Local Modelling of Non-Local Dependencies in Syntax

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SoSe 2009, Universität Leipzig

April 2009

Non-Local Dependencies

- Syntactic dependencies may be non-local in the sense that they involve two positions in a phrase structure whose correspondence cannot be captured by invoking notions like clause-mate relation or (non-extended) predicate/argument structure.

Core cases:

1. long-distance movement dependencies like wh-movement, topicalization, etc. (the displaced item and its base position can in principle be separated by arbitrarily many intervening clause boundaries)
2. reflexivization (often confined to minimal predicate/argument structures, but may also apply non-locally, without necessarily being amenable to an account in terms of logophoricity)
3. long-distance agreement (Tsez, Itelmen, Hindi, perhaps also Icelandic)
4. control of the subject of an infinitive by an argument belonging to a matrix clause
5. non-local case assignment (not necessarily confined to minimal predicate/argument structures)
6. tense relations (consecution temporum): non-local almost by definition
7. extended neg scope, extended mood selection (e.g., *demand* + subjunctive)
8. binding of pronouns (that are interpreted as variables)

Local Modelling

Movement:

1. successive cyclicity in the case of displacement phenomena (i.e., Comp-to-Comp movement): modelling of a non-local dependency as a (more) local phenomenon in classic transformational grammar
2. SLASH feature percolation (Gazdar (1981); Gazdar et al. (1985)): an even more local treatment of movement dependencies developed by Gerald Gazdar in the framework of GPSG (essentially still maintained in HPSG analyses, as in Pollard & Sag (1994)).
3. recent analyses within the minimalist program (including Chomsky (2004, 2005a,b, 2007)): like SLASH feature percolation approaches in that displacement phenomena involve minimal local movement steps – not only to the edge of a phase (i.e., clause or predicate phrase), but actually to the edge of each XP
4. similar: recent work on gap phrases (Koster (2000), Neeleman & van de Koot (2007)).

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Reflexivization:

1. reflexivization by head movement at LF (e.g., Pica (1987), Cole & Sung (1994)) in principles-and-parameters approaches
2. reflexivization by extremely local movement of abstract pronoun matrices to phase edges (Fischer (2004, 2006)) in the minimalist program
3. reflexivization by feature percolation in HPSG (Kiss (2004))

Goals of the Seminar

Goals:

1. to discuss work on the local modelling of non-local dependencies from different theoretical points of view
2. to discuss advantages and disadvantages of local treatments of non-local dependencies
3. to compare different theoretical approaches.

Hypothesis:

- It may turn out that local analyses of non-local phenomena developed in different kinds of syntactic theories (and spanning the generative/declarative dichotomy) can be shown to not only share identical research questions but also identical research strategies.

Recurring questions:

1. How can asymmetries between different kinds of (basically non-local) dependencies be accounted for (e.g., displacement may often be non-local to a higher degree than reflexivization)?
2. How can asymmetries between different languages with respect to the same kinds of (basically non-local) dependencies be accounted for?

Movement: Possible Analyses

(1) What do you think that Mary bought ?

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[$_{\text{CP}}$ What$_1$ do you think [$_{\text{CP}}$ that Mary bought t$_1$]] ? (anachronistic notation)

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(3) Successive-cyclic Comp-to-Comp movement (e.g., Chomsky (1973, 1977, 1981)):
[$_{\mathrm{CP}}$ What$_1$ do you think [$_{\mathrm{CP}}$ t$_1'$ that Mary bought t$_1$]] ? (anachronistic notation)

Movement: Possible Analyses

(1) What do you think that Mary bought ?

(4) Successive-cyclic movement to phase edges (e.g., Chomsky (2000, 2001), Fox (2000), Nissenbaum (2000), Bruening (2001), Barbiers (2002), many others):
$[_{\mathrm{CP}}$ What$_1$ do you $[_{\mathrm{vP}}$ t$_1'''$ think $[_{\mathrm{CP}}$ t$_1''$ that Mary $[_{\mathrm{vP}}$ t$_1'$ $[_{\mathrm{VP}}$ bought t$_1$]]]]] ?

