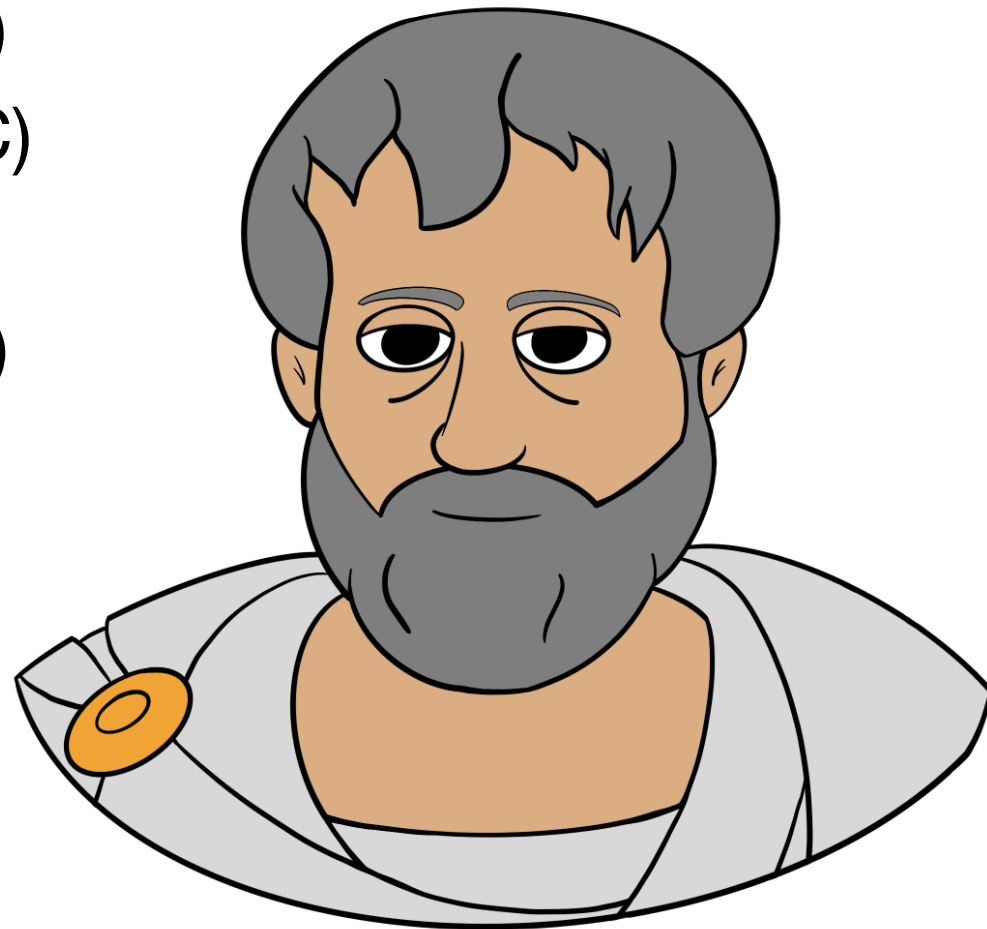


Ancient Greek Philosophy

- **Pre-Socratics** (7th–5th c. BC)
- **Classical** (5th–4th c. BC)
 - Socrates (470–399 BC)
 - Plato (428–348 BC)
 - Aristotle (384–322 BC)
- **Hellenistic philosophy**
(4th c. BC – 3rd c. AD)



Aristotle's three “laws of thought”

1. **Law of Non-Contradiction** (LNC): a contradiction *must* be *false*
2. **Law of Identity**: $X = X$
3. **Law of Excluded Middle** (LEM): X or *not* X

The Law of Non-Contradiction (LNC)

- logical contradiction: “X and ***not*** X”
- LNC: it is ***impossible*** for a contradiction to be true

Objection: “some think Heraclitus says” that it is possible for “the same thing to be and ***not*** to be”

Heraclitus: the Unity of Opposites

- “The ***path*** up and ***down*** is ***one and the same***”
- “The sea is most ***pure*** and most ***polluted*** water: for fish drinkable and life-preserving, for men undrinkable and death-causing”
- “***darkness*** and ***light, evil*** and ***good***, are not different but ***one and the same***” (testimonia)

If statements are ***true & contradictory***, then LNC is false

Heraclitus: “The sea is ***most pure*** and ***most polluted*** water: for fish ***drinkable*** and life-preserving, for men ***undrinkable*** and death-causing”

Is Heraclitus asserting a ***contradiction***?

a. yes

b. no

Heraclitus: “The sea is ***most pure*** and ***most polluted*** water: for fish ***drinkable*** and life-preserving, for men ***undrinkable*** and death-causing”

Is Heraclitus asserting a ***contradiction***?

