductive argument...

...is **valid** when the premises necessitate the conclusion; that is, when if the premises are true, the conclusion **MUST** be true.

...is **sound** when it is a. valid, and b. has true premises.

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# Patterns to Recognize!

A **valid argument form** is an abstract pattern of reasoning that an argument can take, regardless of the subject matter, that is always valid.

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# Modus Ponens

A modus ponens is an argument that begins with a conditional and then reaches a conclusion by affirming the antecedent.

1.  $A \supset B$
2.  $A$
3.  $\therefore B$

1. If it is sunny, then we will cut the grass.
  2. It is sunny.
  3. Therefore, we'll cut the grass.
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# Modus Tollens

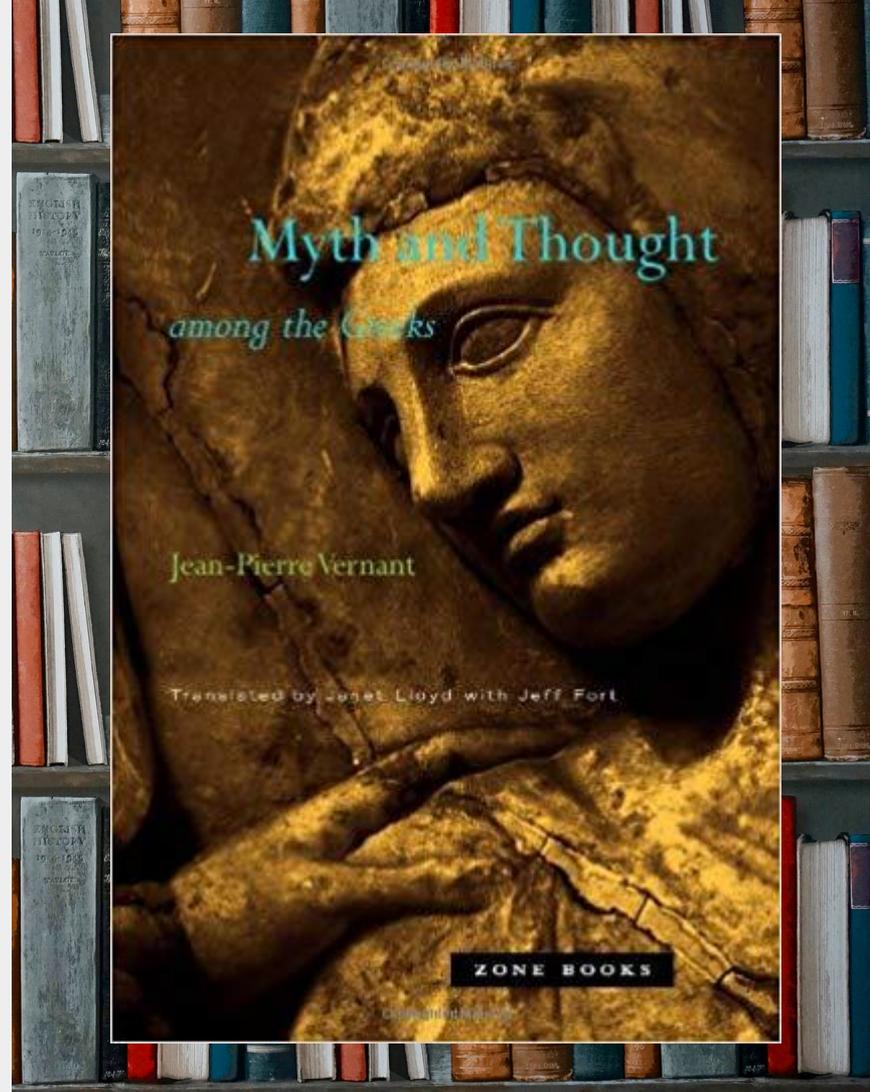
A modus tollens is an argument that begins with a conditional and then reaches a conclusion by denying the consequent.

1.  $A \supset B$
2.  $\sim B$
3.  $\therefore \sim A$

1. If the store is open, the lights will be on.
  2. The lights are not on.
  3. Therefore, the store is not open.
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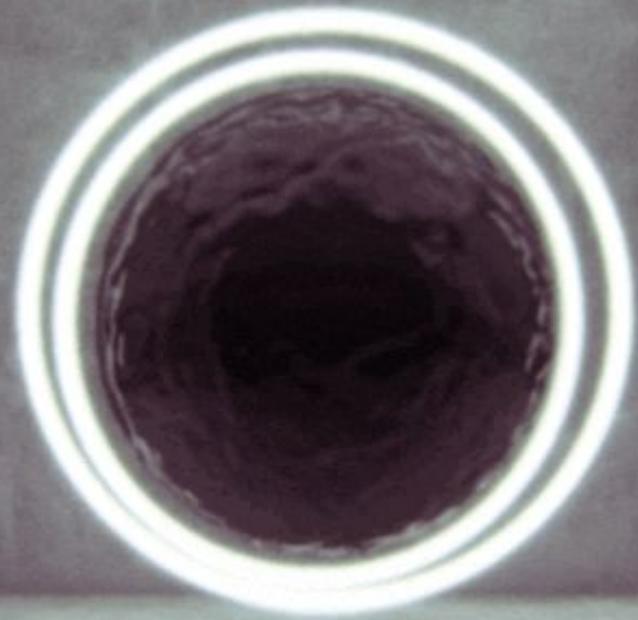
**This class will focus on the Western Tradition in Philosophy, which began in Greece around the 6th century BCE.**

