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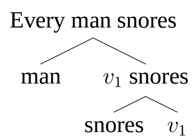
Time: 14:30–16:00

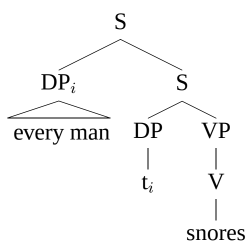
Compositional Semantics
Heinrich Heine University
Winter Semester 2011/12
Room: 25.22-U1.72

Traces

The Dowty Wall and Peters analysis of quantifiers is very weird:

(1)


The Heim and Kratzer one is weird too, but it seems less weird in comparison. As we will see later on, it involves a syntactic transformation of Quantifier Raising (QR), which raises the quantifier *every man* into a higher position in the tree, leaving a trace behind it. **Traces are interpreted as variables.**

(2)


This also works in the analysis of (restrictive) relative clauses, like:

(3) The car **that Joe bought** is very fancy.

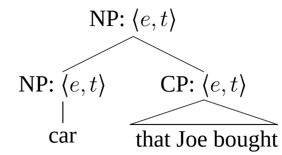
(4) The woman **who admires Joe** is very lovely.

Semantically, relative clauses are just like adjectives:

(5) The **red** car is very fancy.

(6) The **Swedish** woman is very lovely.

They are type $\langle e, t\rangle$ and combine via Predicate Modification.

(7)


CP stands for "Complementizer Phrase" and Heim and Kratzer assume the following syntax for relative clause CPs:

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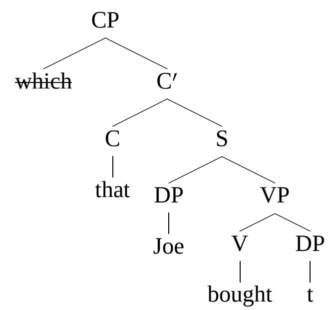
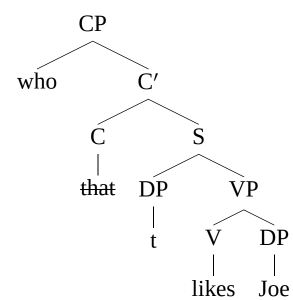


(9)


The text that is struck out like ~~so~~ is *deleted*. Heim and Kratzer assume that either the relative pronoun *which* or *who* or the complementizer *that* is deleted.

Interpretation of variables Heim and Kratzer use simplified variable assignments. The assignment is just an individual. The interpretation of a trace with respect to this assignment is the individual.

(10) $[\![\textbf{t}]\!]^{\text{Mary}}$ = Mary

(11) **Traces Rule**
If α is a trace and a is an assignment, $[\![\alpha]\!]^{a}$ = a

So now we interpret everything with respect to an assignment.

(12) $[\![\ [_{VP}\ [_{V}$ abandoned $]\ [_{DP}$ t $]\ ]]\!]^{\text{Mary}} = \lambda$x . x abandoned Mary

(13) $[\![\ [_{VP}\ [_{V}$ abandoned $]\ [_{DP}$ t $]\ ]]\!]^{\text{Fred}} = \lambda$x . x abandoned Fred

But there are *assignment-independent* denotations too.

(14) For any tree α, α is in the domain of $[\![\,]\!]$ iff for all assignments a and b, $[\![\alpha]\!]^{a} = [\![\alpha]\!]^{b}$.
If α is in the domain of $[\![\,]\!]$, then for all assignments a, $[\![\alpha]\!] = [\![\alpha]\!]^{a}$.

So we can still have assignment-independent lexical entries like:

(15) $[\![\textbf{laugh}]\!] = \lambda x \in D_e$. x laughs

and then by (14), we have:

(16) $[\![\textbf{laugh}]\!]^{\text{Mary}} = \lambda x \in D_e$. x laughs

(17) $[\![\textbf{laugh}]\!]^{\text{Fred}} = \lambda x \in D_e$. x laughs

We need to redo the composition rules now too:

(18) **Lexical Terminals**
If α is a terminal node occupied by a lexical item, then $[\![\alpha]\!]$ is specified in the lexicon.

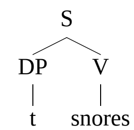
(19) **Non-branching Nodes (NN)**
If α is a non-branching node and β its daughter, then, for any assignment a, $[\![\alpha]\!]^{a} = [\![\beta]\!]^{a}$.

(20) **Functional Application (FA)**
If α is a branching node and $\{\beta, \gamma\}$ the set of its daughters, then, for any assignment a, if $[\![\beta]\!]^{a}$ is a function whose domain contains $[\![\gamma]\!]^{a}$, then $[\![\alpha]\!]^{a} = [\![\beta]\!]^{a}([\![\gamma]\!]^{a})$.

(21) **Predicate Modification (PM)**
If α is a branching node and $\{\beta, \gamma\}$ the set of its daughters, then, for any assignment a, if $[\![\beta]\!]^{a}$ and $[\![\gamma]\!]^{a}$ are both functions of type $\langle e, t\rangle$, then $[\![\alpha]\!]^{a} = \lambda x \in D$. $[\![\beta]\!]^{a}(x) = [\![\gamma]\!]^{a}(x) = 1$.

Exercise: Compute $[\![(22)]\!]^{\text{Mary}}$.

(22)

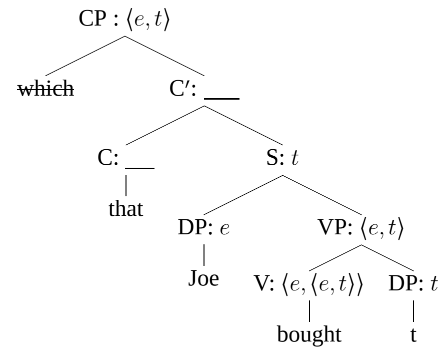


Assume that the people who snore are Mary, John, and Bob.

Exercise: Show that $[\![(22)]\!]$ is undefined; i.e., (22) is not in the domain of $[\![\,]\!]$.

Predicate abstraction. The S in a relative clause is type t. How do we get the CP to have type $\langle e, t\rangle$?

(23)



Heim and Kratzer:

- The complementizer *that* is vacuous; *that S = S*
- The relative pronoun is vacuous too, but it triggers a special rule called Predicate Abstraction

(24) **Predicate Abstraction (PA)**
If α is a branching node whose daughters are a relative pronoun and β, then $[\![\alpha]\!] = \lambda x \in D_e$. $[\![\beta]\!]^{x}$

So $[\![(23)]\!] = \lambda x \in D_e$. Joe bought x.