Trace Conversion and Late Merger

LING 252 · Ethan Poole · 27 April 2020

1 Trace Conversion

- Downstairs copies of moved quantificational DPs cannot be interpreted as-is at LF. Minimally, interpreting both copies would derive gibberish/unintended meanings:

(1) $[_{\text{CP}}$ someone $[\ \lambda_1\ [$ should $[_{v\text{P}}$ someone stay at home $]\ ]\ ]\ ]$

a. $[\![v\text{P}]\!] = \lambda s\ .\ \exists x[\text{PERSON}_s(x) \wedge \text{STAY-HOME}_s(x)]$

b. $[\![\text{CP}]\!] = \lambda s\ .\ \exists y[\text{PERSON}_s(y) \wedge \forall s'[s' \in \text{SHOULD}(s) \rightarrow \exists x[\text{PERSON}_{s'}(x) \wedge \text{STAY-HOME}_{s'}(x)]]]$

- One influential idea about how these structures are rendered interpretable is that the downstairs copy is interpreted as an *anaphoric definite description.*[1,2]

[1] Engdahl (1980, 1986); Sauerland (1998, 2004); Fox (1999, 2002, 2003)

[2] In Schwarz's (2009) terminology, the downstairs copy is interpreted as a STRONG DEFINITE.

⁎ ***Trace Conversion***
The most well-known way to achieve this interpretation is Fox's *Trace Conversion*, a special LF rule that applies to the downstairs copy:

(2) **TRACE CONVERSION**

a. **Variable Insertion**
(Det) Pred → (Det) [[Pred] [ID-n]]

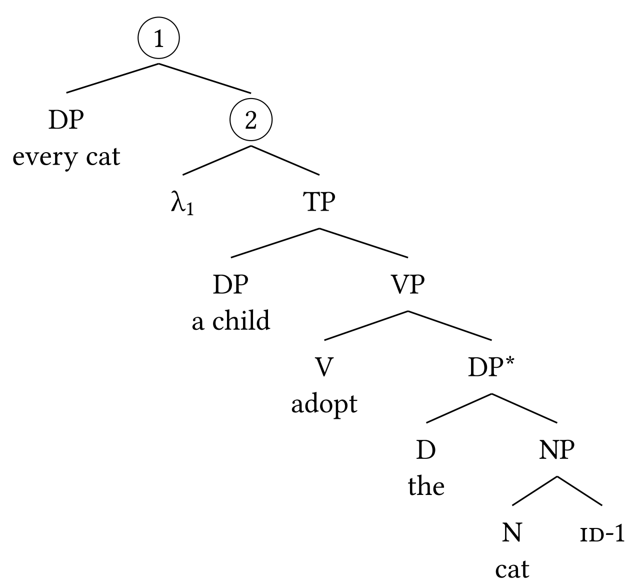
b. **Determiner Replacement**
(Det) [[Pred] [ID-n]] → the [[Pred] [ID-n]]

(3) a. $[\![\text{ID-}n]\!]^g = \lambda x\ .\ x = g(n)$

b. $[\![\text{the}]\!]^g = \lambda P : \underbrace{\exists! x[P(x)]}_{\text{presupposition}}\ .\ \underbrace{\iota x[P(x)]}_{\text{assertion}}$

- ***Example semantic derivation (simplified)***

(4)



The nodes from DP upwards are defined iff* $\text{CAT}(g(1)) = 1$.

a. $[\![\text{ID-1}]\!]^g = \lambda x_e \,.\, x = g(1)$

b. $[\![\text{NP}]\!]^g = \lambda x_e \,.\, \textsc{cat}(x) \wedge x = g(1)$

c. $[\![\text{DP}]\!]^g$ is defined only if $\exists! x[\textsc{cat}(x) \wedge x = g(1)]$;
where defined, $[\![\text{DP}]\!]^g = \iota x[\textsc{cat}(x) \wedge x = g(1)]$

d. $[\![\text{VP}]\!]^g = \lambda y_e : \exists! x[\textsc{cat}(x) \wedge x = g(1)] \,.\, \textsc{adopt}(\iota x[\textsc{cat}(x) \wedge x = g(1)])(y)$

e. $[\![\text{a child}]\!]^g = \lambda P_{\langle e,t\rangle} \,.\, \exists z[\textsc{child}(z) \wedge P(z)]$

f. $[\![\text{TP}]\!]^g$ is defined only if $\exists! x[\textsc{cat}(x) \wedge x = g(1)]$;
where defined, $[\![\text{TP}]\!]^g = \exists z[\textsc{child}(z) \wedge \textsc{adopt}(\iota x[\textsc{cat}(x) \wedge x = g(1)])(z)]$