**“It was in the sixth century BCE, in the Greek cities of Asia Minor, that a new, positivist type of reflection concerning nature emerged” (Vernant 2006: 371).**



**“The birth of philosophy, therefore, is connected with two major transformations of thought. The first is the emergence of a positivist thought that excludes all forms of the supernatural and rejects the implicit assimilation of physical phenomena with divine agents in myth; the second is the development of an abstract thought that strips reality of the power of change that myth ascribed to it” (Vernant 2006: 380).**



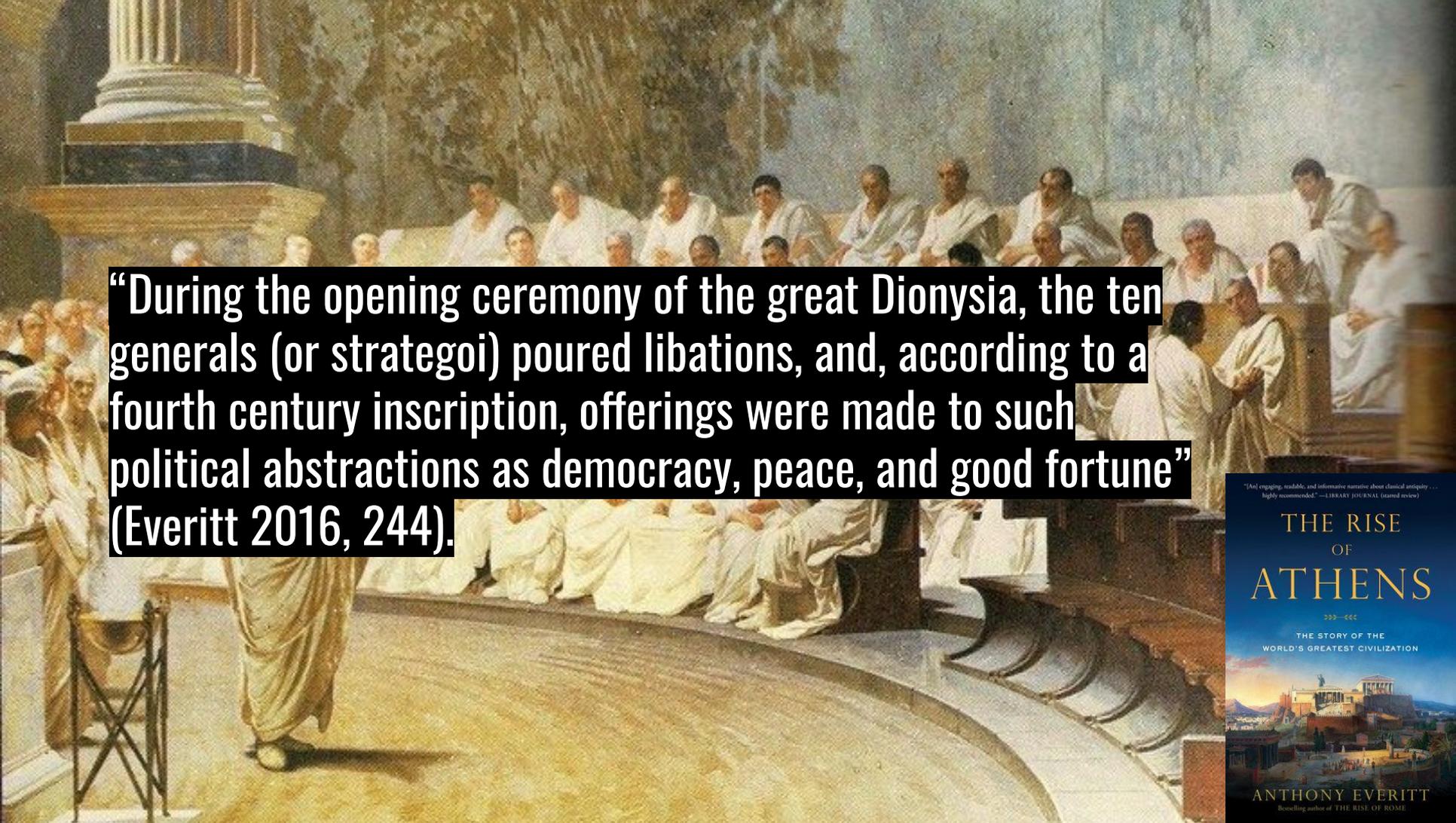


**“For them (the positivists), the powers that make up the universe and whose interplay must explain its current organization are no longer primeval beings or the traditional gods. Order cannot be the result of sexual unions and sacred childbirth, nor can it arise as the result of the gods’ struggles for sovereign power” (Vernant 2006: 219).**

# What brought about this change?

1. The absence in Greece of monarchies of the Eastern type.
2. The beginnings of a commercial economy.  
(See Vernant 2006: 381).

Note: These will be important in the Greek development of pure mathematics. More on that in Unit III.



