

# 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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$\alpha$	$\beta$	$(\alpha * \beta)$
T	T	
T	F	
F	T	

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

$\alpha$	$\beta$	$(\alpha * \beta)$
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" /  $\beta$  is false
- "I went to bed, even though I was angry" is false if "I was angry" /  $\beta$  is false
- so we fill in our table:

$\alpha$	$\beta$	$(\alpha * \beta)$
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" /  $\alpha$  and "I was angry" /  $\beta$  are true
- "I went to bed, even though I was angry" is true if both "I went to bed" /  $\alpha$  and "I was angry" /  $\beta$  are true
- (remember that we are focussing on what is said, not what it implied or implicated)
- so we fill in our table:

$\alpha$	$\beta$	$(\alpha * \beta)$
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

- 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:

$\alpha$	$\beta$	$(\alpha * \beta)$
T	T	

T	F	F
F	T	F
F	F	F

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- 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
    - TT: Jane is tall
    - SS: Jane is smart
  - (1) is false if TT is false
  - (1) is false if SS is false
  - (1) is false if both TT and SS are false
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- suppose: (1) is true if both TT and SS are true
  - if so, then 'but' is equivalent to 'and'
    - TT: Jane is tall
    - SS: Jane is smart
    - (TAS) (T \land 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 TT and SS are true
  - if so, then 'but' isn't equivalent to 'and'
  - instead, we might translate it as follows
    - TT: Jane is tall
    - SS: Jane is smart
    - CC: Being tall contrasts with being smart
    - ((TAS) \wedge C) ((T \land S) \land 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