g. $[\![⓶]\!]^g = \lambda y_e : \exists! x[\textsc{cat}(x) \wedge x = y] \,.\, \exists z[\textsc{child}(z) \wedge \textsc{adopt}(\iota x[\textsc{cat}(x) \wedge x = y])(z)]$

h. $[\![\text{every cat}]\!]^g = \lambda P_{\langle e,t\rangle} \,.\, \forall y[\textsc{cat}(y) \rightarrow P(y)]$

i. $[\![①]\!]^g = \forall y[\textsc{cat}(y) \rightarrow \exists z[\textsc{child}(z) \wedge \textsc{adopt}(\iota x[\textsc{cat}(x) \wedge x = y])(z)]]$
(the presupposition introduced by *the* is satisfied at this point)

- ***Condition C***
QR cannot bleed Condition C, which would be possible if the lower copy of QR were interpreted as a simplex variable lacking lexical material:

(5) *A different neighbor told **her**$_1$ every rumor about **Susan's**$_1$ parents. $\forall \gg \exists$

a. **Trace Conversion: Predicted to be ungrammatical**
*[[every rumor about **Susan's**$_1$ parents] λ_2 [a different neighbor told **her**$_1$
[the ID-2 rumor about **Susan's**$_1$ parents]]]

b. **Simplex variable: Predicted to be grammatical**
[[every rumor about **Susan's**$_1$ parents] λ_2 [a different neighbour told **her**$_1$ t_2]]

- ***Conservativity***
Because the NP restrictor is also interpreted in the scope of the quantifier as a presupposition that projects, everything in the scope will necessarily be a member of the restrictor, thereby forcing quantifiers to be conservative:[3]

[3] Fox (2001, 2002); Bhatt and Pancheva (2007)

(6) **Conservativity**
$D(A)(B) \Leftrightarrow D(A)(A \cap B)$
(e.g. Every cat is orange ⇔ Every cat is an orange cat)

(7) a. $D(A)(B) =$ *(by conservativity)*

b. $D(A)(A \cap B) =$ *(by presupposition projection)*

c. $D(A)(A \cap [\lambda x : A(x) \,.\, B(x)]) =$ *(by conseravitity)*

d. $D(A)(\lambda x : A(x) \,.\, B(x)) =$ *(by denotation of 'the')*

e. $D(A)(\lambda x \,.\, B(\text{the}\,[Ax]))$ □

- ***Distribution w.r.t traces***
Poole (2017, 2019) argues that strong definites are prohibited in higher-type positions, where English also prohibits traces (maybe). This follows if traces *are* strong definites.

2 Fox and Nissenbaum (1999)

- ***Puzzle***
  - Complements can be extracted from DP, but adjuncts cannot:

(8) a. [Of whom] did you see [a painting ___]?
    b. *?? { From where / by whom } did you see [a painting ___]?

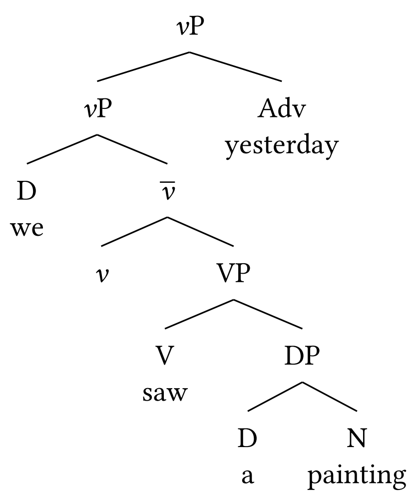
  - But both complements and adjuncts can be extraposed from DP:

(9) a. We saw [a painting ___] yesterday [of John].
    b. We saw [a painting ___] yesterday { from the museum / by John }.

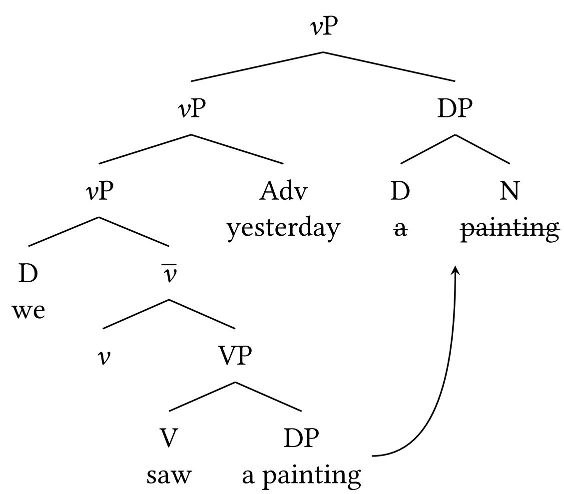
  - This fact about extraposition is surprising under the assumption that extraposition uniformly involves movement of the *extraposed constituent* (EC).