**“During the opening ceremony of the great Dionysia, the ten generals (or strategoi) poured libations, and, according to a fourth century inscription, offerings were made to such political abstractions as democracy, peace, and good fortune” (Everitt 2016, 244).**

"[An] engaging, readable, and informative narrative about classical antiquity... highly recommended." —LIBRARY JOURNAL (starred review)

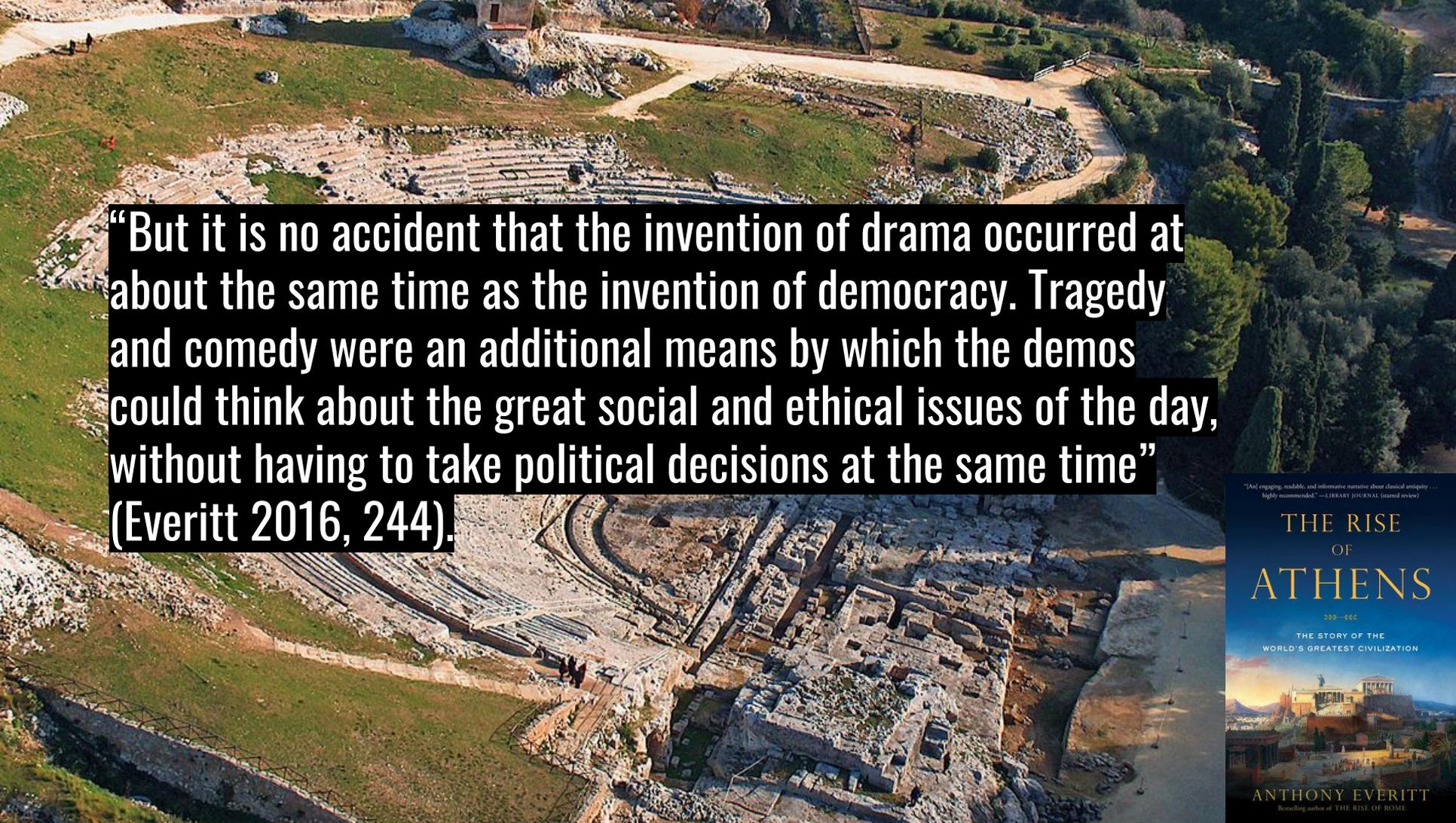
## THE RISE OF ATHENS

525–500

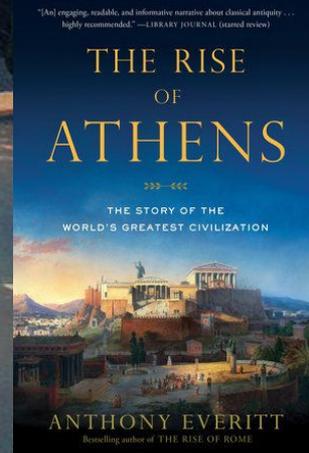
THE STORY OF THE  
WORLD'S GREATEST CIVILIZATION



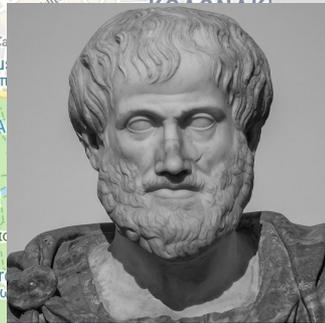
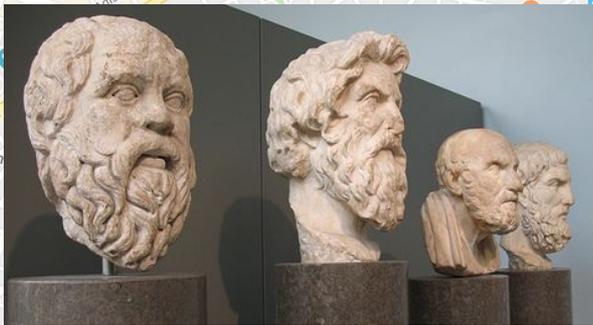
**ANTHONY EVERITT**  
Bestselling author of THE RISE OF ROME

An aerial photograph of ancient Greek ruins. In the upper left, a large, semi-circular theater with tiered stone seating is visible. To its right and further down, a complex of stone buildings, including what appears to be a temple or public structure, is situated on a hillside. The surrounding landscape is a mix of green grass and rocky terrain. A dirt path winds through the site. The text is overlaid on a black rectangular background in the center of the image.

