

305 Lecture 2.1 - Argument Forms

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Plan for This Lecture

We're going to get a little clearer on the notions of 'form' and 'structure' from last time.

Associated Reading

for all x , chapter 4, "First Steps to Symbolization".

Definition

An argument is valid when

- The truth of the premises guarantees the truth of the conclusion.
- Equivalently, when it is impossible for the premises to be true and the conclusion not true.

Formal Validity

An argument is formally valid if

- It is valid; and
- Any argument of the same form is valid.

In those cases, we infer that it is valid **because of** its form.

Three Big Questions About Form

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2. Which words have the same meaning and should be replaced by the same symbol, and which should be treated differently?
3. How do we break the sentence into its constituent parts?

I'm going to have a fairly pluralist, pragmatist view on this question.

- This is not to say that pluralism or pragmatism is right - it's just that it's what I'll adopt. (It is to say that I think it's a reasonable approach.)
- For some purposes the 'formal words' are very few, like 'and', 'or', 'not' etc.
- For other purposes the set is more expansive.

Part of the Form

- If you are studying the logic of causation, you might want to say that 'caused' is a formal word.
- And that would mean any two arguments that have this structure are of the same form.

A caused B.

B caused C.

∴ A caused C.

Part of the Form

- But for other purposes, 'caused' is just another binary relation between events.
- So those arguments will have the same form as these ones.

A happened near B.

B happened near C.

∴ A happened near C.

Part of the Form

- What I mean by having a 'pluralist, pragmatist' view about form is that there is no objectively correct answer about whether these are the same form or not.
- For some purposes it will be helpful to treat them as having the same form.
- For other purposes it will not be.
- We're going to start with a notion of form where lots and lots of things have the same form, so very few arguments are valid in virtue of form.

Three Big Questions About Form

1. Which words get treated as part of the form, and which get replaced by symbols when converting into formal notation?
2. **Which words have the same meaning and should be replaced by the same symbol, and which should be treated differently?**
3. How do we break the sentence into its constituent parts?

There are problems in both directions here.

- Sometimes we want to treat words with different spelling as representing the same meaning - e.g., 'kangaroo' and 'kangaroos'.
- And sometimes we want to treat words with the same spelling as expressing different meanings.

Relating the First Two Questions

Some kinds of ambiguity are 'resolved' by treating the word as part of the formal system. Consider two possible interpretations of this sentence.

Nothing is better than world peace

"Nothing is better than world peace"

1. There is no thing such that it is better than world peace.

"Nothing is better than world peace"

1. There is no thing such that it is better than world peace.
2. It is better that there is nothing than that there is world peace.

Ambiguity and Form

- If you include words like 'nothing' as formal words, then the two readings of the sentence will have different formal representations.
- And the logic called 'predicate logic' does exactly that; it treats 'nothing' as one of the formal words.
- We're not covering that in this course, though you have have covered it elsewhere.
- Some more expansive accounts of what should be a formal word are moved by the thought that treating more words as formal removes some possible ambiguities.

Three Big Questions About Form

1. Which words get treated as part of the form, and which get replaced by symbols when converting into formal notation?
2. Which words have the same meaning and should be replaced by the same symbol, and which should be treated differently?
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Three Formal Tools

1. Replacing words/sentences with letters.

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For Next Time

We'll look at how propositional logic carries out these three tasks.