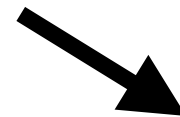
a. yes

b. no

Heraclitus: “The sea is ***most pure*** and ***most polluted***
water: for fish ***drinkable*** and life-preserving, for men
undrinkable and death-causing”

Is Heraclitus asserting a ***contradiction***?

1. the sea is ***drinkable for fish***
2. the sea is ***not drinkable for fish***



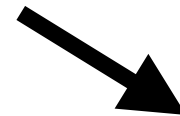
contradictory!

Heraclitus: “The sea is ***most pure*** and ***most polluted*** water: for fish ***drinkable*** and life-preserving, for men ***undrinkable*** and death-causing”

Is Heraclitus asserting a ***contradiction***?

1. the sea is ***drinkable for fish***

2* the sea is ***not drinkable for humans***



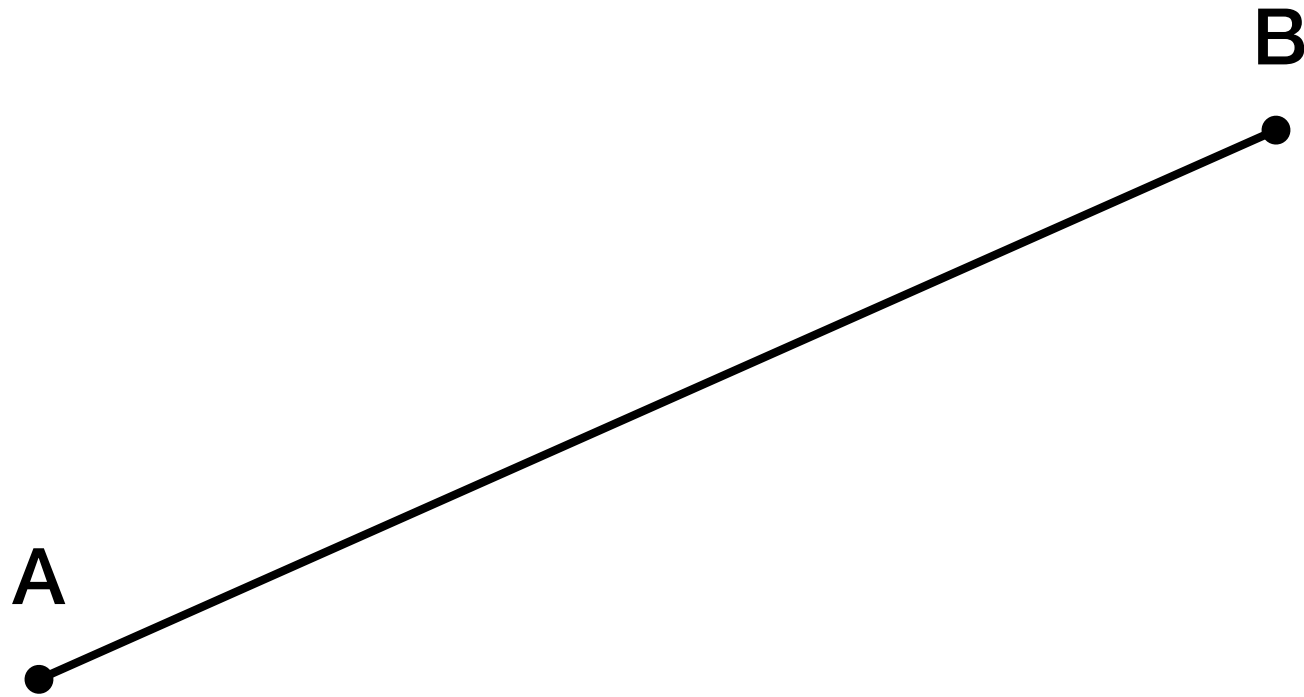
NOT contradictory

Heraclitus: “The path ***up*** and ***down*** is one and the same”

Is Heraclitus asserting a ***contradiction***?