**“But it is no accident that the invention of drama occurred at about the same time as the invention of democracy. Tragedy and comedy were an additional means by which the demos could think about the great social and ethical issues of the day, without having to take political decisions at the same time” (Everitt 2016, 244).**



# The Schools of Athens



**Pyrrhonism**

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# Storytime!



# Pyrrho

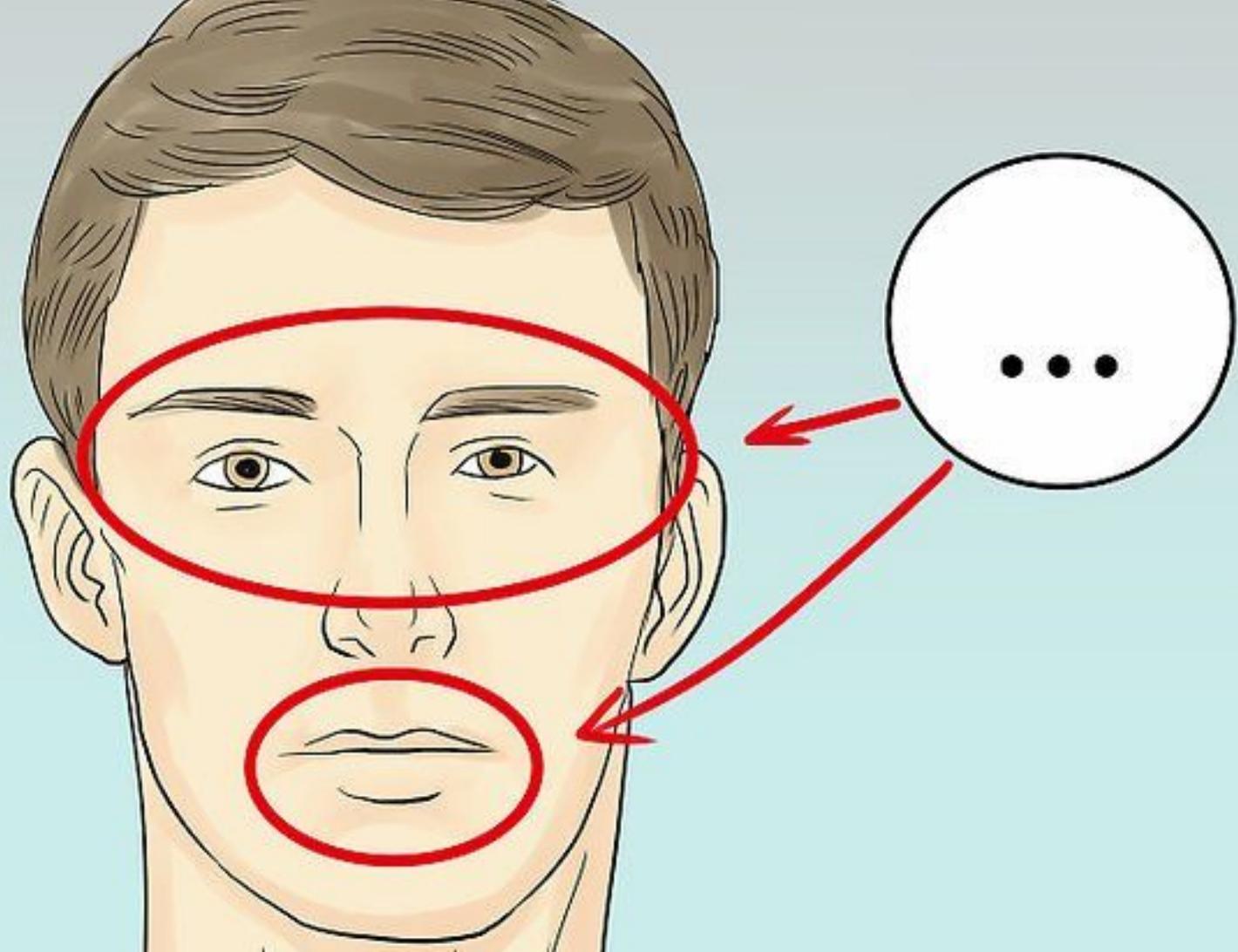


PYRRHO.

