Phil 101 Logic Terms

(last revised Spring 2020)

Aristotle identified three modes of persuasion:

> **Ethos:** "persuasion by character"; when we are persuaded because we think the speaker is trustworthy *either*...
> - because of how they speak (Aristotle; the voice in the Willy Horton ad), ***or***
> - because of what we believe about their background (like some expertise or experience, e.g., a doctor recommending a medicine).[1]
>
> **Pathos:** "appeal to emotion"; when the speaker evokes some emotion(s) in us which incline us to do what the speaker wants. (Example: the Humane Society ad.)
>
> **Logos:** "appeal to reason"; when we are persuaded by evidence and reason, or at least apparent evidence and reason.

Ethos & Pathos:
- Are often more effective than logos at motivating people, but
- Are not so good for finding truth

So philosophers use logos.

Logos, which today we call logic, includes arguments and the techniques used to evaluate them.

> **Argument:** a set of at least 2 statements;
> one is called the "conclusion," the other(s) "premises," and
> the premises *are supposed to* show the conclusion is true or likely true.
>
> **Premise:** a statement that *is supposed to* help show a conclusion is true or likely true. An argument will have at least one, and maybe many.
>
> **Conclusion:** a statement which the premise or premises *are supposed to* show is true or likely true.

There are two main kinds of arguments, "inductive" and "deductive":

> **Inductive argument:** an argument where the premises, at best, show the conclusion is likely (or probably) true.
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> Inductive arguments can be "strong" or "weak":
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> > **Strong:** an inductive argument is strong if it shows its conclusion is likely (or probably) true.
> >
> > **Weak:** an inductive argument is weak if it fails to show its conclusion is likely (or probably) true.
> >
> > Note: Bailey uses "strong" in describing both deductive and inductive arguments. For example, he describes good deductive arguments as "strong" on p. 6. But in this course we will only use "strong" and "weak" to describe inductive arguments.

Deductive argument: an argument where the premises, at best, show the conclusion is true, not just likely true. (Or: the premises, at best, prove the conclusion is true.)

Deductive arguments can be "valid" or "invalid," and "sound" or "unsound":

Valid: an argument is valid when, *if* the premises *were* true, the conclusion would have to be true. (Or: its conclusion could not be false if its premises were true.)

Example of a **valid** argument:
Premise: All fish have horns.
Premise: Jeremy is a fish.
Conclusion: So, Jeremy has horns.
(This is valid even though the premises and conclusion are false.)

Invalid: an argument is invalid when, if the premises were true, the conclusion *could* be false.

Example of an **invalid** argument:
Premise: If I go to Dairy Castle, I always get a hot fudge sundae.
Premise: I got a hot fudge sundae.
Conclusion: So, I went to Dairy Castle.
(I *could* have gotten the sundae somewhere besides Dairy Castle. So the argument is invalid.)

Sound: an argument is sound when it is valid AND its premises are all true.

Unsound: an argument is unsound when it is invalid, OR it has at least one false premise, OR both. But usually we say an argument is unsound when it has at least one false premise. (If it's just invalid, we say it's invalid.)

Use all these terms properly throughout this course. This involves two things:

Know these definitions. Memorize them and apply them carefully.

Apply terms to the right things. "True" and "false" apply to premises and conclusions, but not to arguments: never say an argument is "true" or "false." On the other hand, "strong" and "weak" apply to inductive arguments, and "valid," "invalid," "sound," and "unsound" can apply to deductive arguments, but these terms do not apply to premises or conclusions: never call a premise or conclusion "weak," "valid" etc.

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[1] Being persuaded by someone's perceived expertise can really be logos and not ethos. If I say, for example, "I can trust her about my health because she is a doctor," I may be reasoning like this: "Doctors know about health, and she's a doctor, so she knows about health." That is an argument from authority, and arguments are logos, not ethos. But most students are taught that being persuaded by perceived expertise is ethos, and for this course this point is not very important, so I will accept this part of our definition even though it may be wrong.