

## Lesson Aims:

1. Introduce the components of deductive arguments
2. Introduce the concept of formal validity
3. Introduce the concept of formal soundness



“I don’t think I’ll be going out this weekend if there’s a chance of snow. And this morning the weather forecast called for snow. So it looks like I’ll be staying in this weekend.”

### FORMAL RESTATEMENT

- P1 If there is a chance of snow this weekend,  
then I will not go out.
- P2 There is a chance of snow this weekend.
- C I will not go out.

# How do we identify the conclusion of an argument?

“Clue” words

Thus

So

Therefore

Hence

Ergo

# Find the Conclusion!

“I believe that every batter on the Giants roster this year will have a batting average better than .250. And I believe that  $\bar{U} \wedge \bar{A} \rightarrow \bar{C}$  will be a batter on the Giants roster this year, so I believe that  $\bar{U} \wedge \bar{A} \rightarrow \bar{C}$  will have a batting average better than .250.”

C:  ~~$\bar{U} \wedge \bar{A} \rightarrow \bar{C}$~~  will have a batting average better than .250.

# Validity

A **valid** argument is an argument that preserves truth from its premises to its conclusion.

This means that *if the premises of the argument are true, then the conclusion must also be true.*

VALID: P1 George will say hello to every person who will come into the store today.  
P2 Bill will come into the store today.  
C George will say hello to Bill.

INVALID: P1 Every U.S. President lives in the White House.  
P2 ~~Á~~ æ lives in the White House.  
C ~~Ô~~ æ is a U.S. President.

## Valid or Invalid?

P1 All men are mortal.

P2 Socrates is mortal.

C Socrates is a man.

*Invalid:* The truth of the premises isn't enough to guarantee the truth of the conclusion.

## Valid or Invalid?

P1 Every good ballerina is an elegant dancer.

P2 Arnold Schwarzenegger is a good ballerina.

C Arnold Schwarzenegger is an elegant dancer.

*Valid:* If the premises of this argument are true, then the conclusion must be true.



But so what??? The premises of this argument *aren't* true!



# Soundness

A **sound** argument is a valid argument with true premises.

P1 Every major league baseball team has at least nine players.

P2 The Milwaukee Brewers are a major league baseball team.

C The Milwaukee Brewers have at least nine players.

\*When considering whether an argument is persuasive, we ultimately want to determine whether or not the argument is sound.

# Sound or Not Sound?

P1 All good cars are reliable

P2 All Yugos are reliable

C All good cars are Yugos

*Not sound:* This argument is not formally valid.

# Sound or Not Sound?

P1 All reliable cars are good cars.

P2 All Yugos are reliable cars.

~~Ø~~ ~~∩~~ All Yugos are good cars.

*Not sound:* This argument is valid, but P2 is (presumably) false.



# Sound or Not Sound?

P1 It is pious to prosecute one's murderous father.

P2 It is right to do what is pious.

C It is right to prosecute one's murderous father.

*Uncertain:* To determine the soundness of this argument, we'd need to hear further arguments in favor of the individual premises. That's why arguments end up being so important in philosophy!

# Review

1. The two fundamental components of a deductive argument are the *premises* and the *conclusion*.
2. An argument is valid if  $\{ \text{premises} \} \vdash \text{conclusion}$
3. An argument is sound if it is valid and its premises are all true.