⁎ ***Fox and Nissenbaum's (1999) proposal***
Complement extraposition is derived by movement of the EC. Adjunct extraposition is derived by post-QR merger:

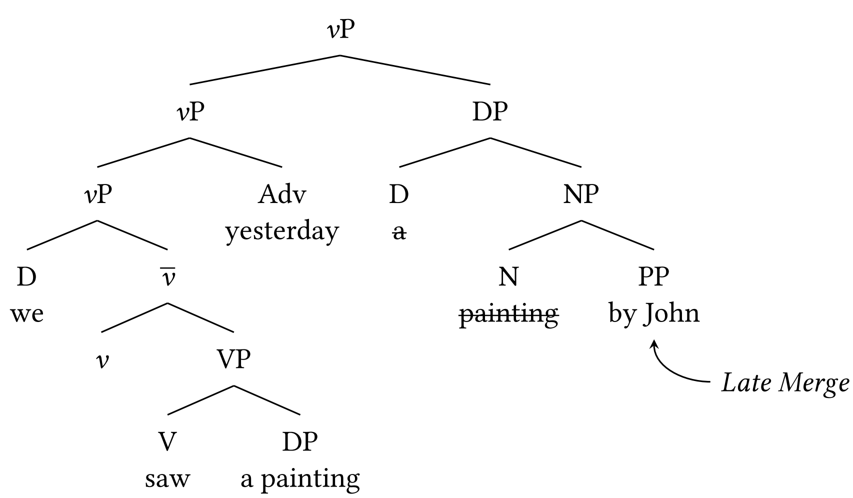
(10) **Step 1: Base structure**



Step 2: QR source DP



Step 3: Late Merge the EC



- ***When is Late Merger possible?***
  - The classical version of Late Merger from Lebeaux (1988) assumes that Late Merger is possible as long as the Projection Principle is satisfied:

    (11) **Projection Principle**
    The subcategorization property of lexical items must be satisfied throughout the derivation.
  - Fox and Nissenbaum instead argue that Late Merger is possible as long as the result is semantically interpretable.
  - The lower copy in adjunct extraposition is interpretable via Trace Conversion. But this is only possible if the NP is not missing its (semantic) argument, as this would cause a type mismatch.

- ***Scope of host DP***
  When an EC is an adjunct, then, the scope of the source DP will be at least as high as the attachment site of EC. This prediction is borne out:

(12) **Target sentences**

a. I looked (very intensely) for anything that would help me with my thesis.

b. *I looked for [anything ___] very intensely [that will/would help me with my thesis].

(13) **Control sentences**

a. I looked for [something ___] very intensely [that will (likely) help me with my thesis].

b. I would buy [anything ___] without making a fuss [that will/would help me with my thesis].

- ***Definiteness***
  Complement extraposition is subject to definiteness restrictions (like ordinary complement extraction is), while adjunct extraposition is not:

(14) **Definiteness restriction on complement extraction**

a. Who did Mary see [a (good) picture of ___]?

b. ??Who did Mary see [the (best) picture of ___]?

(15) **Adjunct extraposition**

a. I saw [the (best) picture ___] yesterday [from the museum].

b. I heard [the same rumor ___] yesterday [that you were spreading].

(16) **Complement extraposition**

a. ??I saw [the (best) picture ___] yesterday [of the museum].

b. ??I heard [the same rumor ___] yesterday [that you were quitting].

- ***Condition C***
  Complement extraposition does not bleed Condition C violations, while adjunct extraposition does:

(17) **Adjunct extraposition**

a. ??I gave **him**$_1$ [an argument that supports **John's**$_1$ theory] yesterday.

b. I gave **him**$_1$ [an argument ___] yesterday [that supports **John's**$_1$ theory].

(18) **Complement extraposition**

a. ??I gave **him**$_1$ [an argument that this sentence supports **John's**$_1$ theory] yesterday.

b. ??I gave **him**$_1$ [an argument ___] yesterday [that this sentence supports **John's**$_1$ theory] .

⇒ ***Covert and overt operations***
If covert and overt operations can be interspersed, there must be a "single-stream" syntax, where LF is not a distinct level of representation.

⇒ ***Extension to ACD***
Fox (2002) develops a theory of ACD based on this system of extraposition.

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