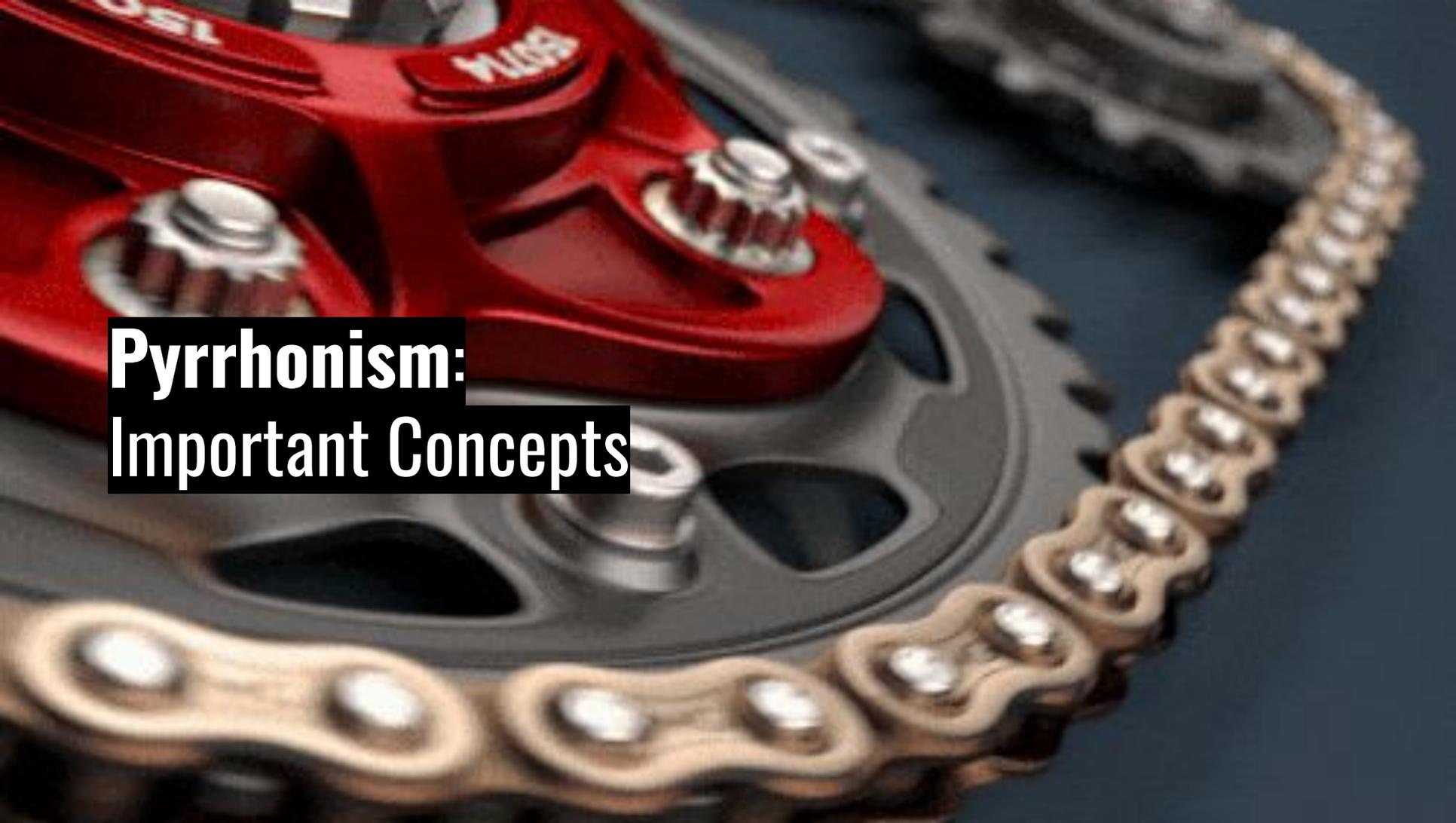












**Pyrrhonism:  
Important Concepts**

**Epistemology** is a branch of Philosophy concerned with the nature and limits of knowledge;

e.g., questions like:

“What is the difference between fact and opinion?”

“What justifies our knowledge claims?”

“What are the limits of human knowledge?”

Possible definition of "Knowledge"

# JTB Theory of Knowledge

S knows that P iff:

- I. P is true,
- II. S believes that P, and
- III. S is justified in believing that P.