Movement: Possible Analyses

(1) What do you think that Mary bought ?

(5) Successive-cyclic movement to phrase edges (e.g., Sportiche (1989), Takahashi (1994), Agbayani (1998), Bošković (2002), Boeckx (2003), Müller (2004), Chomsky (2004, 2005b)):
[$_{\text{CP}}$ What$_1$ do [$_{\text{TP}}$ t$_1^{\prime\prime\prime\prime\prime}$ you [$_{\text{vP}}$ t$_1^{\prime\prime\prime\prime\prime}$ [$_{\text{VP}}$ t$_1^{\prime\prime\prime\prime}$ think [$_{\text{CP}}$ t$_1^{\prime\prime\prime}$ that [$_{\text{TP}}$ t$_1^{\prime\prime}$ Mary [$_{\text{vP}}$ t$_1^{\prime}$ [$_{\text{VP}}$ bought t$_1$]]]]]]]] ?

Movement: Possible Analyses

(1) What do you think that Mary bought ?

(6) SLASH feature percolation (e.g., Gazdar (1981, 1982); Gazdar et al. (1985), Pollard & Sag (1994), Levine & Sag (2003b,a), Müller (2007); also Koster (2000), Neeleman & van de Koot (2007)):
[$_{\mathrm{CP}}$ What$_1$ [$_{\mathrm{C'{:}S}}$ do [$_{\mathrm{TP{:}S}}$ you [$_{\mathrm{T'{:}S}}$ T [$_{\mathrm{vP{:}S}}$ t$_{you}$ [$_{\mathrm{v'{:}S}}$ v [$_{\mathrm{VP{:}S}}$ think [$_{\mathrm{CP{:}S}}$ that [$_{\mathrm{TP{:}S}}$ Mary [$_{\mathrm{T'{:}S}}$ T [$_{\mathrm{vP{:}S}}$ t$_{Mary}$ [$_{\mathrm{v'{:}S}}$ v [$_{\mathrm{VP{:}S}}$ bought t$_1$]]]]]]]]]]]] ? (anachronistic notation)

Movement: Possible Analyses

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(2) Unbounded movement (e.g., Ross (1967)):
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(3) Successive-cyclic Comp-to-Comp movement (e.g., Chomsky (1973, 1977, 1981)):
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(4) Successive-cyclic movement to phase edges (e.g., Chomsky (2000, 2001), Fox (2000), Nissenbaum (2000), Bruening (2001), Barbiers (2002), many others):
[$_{\text{CP}}$ What$_1$ do you [$_{\text{vP}}$ t$'''_1$ think [$_{\text{CP}}$ t$''_1$ that Mary [$_{\text{vP}}$ t$'_1$ [$_{\text{VP}}$ bought t$_1$]]]]] ?

(5) Successive-cyclic movement to phrase edges (e.g., Sportiche (1989), Takahashi (1994), Agbayani (1998), Bošković (2002), Boeckx (2003), Müller (2004), Chomsky (2004, 2005b)):
[$_{\text{CP}}$ What$_1$ do [$_{\text{TP}}$ t$'''''_1$ you [$_{\text{vP}}$ t$'''''_1$ [$_{\text{VP}}$ t$''''_1$ think [$_{\text{CP}}$ t$'''_1$ that [$_{\text{TP}}$ t$''_1$ Mary [$_{\text{vP}}$ t$'_1$ [$_{\text{VP}}$ bought t$_1$]]]]]]]] ?

