Deductive and Non-Deductive Arguments

Day 2 – Philosophical Method

Deductive arguments

- Definition:

A ***deductive argument*** is an argument that is intended by the arguer to provide a guarantee of the truth of the conclusion provided that the argument's premises are true.

Deductive arguments

- Definition:

- A deductive argument is ***valid*** if the premises can't all be true without the conclusion also being true.

Deductive arguments

- Definition:

- A deductive argument is ***valid*** if the premises can't all be true without the conclusion also being true.

NOTE: The conclusion of a valid argument **can** be false, if one or more of its premises is false.

Valid or invalid?

Ms. Whitesell uses a desk in the front office of SVGS.

Ms. Whitesell interacts with every student at SVGS.

Ms. Whitesell talks to parents of students in all of the academic programs at SVGS.

Ms. Whitesell is the director of SVGS.

Valid or invalid?

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Would it be possible for all the premises to be true, but the conclusion false?

Valid or invalid?

Today is either a week day or a weekend day.

Today is not a weekend day.

Today is a weekday.

Valid or invalid?

Today is either a week day or a weekend day.

Today is not a weekend day.

Today is a weekday.

Would it be possible for all the premises to be true, but the conclusion false?

Deductive arguments

- Definition:

- A valid deductive argument is ***sound*** if all of its premises are true.

Deductive arguments

- Definition:

- A valid deductive argument is ***sound*** if all of its premises are true.

NOTE: The conclusion of a sound valid argument **cannot** be false.

Sound or unsound?

If the atomic number of hydrogen is 1, then it is the lightest element.

The atomic number of hydrogen is 1.

Hydrogen is the lightest element.

Sound or unsound?

If the atomic number of hydrogen is 1, then it is the lightest element.

The atomic number of hydrogen is 1.

Hydrogen is the lightest element.

Is the argument valid?

Sound or unsound?

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Is the argument valid? 

Sound or unsound?

If the atomic number of hydrogen is 1, then it is the lightest element.

The atomic number of hydrogen is 1.

Hydrogen is the lightest element.

Is the argument valid? 

Are all the the premises true?

Sound or unsound?

If the atomic number of hydrogen is 1, then it is the lightest element.

<u>The atomic number of hydrogen is 1.</u>

Hydrogen is the lightest element.

Is the argument valid? 

Are all the premises true? 

Sound or unsound?

If the atomic number of helium is 1, then it is the lightest element.

The atomic number of helium is 1.

Helium is the lightest element.

Is the argument valid?

Sound or unsound?

If the atomic number of helium is 1, then it is the lightest element.

The atomic number of helium is 1.

Helium is the lightest element.

Is the argument valid? 

Sound or unsound?

If the atomic number of helium is 1, then it is the lightest element.

<u>The atomic number of helium is 1.</u>

Helium is the lightest element.

Is the argument valid? 

Are all the premises true?

Sound or unsound?

If the atomic number of helium is 1, then it is the lightest element.

The atomic number of helium is 1.

Helium is the lightest element.

Is the argument valid? 

Are all the premises true? 

Non-deductive arguments

- Definition:

A **non-deductive** (or inductive) argument is an argument that is intended by the arguer to make it very unlikely that its conclusion is false provided that the argument's premises are true.

Non-deductive arguments

- Definition:

A **non-deductive** (or **inductive**) argument attempts to offer good reason to believe that its conclusion is probably true.

- Success is a matter of degree
- An inductive argument can be strengthened by adding additional premises which offer further evidence

Non-deductive arguments

The ravens I have observed in Staunton are all black.

All ravens are black.

Non-deductive arguments

The ravens observed by bird watchers in Staunton are black.

All ravens are black.

Weak

Non-deductive arguments

The ravens observed by bird watchers in Staunton are all black.

The ravens reported by bird watchers elsewhere in Virginia are black.

All ravens are black.

Stronger