# Possible definition of “Knowledge”

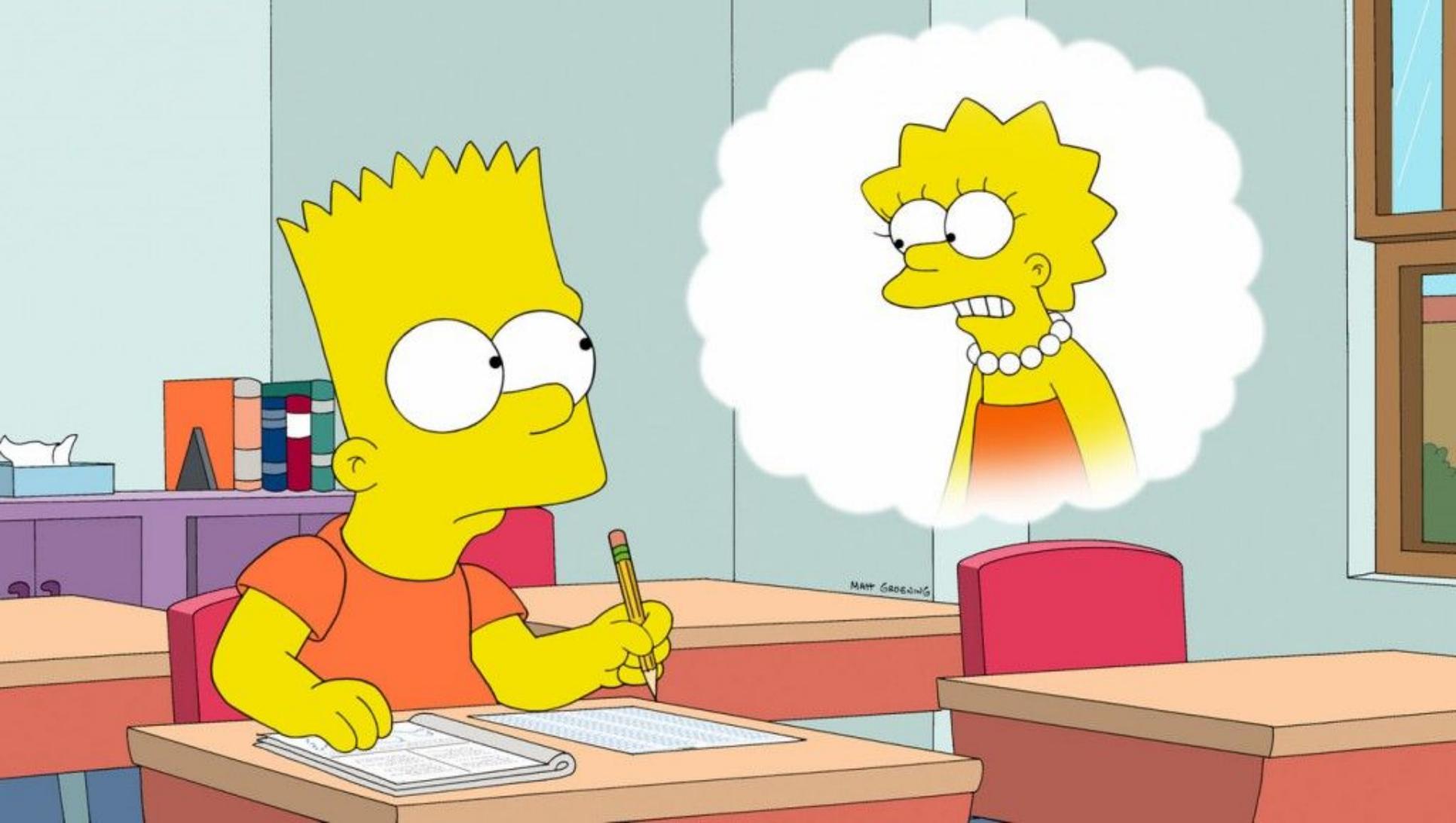
I.e., “knowledge” is  
justified, true belief.



“I know that a neutral carbon atom has four valence electrons.”



- Is P true?
- Does S believe P?
- Is S justified in believing P?



**I know that:**

- A. a neutral carbon atom has five valence electrons.**
- B. a neutral nitrogen atom has four valence electrons.**
- C. a neutral carbon atom has four valence electrons.**
- D. a neutral hydrogen atom has no valence electrons.**

“I know that a neutral carbon atom has four valence electrons.”



- Is P true?
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- Is S justified in believing P?

S knows that P iff:

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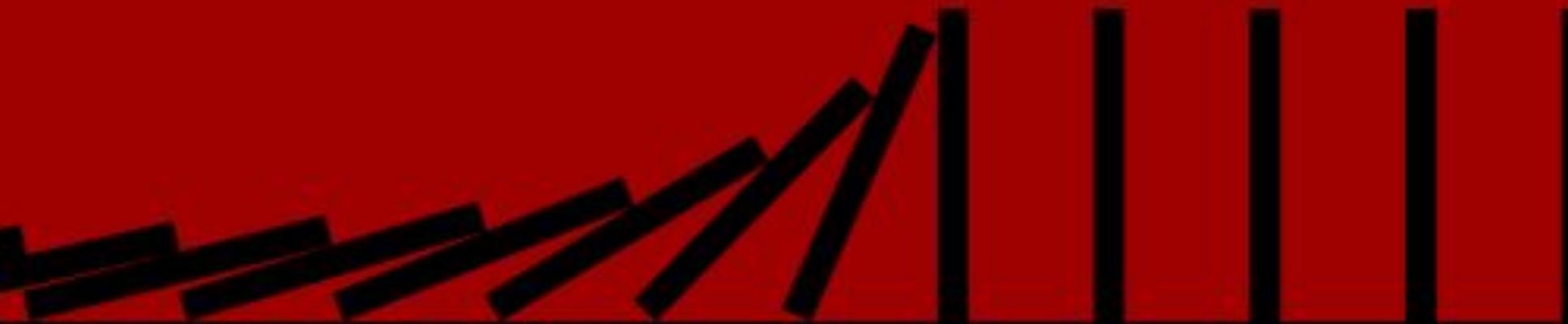
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The Oxford Handbook of  
**SKEPTICISM**