(6) SLASH feature percolation (e.g., Gazdar (1981, 1982); Gazdar et al. (1985), Pollard & Sag (1994), Levine & Sag (2003b,a), Müller (2007); also Koster (2000), Neeleman & van de Koot (2007)):
[$_{\text{CP}}$ What$_1$ [$_{\text{C}'\text{:s}}$ do [$_{\text{TP:s}}$ you [$_{\text{T}'\text{:s}}$ T [$_{\text{vP:s}}$ t$_{\textit{you}}$ [$_{\text{v}'\text{:s}}$ v [$_{\text{VP:s}}$ think [$_{\text{CP:s}}$ that [$_{\text{TP:s}}$ Mary [$_{\text{T}'\text{:s}}$ T [$_{\text{vP:s}}$ t$_{\textit{Mary}}$ [$_{\text{v}'\text{:s}}$ v [$_{\text{VP:s}}$ bought t$_1$]]]]]]]]]]]] ? (anachronistic notation)

Movement in the Minimalist Program

Assumptions:

- Movement is triggered by appropriate features (which have an EPP property, i.e., require a specifier to be created by movement with certain kinds of categories).
- Movement is required to be successive-cyclic because of a constraint like the PIC, which requires local movement to the closest phase edge.
- Movement is permitted to be successive-cyclic because one of the following hypotheses holds:
  1. EPP features are available for intermediate phase heads (Chomsky (2000, 2001), Fanselow & Mahajan (2000), Sabel (2000), McCloskey (2002)).
  2. Intermediate movement steps can violate the prohibition against non-feature driven movement (Last Resort) so as to satisfy a higher-ranked constraint (Phase Balance, in Heck & Müller (2000, 2003)).
  3. Intermediate movement steps are not the result of genuine movement; rather, intermediate traces are inserted into appropriate positions (Chomsky's (1995) Form Chain, Takahashi (1994), Fox (2000), Boeckx (2003)).

(7) Phase Impenetrability Condition (PIC) (Chomsky (2000, 108), Chomsky (2001, 13)): The domain of a head X of a phase XP is not accessible to operations outside XP; only X and its edge are accessible to such operations.

Differences wrt the locality of intermediate movement steps may follow from differences wrt the definition of phases: CP and vP vs., e.g., TP (Richards (2004, 2007)); DP as a possible phase; every XP as a phase.

SLASH Feature Percolation

Motivation of the SLASH feature approach (late 70s):

1. The complexity of classical transformational grammar (Chomsky (1965)) is due not to the base component (context-free phrase structure rules), but rather to the transformational component (transformations map phrase markers to phrase markers).
2. However, transformations seem necessary to model displacement.
3. Therefore, the task is to capture displacement phenomena without transformations: SLASH features.

Gazdar's (1981) Original Approach: Derived Categories

The structure of displacement constructions ('movement' is just a metaphor):

1. (top): landing site of movement
2. (middle): movement path
3. (bottom): base position of movement

(8) Movement dependencies:
$\underbrace{[\text{What...}}_{\text{top}}\ \underbrace{[\text{do you think that Mary bought}}_{\text{middle}}\ \underbrace{[\text{t}]]]}_{\text{bottom}}$

Let V_N be a set of basic category symbols. The set of derived categories $D(V_N)$ is defined as in (9).

(9) Derived categories:
$D(V_N) = \{\alpha/\beta\text{: } \alpha, \beta \in V_N\}$

- Suppose that S and NP are the only kinds of categories.
- Then there are four derived categories:
  NP/NP, NP/S, S/NP, S/S.
- What follows the basic category has become known as the SLASH feature. The SLASH feature signals that something is missing (and what).

Derived Context-Free Phrase Structure Rules

G is the set of base rules. For each syntactic category β, there is a subset of the set of non-terminal symbols V_N whose members can dominate β according to the rules in G. This set is called V_β ($V_\beta \subseteq V_N$). Then, for each category β ($\beta \in V_N$), a finite set of derived rules D(β,G) can be defined.