a. yes

b. no

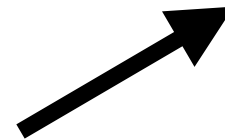


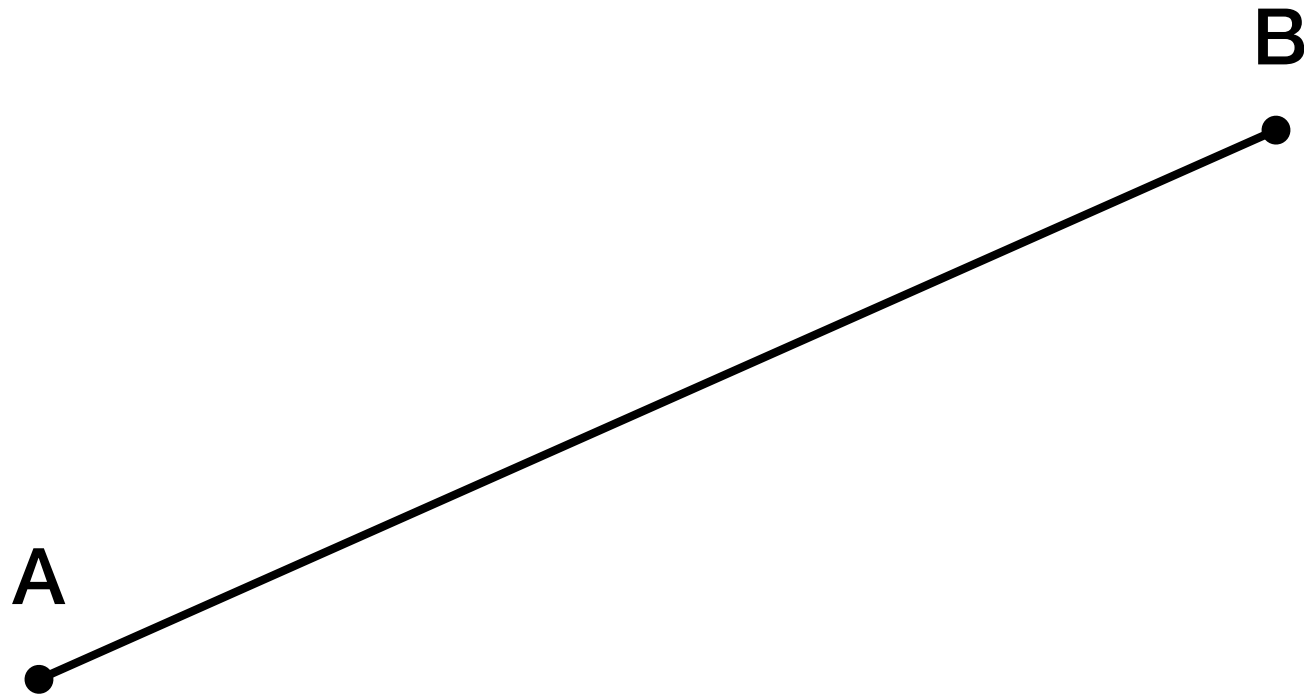
Heraclitus

1. The line from A to B is *up*
2. The line from B to A is *down*

C So, the same line is both *up* and *down*

NOT contradictory

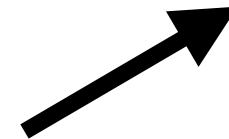




Heraclitus

1. The line from A to B is *up*
2. The line from **A to B** is *down*

contradictory!



C So, the same line from **A to B** is both *up* and *down*



*What does this sign post even **mean**?!?*

1. suppose “this is an entrance” is true
2. suppose “this is **not** an entrance” is true
3. then, “this is an entrance” = “this is **not** an entrance”

Semantic Argument

1. if “A ***is*** B” is true and “A is ***not*** B” is true, then
“A ***is*** B” and “A is ***not*** B” would mean the same thing
 2. But “A ***is*** B” and “A is ***not*** B” do not mean the same thing.
- C So, “A ***is*** B” and “A is ***not*** B” are ***NOT*** both true.

Semantic Argument

1. if “A **is** B” is true and “A is **not** B” is true, then
“A **is** B” and “A is **not** B” would mean the same thing
2. But “A **is** B” and “A is **not** B” do not mean the same thing.

C So, “A **is** B” and “A is **not** B” are **NOT** both true.

Avicenna: “Anyone who denies [the LNC] should be beaten
...until he admits that **to be beaten** is **NOT** the same
as **not to be beaten**”

The Law of Identity: $X = X$

Suppose that

1. Socrates is wise

2. wise \neq wise

It would follow that

3. Socrates is ***not*** wise

→ ***contradiction!***

$X \neq X$ entails a contradiction, and so *cannot be true* (LNC)

“The cat is on the mat”

Is this statement **true** or **false** or **neither**?

- if the cat **is** on the mat, it is **true**
- if the cat is **not** on the mat, it is **false**
- is there an “**intermediate**” between true and false?

Aristotle on the “laws of thought”

1. LNC \rightarrow Semantic Argument
2. Law of Identity \rightarrow LNC
3. LEM \rightarrow nature of truth

Lesson: logic places ***limits*** on the ***nature of reality***

Aristotle on the “laws of thought”

1. LNC \rightarrow Semantic Argument
2. Law of Identity \rightarrow LNC
3. LEM \rightarrow nature of truth

Lesson: logic places *limits* on the *nature of reality*

Learn more

- PHIL 205: Introduction to Formal Logic
- PHIL 421: Metaphysics