Semantik
10. Quantifikation und Grammatik 2

Fabian Heck
(basierend auf Folien von Gereon Müller)
Institut für Linguistik
home.uni-leipzig.de/heck

Type Shifting

Recall:
There is an alternative to resolving the type mismatch with object quantifiers by quantifier raising: type shifting.

(1) Type ambiguity with quantifying determiners:

a. $[\![\textbf{every}_1]\!] = \lambda f \in D_{<e,t>}. [\ \lambda g \in D_{<e,t>}\ .\ \forall x \in D_e: f(x) = 1 \rightarrow g(x) = 1\ ]$

b. $[\![\textbf{every}_2]\!] \in D_{<<e,t>,<<e,<e,t>>,<e,t>>>} = \lambda f \in D_{<e,t>}. [\ \lambda Q \in D_{<e,<e,t>>}. [\ \lambda y \in D_e\ .\ \forall x \in D_e: f(x) = 1 \rightarrow Q(x)(y) = 1\ ]]$

Type Shifting: Illustration

(2)

a. $[\![\textbf{John saw every}_2\ \textbf{woman}]\!] = 1$ iff (by FA, TN)

b. $[\![\textbf{saw every}_2\ \textbf{woman}]\!](\text{John}) = 1$ iff (by FA)

c. $[\![\textbf{every}_2\ \textbf{woman}]\!]([\![\textbf{saw}]\!])(\text{John}) = 1$ iff (by FA)

d. $[\![\textbf{every}_2]\!]([\![\textbf{woman}]\!])([\![\textbf{saw}]\!])(\text{John}) = 1$ iff (by TN)

e. $\lambda f \in D_{<e,t>}.\ [\ \lambda Q \in D_{<e,<e,t>>}.\ [\ \lambda y \in D_e\ .\ \forall x \in D_e\text{: } f(x) = 1 \rightarrow Q(x)(y) = 1\ ]](\lambda z \in D_e\ .\ z \text{ is a woman})([\![\textbf{saw}]\!])(\text{John}) = 1$ iff (by λ-conversion)

f. $\lambda Q \in D_{<e,<e,t>>}.\ [\ \lambda y \in D_e\ .\ \forall x \in D_e\text{: } [\ \lambda z \in D_e\ .\ z \text{ is a woman }](x) = 1 \rightarrow Q(x)(y) = 1\ ]([\![\textbf{saw}]\!])(\text{John}) = 1$ iff (by λ-conversion)

g. $\lambda Q \in D_{<e,<e,t>>}.\ [\ \lambda y \in D_e\ .\ \forall x \in D_e\text{: } x \text{ is a woman} \rightarrow Q(x)(y) = 1\ ]([\![\textbf{saw}]\!])(\text{John}) = 1$ iff (by TN)

h. $\lambda Q \in D_{<e,<e,t>>}.\ [\ \lambda y \in D_e\ .\ \forall x \in D_e\text{: } x \text{ is a woman} \rightarrow Q(x)(y) = 1\ ]([\ \lambda k \in D_e\ .\ [\ \lambda l \in D_e\ .\ l \text{ saw } k\ ]])(\text{John}) = 1$ iff (by λ-conversion)

i. $[\ \lambda y \in D_e\ .\ \forall x \in D_e\text{: } x \text{ is a woman} \rightarrow [\ \lambda k \in D_e\ .\ [\ \lambda l \in D_e\ .\ l \text{ saw } k\ ]](x)(y) = 1\ ](\text{John}) = 1$ iff (by λ-conversion, twice)

j. $[\ \lambda y \in D_e\ .\ \forall x \in D_e\text{: } x \text{ is a woman} \rightarrow y \text{ saw } x\ ](\text{John}) = 1$ iff (by λ-conversion))

k. $\forall x \in D_e\text{: } x \text{ is a woman} \rightarrow \text{John saw } x$

Type Shifting: The Three Central Problems

Three central problems:

1. This approach must again be revised if scope ambiguity is to be taken into account (in particular, wide scope of the object over the subject is a problem).
2. There are problems with antecedent-contained deletion.
3. Binding of pronouns by quantifiers is a problem.