(10) Derived Rule Schema (also cf. 'Slash Introduction Metarule' in Gazdar et al. (1985))):
D(β,G) = $\{[_{\alpha/\beta}\ \sigma_1 \ldots \sigma_i/\beta \ldots \sigma_n]$: $[_\alpha\ \sigma_1 \ldots \sigma_i \ldots \sigma_n] \in$ G & $1 \leq i \leq n$ & $\alpha, \sigma_i \in V_\beta$.

Note:
Node admissibility conditions replace phrase structure rules here; this is not really important.

(11) a. Phrase structure rule:
S $\rightarrow$ NP VP
b. Node admissibility condition:
[$_{\text{S}}$ NP VP]

Rules

(12) G =

a. {[S NP VP],
b. [$_{\mathrm{VP}}$ V VP′],
c. [$_{\mathrm{VP}}$ V NP],
d. [$_{\mathrm{PP}}$ P NP],
e. [$_{\mathrm{S'}}$ that S],
f. [$_{\mathrm{VP}}$ V S′],
g. [$_{\mathrm{VP'}}$ to VP],
h. [$_{\mathrm{VP}}$ V NP PP],
i. [$_{\mathrm{NP}}$ NP PP] }

(13) D(NP,G) =

a. {[S/NP NP/NP VP], [$_{\mathrm{S/NP}}$ NP VP/NP],
b. [$_{\mathrm{VP/NP}}$ V VP′/NP],
c. [$_{\mathrm{VP/NP}}$ V NP/NP],
d. [$_{\mathrm{PP/NP}}$ P NP/NP],
e. [$_{\mathrm{S'/NP}}$ that S/NP],
f. [$_{\mathrm{VP/NP}}$ V S′/NP],
g. [$_{\mathrm{VP'/NP}}$ to VP/NP],
h. [$_{\mathrm{VP/NP}}$ V NP/NP PP], [$_{\mathrm{VP/NP}}$ V NP PP/NP],
i. [$_{\mathrm{NP/NP}}$ NP/NP PP], [$_{\mathrm{NP/NP}}$ NP PP/NP] }

(14) D(PP,G) =

a. {[S/PP NP/PP VP], [$_{\mathrm{S/PP}}$ NP VP/PP],
b. [$_{\mathrm{VP/PP}}$ V VP′/PP],
c. [$_{\mathrm{VP/PP}}$ V NP/PP],
d. [$_{\mathrm{PP/PP}}$ P NP/PP],
e. [$_{\mathrm{S'/PP}}$ that S/PP],
f. [$_{\mathrm{VP/PP}}$ V S′/PP],
g. [$_{\mathrm{VP'/PP}}$ to VP/PP],
h. [$_{\mathrm{VP/PP}}$ V NP/PP PP], [$_{\mathrm{VP/PP}}$ V NP PP/PP],
i. [$_{\mathrm{NP/PP}}$ NP/PP PP], [$_{\mathrm{NP/PP}}$ NP PP/PP] }

Top, Middle, Bottom

Derived rules regulate the percolation of SLASH features in the middle. In addition, rules are needed for the top and for the bottom of displacement constructions. These latter rules are non-derived rules.

(15) Bottom ('SLASH Termination'):
<4, [$_{\alpha/\alpha}$ t], h$_\alpha$> (t = trace; h = denotation of trace)

(16) Features for clausal categories:

a. [±C(omplement], [±R(elative)], [±Q(interrogative)]
b. S = [–C,–R,–Q]
c. S′ = [±C,–R,–Q]
d. R = [+C,+R,–Q] (relative clause)
e. Q$_1$ = [–C,–R,+Q] (root interrogative)
f. Q$_2$ = [+C,–R,+Q] (embedded interrogative)

(17) Relative clause rule:
<5, [$_{\text{NP}}$ NP R], λR[NP′](R′)>

(18) Top (for relative clauses):

a. <6, [R (NP$_{[\pm\text{wh},+\text{pro}]}$) S/NP], (...)>
b. <7, [R PP$_{[+\text{wh},+\text{pro}]}$) S/PP], (...)>

