Presupposition P-Set

24.954: Pragmatics in Linguistic Theory

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1 From *the law of non-contradiction* to *the law of the excluded middle*

One logical law that is easy to accept is *the law of non-contradiction*, which can be expressed as the following formula of propositional logic:

$$\neg (p \wedge \neg p)$$

This tells us that no statement can be both true and false. Seems pretty uncontroversial, right?

The exercise here is to show (informally) how *the law of the excluded middle* – every statement is either true or false – follows from *the law of non-contradiction*.

Hint: first, render the law of the excluded middle into a formula of propositional logic, and go from there (using the truth-tables for the logical connectives).

2 Projection in conditional statements

Treating *if...then...* as a two place sentential operator, (a) state the generalisation concerning how presuppositions project in conditional statements, and (b) write a multi-dimensional lexical entry for *if...then...* which captures the generalisation. Use the entries for conjunction and disjunction as a guideline.

3 More on compositionality

Define an operator (call it ($\ggcolon$)) which will allow us to compose something of type $\frac{\text{st}}{a}$ with something of type $\left\langle a, \frac{\text{st}}{\langle a, b\rangle}\right\rangle$ (where a and b could be any type).

(1) $\frac{\text{st}}{a} \ggcolon m = ???$ $\qquad (\ggcolon) :: \left\langle \frac{\text{st}}{a}, \left\langle \left\langle a, \frac{\text{st}}{b}\right\rangle, \frac{\text{st}}{b}\right\rangle\right\rangle$

Tailor the definition of $\ggcolon$ such that it makes the right predictions for the presuppositions of the following sentence:

(2) she$_1$ quit vaping.

Assume the following semantics for the pronoun:[1]

(3) $[\![\text{she}_1]\!]^g = \frac{g(1) \text{ identifies female}}{g(1)}$

Give the LF and compute the meaning, using the operator you have just defined.

4 More on the binding problem

Recall that a multi-dimensional theory of presupposition faces the *binding problem*.

Suppose that we assign the presuppositional predicate "quit smoking" the following entry:

(4) $[\![\text{quit smoking}]\!] = \lambda x \,.\, \frac{x \text{ used to smoke}}{x \text{ used to smoke} \wedge x \text{ doesn't smoke now}}$

Does the binding problem still arise? Assume that *someone* has the following meaning, in order to bootstrap compositionality:

(5) $[\![\text{someone}]\!] := \lambda P.\, \frac{\exists x[\mathbb{P}\,(P\,x)]}{\exists x[\mathbb{A}\,(P\,x)]}$

[1] Since relativising meanings to assignments hasn't been relevant, we omitted the g parameter in the handout.

5 Bonus question on disjunction

Try to come up with counter-examples to the following generalisation (subscript Greek letters are presuppositions):

(6) **Disjunction**
If A_π, and B_ρ, then a sentence of the form "A or B" presupposes π, and unless "not A" entails ρ, also presupposes ρ.