**Skepticism** is a philosophical view that can include any of the following theses:

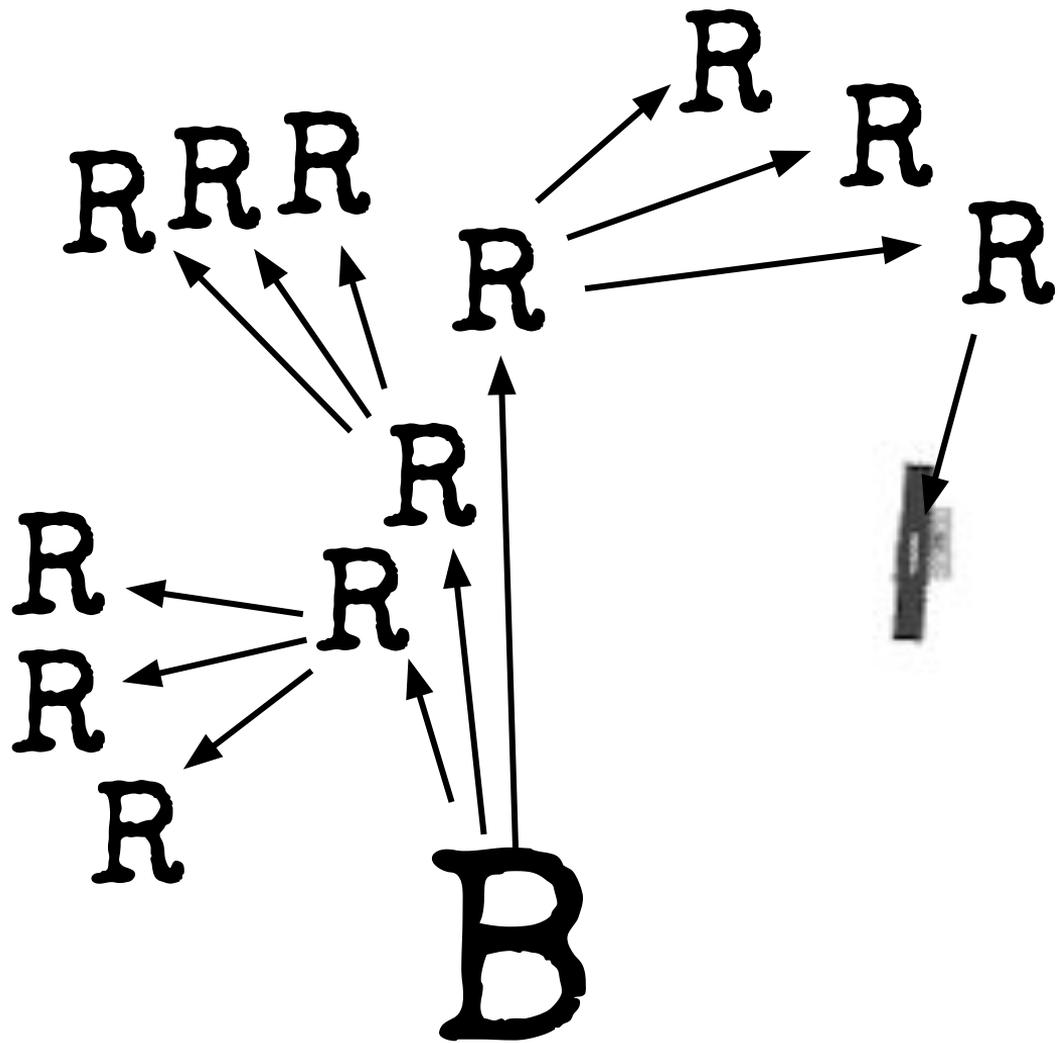
- a. that no knowledge claim is fully justifiable
- b. that for any thesis, there is another thesis with equal probability of being true, so that it is impossible to know which is the true thesis; and
- c. that knowledge (of a particular subject) is impossible (see Chapter 1 of Oxford Handbook of Skepticism).



# The Regress Argument

The Regress Argument is also known as **Agrippa's Trilemma**, named after Agrippa the Skeptic (a Pyrrhonian philosopher who lived from the late 1st century to the 2nd century CE).

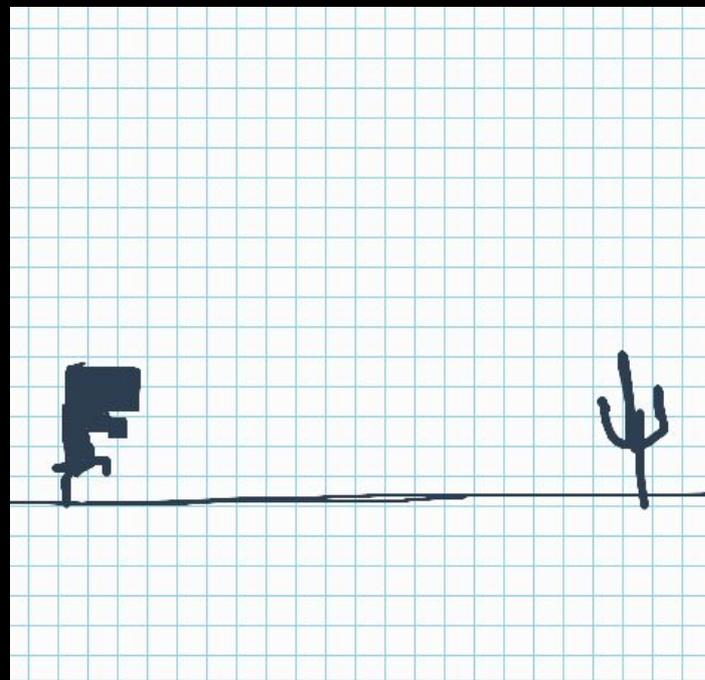
1. In order to be justified in believing something, you must have good reasons for believing it.
2. Good reasons are themselves justified beliefs.
3. So in order to justifiably believe something, you must believe it on the basis of an infinite amount of good reasons.
4. No human can have an infinite amount of good reasons.
5. Therefore, it is humanly impossible to have justified beliefs, i.e. knowledge.