Example and Constraints

(19) Movement of an object pronoun:
[$_{\mathrm{NP}}$ [$_{\mathrm{NP}}$ the man] [$_{\mathrm{R}}$ [$_{\mathrm{NP}}$ that$_{[-wh,+pro]}$ [$_{\mathrm{S/NP}}$ [$_{\mathrm{NP}}$ Fido] [$_{\mathrm{VP/NP}}$ [$_{\mathrm{V}}$ chased] [$_{\mathrm{NP/NP}}$ t]]]]]]

Constraints can be encoded as restrictions on derived category formation.

(20) A-over-A Principle (Chomsky (1964)):
In a structure ... [$_{\mathrm{A}}$ ... [$_{\mathrm{A}}$ ...] ...] ..., an operation can only affect the higher, more inclusive category A.

(21) a. [$_{\mathrm{DP}_1}$ My letter to [$_{\mathrm{DP}_2}$ a friend in Italy]] got lost
b. *[$_{\mathrm{DP}_2}$ Who] did [$_{\mathrm{DP}_1}$ my letter to t_2] get lost ?

(22) A-over-A Principle (Gazdar (1981)):
$\alpha \neq \beta$ in (23) (= (10)).

(23) Derived rules:
$D(\beta,G) = \{[_{\alpha/\beta}\ \sigma_1 \ldots \sigma_i/\beta \ldots \sigma_n]: [_{\alpha}\ \sigma_1 \ldots \sigma_i \ldots \sigma_n] \in G \ \&\ 1 \leq i \leq n \ \&\ \alpha, \sigma_i \in V_\beta$.

Uniform vs. Punctuated Movement Paths

Conclusion:
For standard movement dependencies (i.e., ignoring complications like parasitic gaps and ATB-extraction), current minimalist approaches that envisage movement to all intervening XP edges turn out to be very similar to SLASH feature percolation approaches.

(24) A basic difference: uniform vs. punctuated movement paths (Abels (2003, 2008))

	uniform path	punctuated path
unbounded movement	±	–
comp-to-comp movement	–	+
movement to designated phase edges	–	+
movement to all XP edges	+	–
movement by SLASH feature percolation	+	–

Two kinds of evidence:

- reflexes of successive-cyclic movement
- reflexivization and movement

Reflexes of Successive-Cyclic Movement

Standard assumptions:

- There are reflexes of movement (morphological or other).
- These reflexes show up in designated positions and thus support theories based on punctuated paths.

Some reflexes of movement:

- choice of complementizer in Modern Irish (see McCloskey (1979))
- *wh*-agreement in Chamorro (see Chung (1994))
- partial *wh*-movement in Ancash Quechua (see Cole (1982)), Iraqi Arabic (see Wahba (1982)), and German (if the *wh*-scope marker *was* is actually the realization of a moved *wh*-feature; see Cheng (2000), Sabel (2000))
- obligatory V-to-C raising with (certain types of) *wh*-phrases in Spanish (see Torrego (1984), Baković (1998)) and Basque (see Ortiz de Urbina (1989))
- selection of subject pronouns in Ewe (see Collins (1993, 1994))
- tonal downstep in Kikuyu (see Clements, McCloskey, Maling & Zaenen (1983))
- *meN* deletion in colloquial Singapore Malay (see Cole & Hermon (2000))
- *wh*-copying in German (see Fanselow & Mahajan (2000))
- obligatory CP extraposition in German (see Müller (1998))
- stranding in Dutch (see Barbiers (2002))

Reflexes of Successive-Cyclic Movement: Ewe

However:
It is not always clear that the reflex of movement can be tied to standard phase edges. For instance, movement in Ewe affects SpecT (i.e., the TP domain): Optionally, a different form of subject pronoun can be chosen if movement to SpecC takes place (see Collins (1993, 1994)).