Scope Ambiguity

(3) **Some man saw every$_2$ woman**

a. There is some man who saw every woman.

b. For each woman, there is some man who saw her (not necessarily the same one in each case.)

Problem:
The second, inverse reading cannot by derived under the current denotation of **every$_2$**.

(4) Derivation of the surface order reading:

a. $[\![\textbf{Some man saw every}_2\ \textbf{woman}]\!] = 1$ iff

b. $[\![\textbf{some man}]\!]\ ([\![\textbf{saw every}_2\ \textbf{woman}]\!]) = 1$ iff (recall (2))

c. $[\![\textbf{some man}]\!]\ ([\ \lambda y \in D_e\ .\ \forall x \in D_e\text{: x is a woman} \rightarrow \text{y saw x}]) = 1$ iff

d. $[\ \lambda f \in D_{<e,t>}\ .\ [\ \exists z \in D_e\ .\ \text{z is a man \& } f(z) = 1]]\ ([\ \lambda y \in D_e\ .\ \forall x \in D_e\text{: x is a woman} \rightarrow \text{y saw x}]) = 1$ iff

e. $[\exists z \in D_e\ .\ \text{z is a man \& } [\ \lambda y \in D_e\ .\ \forall x \in D_e\text{: x is a woman} \rightarrow \text{y saw x}](z) = 1] = 1$ iff

f. $\exists z \in D_e\ .\ \text{z is a man \& } \forall x \in D_e\text{: x is a woman} \rightarrow \text{z saw x}$

(5) No derivation for the inverse reading:
$\forall x \in D_e\text{: x is a woman} \rightarrow \exists z \in D_e\text{: z saw x}$

Further Examples

Observation:
The quantifier raising-based account, but not the in-situ account, can also correctly predict scope ambiguities with two objects.

(6) a. **The company sent one representative to every meeting.**

b. **[$_S$ [$_{DP}$ [$_D$ every] [$_{NP}$ meeting]] [$_S$ 2 [$_S$ [$_{DP}$ [$_D$ one] [$_{NP}$ representative]] [$_S$ 1 [$_S$ [$_{DP}$ [$_D$ the] [$_{NP}$ company]] [$_{VP}$ [$_{V'}$ [$_V$ sent] [$_{DP}$ t_1]] [$_{PP}$ [$_P$ to] [$_{DP}$ t_2]]]]]]]]**

c. **[$_S$ [$_{DP}$ [$_D$ one] [$_{NP}$ representative]] [$_S$ 1 [$_S$ [$_{DP}$ [$_D$ every] [$_{NP}$ meeting]] [$_S$ 2 [$_S$ [$_{DP}$ [$_D$ the] [$_{NP}$ company]] [$_{VP}$ [$_{V'}$ [$_V$ sent] [$_{DP}$ t_1]] [$_{PP}$ [$_P$ to] [$_{DP}$ t_2]]]]]]]]**

Antecedent-Contained Deletion

(7) VP deletion in English:

a. **I read "War and Peace" before you did** read "War and Peace"

b. **I went to Tanglewood even though I wasn't supposed to** go to Tanglewood

(8) Antecedent-contained deletion: A problem:

I read every novel wh_1 that you did *read every novel wh_1 that you did read every novel wh_1 that you did ...

(9) Quantifier raising solves the problem:

$[_{IP}$ $[_{DP}$ every $[_{NP}$ $[_{N}$ novel] $[_{CP}$ wh_1 $[_{C'}$ $[_{C}$ that] $[_{IP}$ $[_{DP}$ you] $[_{I'}$ did $[_{VP}$ read t_1]]]]]]] 1 $[_{IP}$ I $[_{I'}$ PAST $[_{VP}$ read t_1]]]]

Qualification:

This account presupposes that information about what happens at LF is accessible in the mapping from S-structure to PF. (Alternatively, quantifier raising here is syntactic movement, which is then blurred by other operations.)

