More Validity

Philosophy 109

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September 6, 2019

Administrative Stuff

- Reading and exercises for next time:
  - Forallx Chapter 2, Exercises A and B; Chapter 3, ex. A and B.
  - Optional: Hardegree, Ch. 4 pg. 100, 102-117
- Homework 1 is due Sept. 22nd
  - Will be posted to Sakai by next class period.
  - Upload the homework to sakai in .pdf or Word format.
  - Upload under the Assignments section.

Review of Wednesday

Argument

An argument is a group of statements (or propositions) where one statement is supposed to be supported by the others.

- There are two kinds of statements in an argument
  - The conclusion (only one)
  - Premises: statements supposed to provide support for the conclusion.

Review of Wednesday

Statements

- Statements are declarative sentences.
- Statements are either true or false (but not both).
- Example of a non-statement?

Review of Wednesday

Validity

An argument is *valid* iff If the premises are true, the conclusion must be true. Or, equivalently, it is impossible for the premises to be true and the conclusion false.

- When an argument is valid, it's conclusion is said to *follow* from its premises.
- This relationship is called *entailment* or *consequence*.
- A deductive argument is one which purports to be valid. Good deductive arguments are valid.
- When an argument is valid, and all of its premises are true, then we call the argument *sound*.

Deductive Logic

- Deductive logic is the study of validity.
- Validity is a matter of form, not content.
- A valid argument is one which has a valid form.
- This is what makes it useful to do formal, sentential logic.

Arguments

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  - P1 Stealing is wrong
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  - P2 Lisa is a Rutgers student

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  - P1 All Rutgers Students are from New Jersey
  - P2 Lisa is a Rutgers student
  - C Therefore, Lisa is from New Jersey

Counter-examples

- We know an argument is invalid if there is a counter-example to it:

Counter-example

A case where the premises of an argument are true, but the conclusion is false.

P1 Some cats are cute.
P2 Some cute things are dogs.
C Therefore, all cats are dogs.

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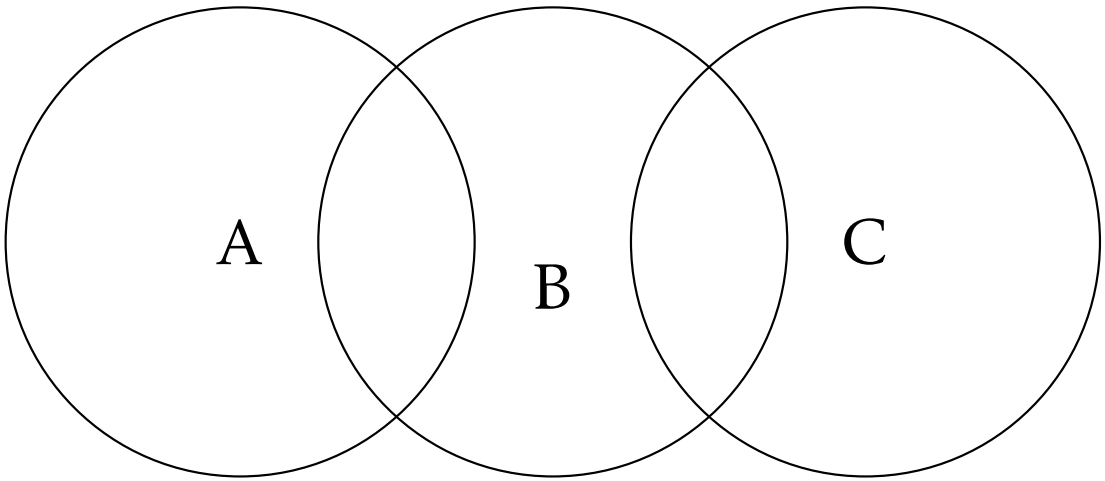

Conclusions

In English, we often signal the conclusion of an argument with a **conclusion indicator**:

- Therefore
- so
- hence
- consequently
- entails
- whence
- thus
- implies
- whereby
- as a result
- it follows that
- we may infer

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Argument 3

Students shouldn't party too hard, since their grades might slip and they won't get a good job.

- What is the **premise indicator** in Argument 3?

Premises

- since
- as
- owing to
- as shown by
- insofar as
- implied by
- given
- for
- we may infer from
- for the reason(s)
- because
- seeing that

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What is the **premise indicator** in Argument 3??
Since is the premise indicator.

Premises

Sometimes, there are no premise or conclusion indicators in an argument

Argument 4

We should drastically reduce defense spending. America's security does not depend on a gigantic military, and we could more effectively use the money saved back home either by returning it directly to tax payers or by increasing social spending.

- What's the conclusion? What are the premises?