(25) Focus movement and subject pronoun choice in Ewe:

Kofi$_1$ e me gble [$_{\mathrm{CP}}$ t$'_1$ be [$_{\mathrm{TP}}$ é/wo fo t$_1$]]
Kofi FOC I said that he hit

'It was Kofi that I said that he hit.'

(26) Subject pronoun choice without focus movement in Ewe:

a. Kofi$_1$ e me gble na t$_1$ [$_{\mathrm{CP}}$ be é fo Kosi]
Kofi FOC I said to that he hit Kosi
'It was Kofi that I told that he hit Kosi.'

b. *Kofi$_1$ e me gble na t$_1$ [$_{\mathrm{CP}}$ be wo fo Kosi]
Kofi FOC I said to that he hit Kosi
'It was Kofi that I told that he hit Kosi.'

Consequence: It is unclear whether reflexes of movement can be taken to argue for punctuated paths.

Pit-Stop Reflexives 1

(27) Pit-stop reflexive (Barss (1986)):

a. *Jane believes (that) John$_1$ thinks (that) she likes some pictures of himself$_1$

b. Which pictures of himself$_1$ does Jane believe (that) John$_1$ thinks □ (that) she likes?

c. *Mary told John$_1$ that she liked these pictures of himself$_1$

d. Which pictures of himself$_1$ did Mary tell John$_1$ □ that she liked?

Consequences:

1. Reflexivization must be possible in intermediate positions.
2. The examples in (27) cannot yet decide between a punctuated and a uniform approach (the latter can postulate the relevant information in SpecC).

Pit-Stop Reflexives 2

Claim (Abels (2003, 2008)):
There is an argument for punctuated paths on the basis of raising constructions.

(28) Pit-stop reflexive with a seem experiencer:

a. [Which pictures of himself]$_1$ did it seem to John [$_{\text{CP}}$ □ that Mary liked t$_1$] ?
b. *[Which pictures of himself]$_1$ did Mary$_2$ seem to John [$_{\text{TP}}$ (□) t$_2$ to like t$_1$] ?

Assumption:
Raising infinitives are TPs (not CPs).

Argument:

1. Uniform approach: Reflexivization should be possible via the □ position (SpecT, or TP[SLASH:NP]) in (28-b).
2. Punctuated approach: Reflexivization should be impossible in (28-b) if SpecT is not a landing site for successive-cyclic movement (e.g., if it is not a phase edge).
3. (28-b) is ungrammatical, which supports a punctuated approach.

Pit-Stop Reflexives 3

(28) Pit-stop reflexive with a seem experiencer:

a. [Which pictures of himself]$_1$ did it seem to John [$_{\text{CP}}$ □ that Mary liked t_1] ?
b. *[Which pictures of himself]$_1$ did Mary$_2$ seem to John [$_{\text{TP}}$ (□) t_2 to like t_1] ?

However:

1. When which picture of himself in (28-b) moves to SpecT (in a uniform approach), the intervening subject Mary is still present.
2. Mary is also still present when the intended antecedent John is merged.
3. Therefore, Mary will intervene, and block binding of the reflexive by John (as a closer potential antecedent) even if which picture of himself moves to SpecT (or TP has the appropriate SLASH feature), given either m-command or tucking-in after wh-movement to SpecT.
4. It is unlikely that there can be a subsequent step in the derivation where Mary ceases to be an intervener and permits binding of the reflexive by John.

Consequence: It is unclear whether pit-stop reflexives can be taken to argue for punctuated paths.

Pit-Stop Reflexives 4

A further problem:

(29) a. Which pictures of himself$_1$ does Jane believe (that) John$_1$ thinks [$_{\mathrm{CP}}$ □ (that) she likes t] ?
b. *Which pictures of himself$_1$ did Mary$_2$ seem to John$_1$ [$_{\mathrm{TP}}$ □ t$_2$ to like t] ?
c. *Which pictures of himself$_1$ did Mary$_2$ seem to Jane$_3$ [$_{\mathrm{TP}}$ t$_2$ to have told John$_1$ [$_{\mathrm{CP}}$ □ that she likes t]] ?

