Formale Semantik
06. Quantifikation und Modelltheorie

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stets aktuelle Fassungen: `https://github.com/rsling/VL-Deutsche-Syntax`

Inhalt

From PC to F1

Back to semantics: F1

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- sentences refer to truth values

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- fixed only within a specific context (SOA)

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- Q evaluation in PC is algorithmic
- variables interpreted like definite pronominal NPs (within a fixed context)

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- Q $\rightarrow \exists, \forall$

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- $\text{var} \rightarrow x_1, x_2, \ldots, x_n$

Phrase structure

- wff $\rightarrow$ pred$_n$ a$_1$ a$_2$ ...a$_n$

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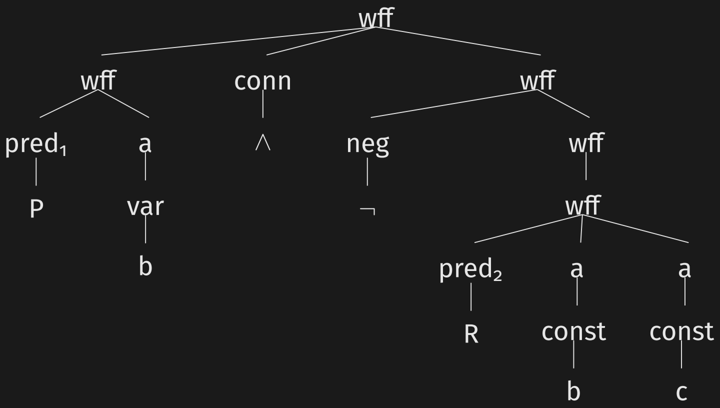
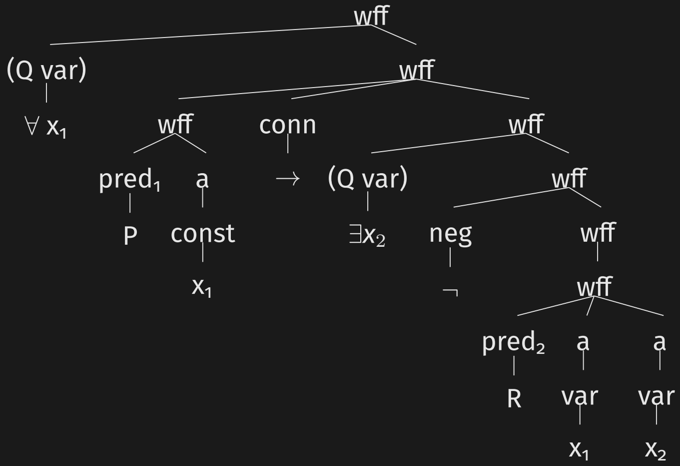
A wff without Q



A wff with Q's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- The definition in CM allows a node to dominate itself.

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- scope = binding domain

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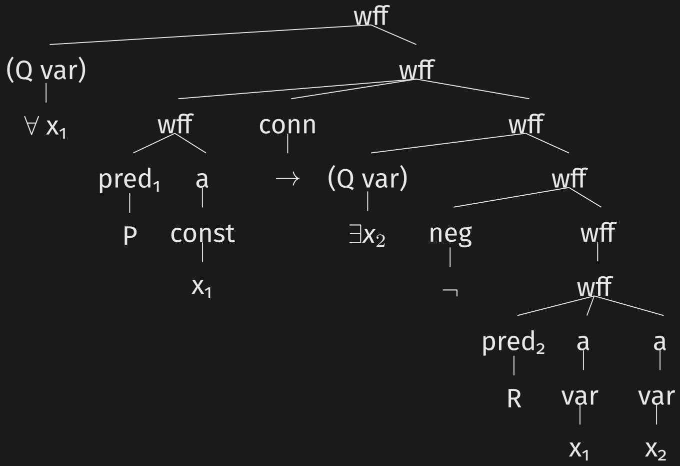

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Model theory

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- *the extension of α relative to $\mathcal{M}_n$ and g_n*

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- g_n is like $\mathrm{V_n}$ for constants, only flexible
- it can iterate through $\mathrm{U_n}$
- initial assignment can be anything:

$$g_1 = \begin{bmatrix} x_1 \rightarrow \textit{Herr Webelhuth} \\ x_2 \rightarrow \textit{Frau Eckardt} \\ x_3 \rightarrow \textit{Turm} - \textit{Mensa} \end{bmatrix}$$

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- iff the answer was never 0, then $[\![(\forall x_1)Px_1]\!]^{\mathcal{M}_1,g_1} = 1$

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- Q ambiguity cannot be structural (e.g., $\exists$ will never c-command $\forall$)

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- raising verbs:
- *(Laura Palmer)$_i$ seems t$_i$ to be dead.*
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- LF is constructed by syntactic rules!

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Quantification in English: F2

The Q raising rule

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- QR rule also introduces coindexing of traces

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- assume introduction of reasonable syntactic types/rules without specifying
- assume admissible (reasonable, possible) models $\mathcal{M}$

Semantics for QR output: *every*

$$[\![\,[\,[every\ \beta]_i\ S]\!]^{\mathcal{M},g} = 1 \text{ iff for all } u \in U: \\ \text{if } u \in [\![\beta]\!]^{\mathcal{M},g} \text{ then } [\![S]\!]^{\mathcal{M},g[u/t_i]}$$

A sentence containing the trace t_i with an adjoined NP_i (which consists of *every* plus the common noun β) extend to 1 iff for each individual *u* in the universe *U* which is in the set referred to by the common noun β, *S* denotes 1 with *u* assigned to the pronominal trace t_i. *g* is modified iteratively to check that.

Semantics for QR output: *some, a*

$$[\![\,[\,[a\ \beta]_i\ S]\,]\!]^{\mathcal{M},g} = 1 \textit{ iff for some } u \in U: \\ u \in [\![\beta]\!]^{\mathcal{M},g} \textit{ and } [\![S]\!]^{\mathcal{M},g[u/t_i]}$$

(similar)

Literatur I

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