**According to Agrippa, you have three options (and none of them work).**

1. You can start providing justifications, but you'll never finish.
2. You could claim that some things don't need further justification, but that would be a dogma (which is also unjustified).
3. You could try to assume what you are trying to prove, but that's obviously circular.

# INFORMAL FALLACY OF THE DAY



## Begging the Question

This is a fallacy that occurs when an arguer presents an argument for a conclusion and one of the premises supporting the conclusion is the conclusion itself.

**RCG:** Shakira is my gf.

**Dude:** Dude, that's like not true. Why should I believe that?

**RCG:** Cuz she's my gf, bro.

**Joe:** God exists.

**Fred:** Why believe that?

**Joe:** Because God exists.

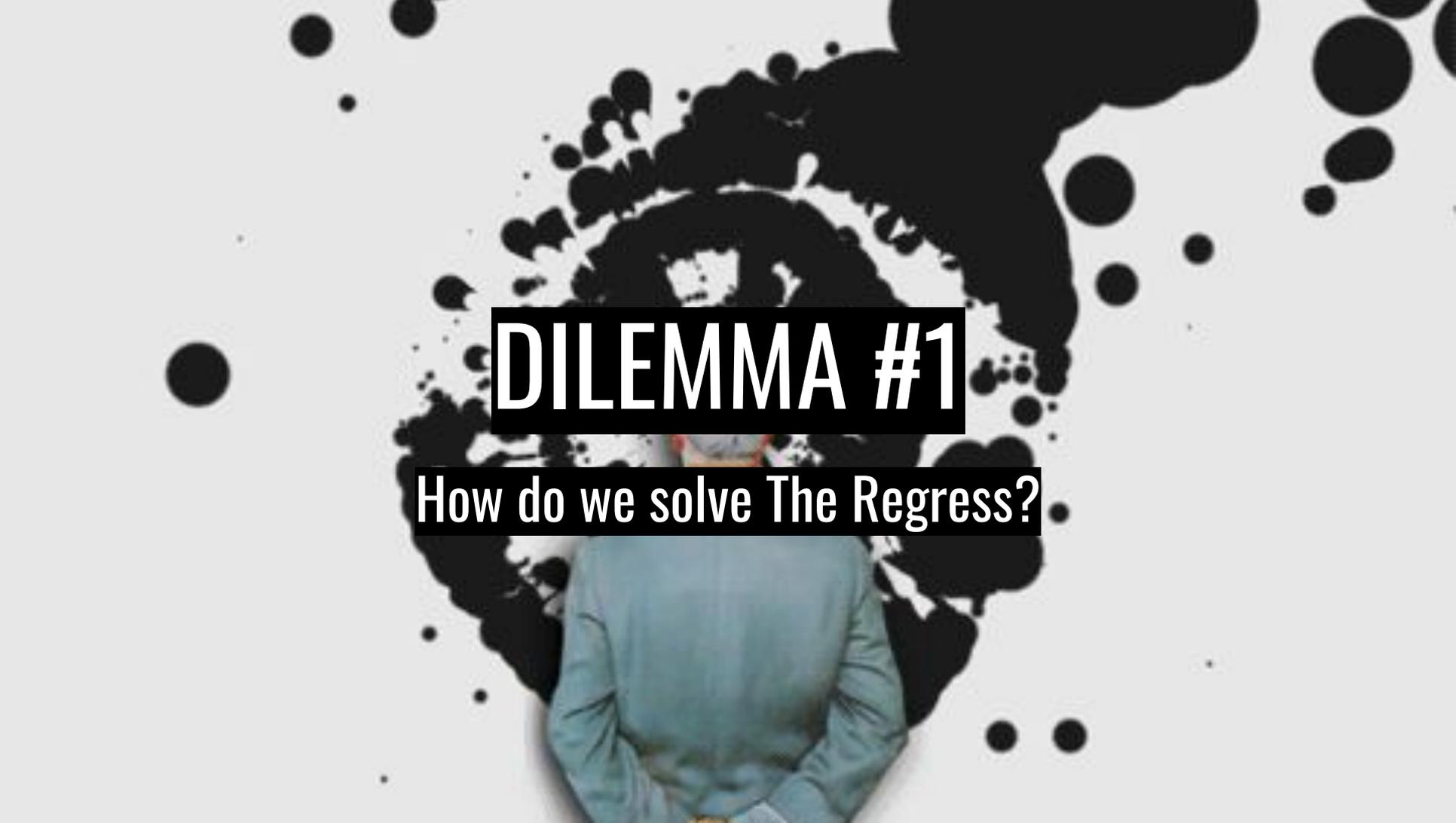
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Standard Form(?)

1. I am right.
2. Therefore, I am right.

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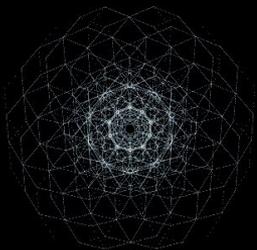
# **DILEMMA #1**

**How do we solve The Regress?**

Two strategies:

- A. Change our definition of “knowledge”; or
- B. Attempt to refute the Regress Argument through another premise.

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Fundamental Question of the Course:  
**What is knowledge?**



**Breaking on the Wheel**