Quantifiers that Bind Pronouns

(10) Binding of reflexive pronouns:

a. **Mary blamed herself.**
b. **No woman blamed herself.**
c. **Every woman blamed herself.**

(11) Sentences with different truth conditions:

a. **No woman blamed no woman.**
b. **Every woman blamed every woman.**

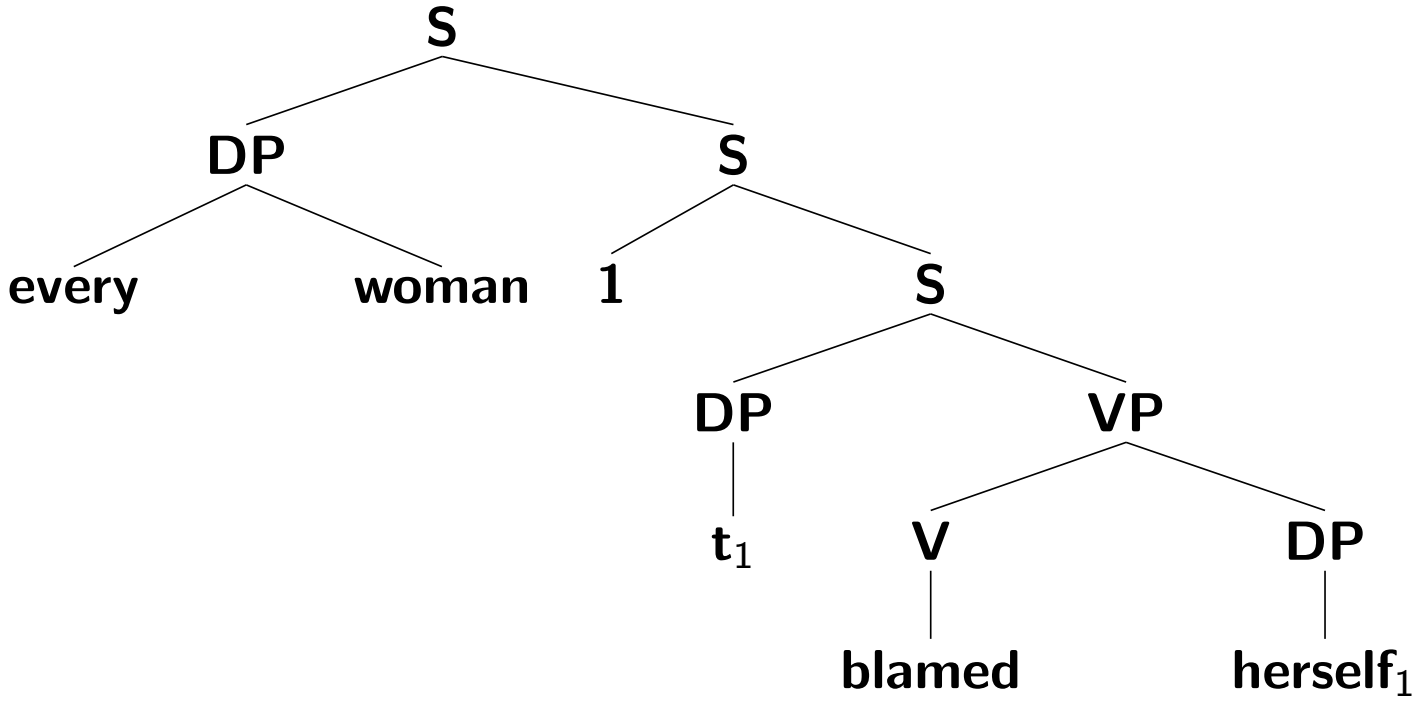
(12) Binding of personal pronouns:

a. **No man noticed the snake next to him.**
b. **We showed every woman a newspaper article with a picture of her.**

Note:
Obligatory and optional co-indexation is governed by syntactic binding principles (A and B).

Binding of Pronouns

(13) Binding of pronouns by raised quantifiers:



Note:
In contrast to the quantifier raising approach to binding of pronouns, the in-situ approach would ceteris paribus require a new composition rule (cf. p. 203 in the book).