A second problem with Abels's (2003) argument for designated phases can be found in Boeckx & Grohmann (2007), Boeckx (2008) (also see Abels & Bentzen (2008)): Sentences like (29-c) also lack the enrichment of binding options by movement to intermediate positions although the most deeply embedded clause is a CP, and movement to the □ position of this CP domain should suffice for creating the new binding option. This would seem to suggest that the correct generalization is that an intervening experiencer blocks the enrichment of binding options, quite independently of the nature of the landing site involved.

Reflexivization: State of the art

Standard approach (Pollard & Sag (1992), Reinhart & Reuland (1993)):

1. Standard instances of reflexivization are inherently local (confined to minimal predicate/argument structures)
2. Non-local reflexivization involves exempt anaphors that are governed by concepts like logophoricity (Sells (1987)).

Problems with the standard approach:

- A uniform concept of reflexive ('anaphor') becomes unavailable. (Plus, reflexivity cannot be defined without recourse to reflexives.)
- It becomes difficult to capture cross-linguistic variation.
- Cross-linguistic evidence involving psych verbs cannot easily be accounted for.
- There are cases of long-distance reflexivization where logophoricity does not seem to be involved.

Conclusion:

- Reflexivization can involve a non-local dependency.
- Accordingly, local approaches to (non-local) reflexivization can and have been pursued, in both generative (derivational) and declarative (representational) approaches to syntax: Fischer (2004, 2006), Kiss (2004))

Basic Assumptions in Fischer's (2006) Approach

- The analysis relies on a minimalist derivational approach (Merge/Move) that envisages local (phase-based) optimization procedures.
- The PIC holds; all phrases are phases.
- Binding involves feature checking.
- The derivation starts out with abstract pronominal matrices; how the pronominal feature matrix is realized is determined by moving the matrix from its base position to the domain of its antecedent and deleting features in the course of doing so.
- Feature deletion is brought about by a set of ranked principle A constraints interacting with faithfulness constraints that block feature deletion in pronominal matrices.
- Cross-linguistic variation can be traced back to the relative interleaving of the two (internally fixed) hiearchies of constraints.

(30) a. Principle A_{Δ}:
If x_{β} is not checked in Δ, x must be minimally anaphoric.

b. Hierarchy of principle A constraints:
$Pr.A_{ID} \gg Pr.A_{FD} \gg Pr.A_{SD} \gg Pr.A_{CD} \gg Pr.A_{ThD} \gg Pr.A_{XP}$

c. Faithfulness constraints:
$\textsc{Faith}_{[pron]} \gg \textsc{Faith}_{[se]} \gg \textsc{Faith}_{[self]}$

d. Morphological realization: A checked $x_{[\beta]}$ is realized maximally anaphorically (in its base position).

Sample Derivations

(31) German:

a. dass Fritz$_1$ *ihn$_1$/sich$_1$/sich selbst$_1$ mag
that Fritz PRON/SE/SELF likes

dass Fritz$_1$ denkt [$_{CP}$ dass Maria ihn$_1$/*sich$_1$/*sich selbst$_1$ mag]
that Fritz thinks that Maria PRON/SE/SELF likes

(32) a. Initial pronominal matrix: x_β:[SELF, SE, PRON]

b. Ranking for German
$\textsc{Faith}_{[pron]} \gg \text{Pr.A}_{ID/FD/SD} \gg \textsc{Faith}_{[se]} \gg (\text{Pr.A}_{ThD} \gg \text{Pr.A}_{XP}) \circ \textsc{Faith}_{[self]}$

c. x_β:[SELF, SE, PRON] moves from phrase to phrase until it reaches its antecedent (trigger: Phase Balance, s.a.)

d. In the very first domain (VP), the derivation is split into two parts: Pr.A_{XP} forces [SELF] deletion (leaving only [SE, PRON]); $\textsc{Faith}_{[self]}$ blocks [SELF] deletion.

e. If x_β finds a sufficiently local antecedent (e.g., in Specv), its anaphoric features remain intact, and it is realized accordingly (maximally anaphorically).

f. If x_β must continue to move up the tree, it successively loses the anaphoric features of its matrix until it finally reaches its antecedent and can be checked.