Arguments

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Argument 4

Conclusion We should drastically reduce defense spending. P1 America's security does not depend on a gigantic military, and P2 we could more effectively use the money saved back home either by returning it directly to tax payers or by increasing social spending.

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Another Argument

Argument 5

Socialized medicine is not recommended because it would result in a reduction in the overall quality of medical care available to the average citizen. In addition it might very well bankrupt the federal treasury. This is the whole case against socialized medicine in a nutshell.

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- Note that the last sentence is neither a premise nor a conclusion. Just window dressing.

Nested arguments

- Earlier, I suggested that each argument has one conclusion.
- However, the conclusion of a previous argument can serve as a premise in another argument.
- Sometimes, the argument for a premise will be included in the overall argument.
- When this happens, sometimes we say that the premise which has its own argument included is a "subconclusion" or "lemma".
- In a sense, its clearly ideal to have an argument for each premise.

Nested Arguments

Argument 6

Because publishers are aiming at a national market, the number one criterion for any textbook is the avoidance of controversy. Since they must respond to a variety of specific criteria from their buyers, this has resulted in the dumbing down of textbooks.

- This argument is has a subconclusion as a premise;
- i.e., one of its premises has its own supporting argument.

Nested Arguments

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  P3 [Publishers] must respond to a variety of specific criteria from their buyers,

  C Textbooks have been dumbed down.

Nested Arguments

Argument 7

Because publishers are aiming at a national market, the number one criterion for any textbook is the avoidance of controversy. Since they must respond to a variety of specific criteria from their buyers, this has resulted in the dumbing down of textbooks.

Suppressed Premises

- Sometimes arguments contain premises which are not explicitly mentioned.
- They are assumed or presupposed.
- We call such premises **suppressed premises**.
- Often this is OK. Sometimes it is not.
- In order to formalize an argument, even suppressed premises need to be included.
- We won't deal with many arguments with suppressed premises; but keep an eye out for them.

Suppressed Premises

Argument 8

The issue of abortion has perplexed mankind for hundreds of years, and still remains an issue of debate for all who take moral problems seriously. Many people have differing opinions on the morality of abortion, but I think that it is morally permissible in the early stages of pregnancy because, at that stage, the fetus lacks even sentience, a necessary condition for having any moral status whatsoever.

- This argument has unnecessary sentences, and an important suppressed premise. Can you pick them out?

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  - P3 (Suppressed) it is morally permissible to kill something with no moral status.
  - P4 (Suppressed) Abortion kills a fetus.
  - C Abortion is morally permissible in the early stages of pregnancy.

Necessity, Possibility, and Actuality

- Some statements are actually true.
  - *Donald Trump is President.*
- Others aren't actually true, but they are *possibly true*:
  - *Hillary Clinton is President.*
  - Even though she isn't, **she could have been**.
- Some statements aren't even possibly true.

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  - *Alex is from Texas, and Alex is not from texas.* (Logically impossible).

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  - *If Amanda is a logician, then Amanda is a logician or a writer.*

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  - *If Amy is a female psychiatrist, then Amy is a psychiatrist.*
  - *If Amanda is a logician, then Amanda is a logician or a writer.*
- Logically necessary sentences are called **logical truths.**

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- We will look at a *formal* logical theory in which these notions have a precise meaning.
- Formal theories help us understand these notions as they are used in informal (natural) languages like English.

Consequence and Validity

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- If a conclusion is a consequence of, or follows from, its premises, then the argument is said to be valid.

Validity (Precise)

Detailed Validity

An argument $\mathcal{A}$ is **Valid** if and only if:

Formulation 1 : It is logically necessary that *if* all of the premises of $\mathcal{A}$ are true, then the conclusion of $\mathcal{A}$ is true.

Formulation 2 It is logically impossible for both of the following to be true simultaneously: (1) all of the premises of $\mathcal{A}$ are true, and (2) the conclusion of $\mathcal{A}$ is false.

The two formulations are equivalent

- We are using multiple formulations, all of which are equivalent, to make things easier to understand.
- On a test, you will just have to provide one of them; any one you like.

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  - Logical: is the argument valid?
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- But logic doesn't tell us much about the second component
  - except in cases of logical truths and falsehoods.
  - But these are rarely interesting premises.

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- The only thing that can't occur is for a valid argument to have true premises and a false conclusion. That is the definition and entire point of validity!
- If an argument is sound, you can *detach* the conclusion. That is, if you know an argument is sound you know its conclusion is true.

A Subtlety

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  P1 John is a bachelor.

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- For us, they are **invalid**, because they have invalid **forms**.

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- Formal logic is concerned with this kind of validity.