

lecture 09, issues in translation: conjunction

phil1012 introductory logic

overview

this lecture

- a general strategy for determining how to translate a proposition using the connectives of PL
- issues arising with respect to the translation of conjunction

learning outcomes

- after doing the relevant reading for this lecture, listening to the lecture, and attending the relevant tutorial, you will be able to:
 - pursue a general strategy for determining how to translate a proposition using the connectives of PL
 - translate sentences which are not obviously conjunctions into PL using the connective conjunction

required reading

- section 6.2 of chapter 6

a general strategy for translation

a general strategy for translation

- at the end of section 6.1 of the textbook, there's a brief discussion of how to approach translating a proposition where we are unsure what connective is involved
- suppose, for instance you have a proposition which seems to be of the form $\alpha * \beta$ where $*$ is some two-place connective, but you aren't sure how to translate it

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- well, one thing you can do is attempt to construct a truth table for the proposition
 - for example, suppose we have the proposition "I went to bed, even though I was angry"
 - the proposition appears to be of the form $\alpha * \beta$ where $*$ is some two-place connective
 - but which connective is it?
 - let's try to construct a truth table for the proposition
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α	β	$(\alpha * \beta)$
T	T	
T	F	
F	T	

F|F||

- now let's ask whether "I went to bed, even though I was angry" is true if "I went to bed" / α is false
- "I went to bed, even though I was angry" is false if "I went to bed" / α is false
- so we fill in our table:

α	β	$(\alpha * \beta)$
T	T	
T	F	
F	T	F
F	F	F

- now let's ask whether "I went to bed, even though I was angry" is true if "I was angry" / β is false
- "I went to bed, even though I was angry" is false if "I was angry" / β is false
- so we fill in our table:

α	β	$(\alpha * \beta)$
T	T	
T	F	F
F	T	F
F	F	F

- finally, let's ask whether "I went to bed, even though I was angry" is true if both "I went to bed" / α and "I was angry" / β are true
- "I went to bed, even though I was angry" is true if both "I went to bed" / α and "I was angry" / β are true
- (remember that we are focussing on what is said, not what it implied or implicated)
- so we fill in our table:

α	β	$(\alpha * \beta)$
T	T	T
T	F	F
F	T	F
F	F	F

- of course, this is just the table for conjunction, so we have discovered that the two-place connective here is conjunction
- so we would use conjunction in our translation

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- things do not always work out so well, however
 - suppose we use the method to determine which two-place connective to use to translate "I went to bed because I was angry"
 - this is true only if both propositions which make it up are true
 - so we can fill out our table like this:

α	β	$(\alpha * \beta)$
T	T	
T	F	F
F	T	F

$F|F \parallel F$

- but now let us ask whether it is true if both propositions which make it up are true
 - not necessarily
 - I could have been angry, and I could have gone to bed, and yet, I might not have gone to bed because I was angry
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- if we can't fill in the truth table, we can conclude that the connective is not a truth-functional connective
- if we can fill in the table, then we know what connective it is
- let's look at some more examples in connection with conjunction now

issues with conjunction

issues with conjunction

- we translate 'and' as a conjunction
 - but we also translate 'but' as a conjunction
 - why? and are we right to do so?
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- consider:
 - (1) Jane is tall but smart
 - T : Jane is tall
 - S : Jane is smart
 - (1) is false if T is false
 - (1) is false if S is false
 - (1) is false if both T and S are false
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- suppose: (1) is true if both T and S are true
 - if so, then 'but' is equivalent to 'and'
 - T : Jane is tall
 - S : Jane is smart
 - $(T \wedge S)$
 - but this fails to capture the sense in which 'Jane is tall but smart' conveys that being tall contrasts with being smart
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- suppose: (1) is not necessarily true if both T and S are true
 - if so, then 'but' isn't equivalent to 'and'
 - instead, we might translate it as follows
 - T : Jane is tall
 - S : Jane is smart
 - C : Being tall contrasts with being smart
 - $((T \wedge S) \wedge C)$
 - but this seems to be too strong
 - saying 'Jane is smart but tall' doesn't seem to be equivalent to saying 'Jane is tall and smart and being tall contrasts with being smart'
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- solution . . .
 - claim that 'but' merely conventionally implicates a contrast
 - claim that 'but' and 'and' are truth-functionally equivalent

wrapping up

this lecture

- a general strategy for determining how to translate a proposition using the connectives of PL
- issues arising with respect to the translation of conjunction

next lecture

- lecture 10, trees for PL