Basic Assumptions in Kiss' (2004) Approach

(33) Principle A:
Full syntactic expressions are d-resolved.

(34) R-Drop:
An R-dependency remains a morphological phenomenon: Reflexivity is not realized syntactically.

(35) R2R (Reflexive to Reflexive):
An R-dependency is syntactically realized as an R-dependency (no resolution necessary).

(36) R2D (Reflexive to Dependent):
An R-dependency is syntactically realized as a D-dependency (resolution necessary).

(37) Features:

a. R(1): morphologically encoded reflexivity related to index 1
b. D(1): syntactically encoded reflexivity related to index 1
c. [±subj]: the highest argument of a predicate has/has not been realized
d. [±cpl]: complete/incomplete predicate.

Sample Derivations

(38) Principles of Non-local Resolution:
   a. If a daughter of a phrase Y bears D(1), the index of the other daughter is 1.
   b. If D(1) is not resolved by identification with the index of the other daughter, D(1) is projected to Y.

(39) R2D (Reflexive to Dependent):
   Y bears D(1) if X is [+cpl], and Y bears R(1) in all other cases.

(40) German:
   a. dass Fritz$_1$ sich$_1$ mag
      that Fritz himself likes
   b. dass Fritz$_1$ $[_{\mathrm{VP[+subj,D(1)]}}$ $[_{\mathrm{NP[R(1)]}}$ ein Bild $[_{\mathrm{PP[R(1)]}}$ von sich$_1$]
      that Fritz a picture of himself
      $[_{\mathrm{V[+cpl]}}$ betrachtete]]]
      studied

Conclusion:
In both Fischer's (2006) and Kiss' (2004) analyses, reflexivization may invovle the passing on of relevant binding information in syntactic trees. A local modelling of (potentially) non-local anaphoric dependencies is involved.

Long-Distance Agreement

Long-distance agreement (LDA):
A matrix verb agrees with the argument of an embedded clause with respect to ϕ-features (person, number, gender).

Problem:

- Agreement relations are typically highly local (they take place within the minimal clause).
- However, at least at first sight, in cases of long-distance agreement, the two items are in different domains; in particular, they are in different phases (Chomsky (2000, 2001)).
- This raises problems for theoretical accounts of long-distance agreement phenomena, and may require a local modelling of a non-local dependency.

LDA: Data 1

(41) Hindi

Vivek-ne [kitaab paṛh-nii] chaah-ii
Vivek-ERG book.**f** read-INF.**f** want-PFV.**f.sg**
'Vivek wanted to read the book.' (Bhatt (2005))

(42) Kashmiri

Raam-an che hameeSI yatshImatsI [panInis necivis khAAtrI koori
Ram-ERG be.PRS.F always wanted.**f.pl** self.DAT son.DAT for **girls**
vuchini]
see-INF.**f.pl**
'Ram has always wanted to see girls for his son.' (Bhatt (2005))

(43) Tsez

eni-r [už-ā Magalu b-āc'-ru-łi] b-iy-xo
mother-DAT boy-ERG bread.**III**.ABS **III**-eat-PSTPRT-NMLZ **III**-know-PRS
'The mother knows the boy ate the bread.' (Polinsky & Potsdam (2001))

(44) Kutchi Gujarati

Valji-ne [chopri vanch-vi] par-i
Valji.M-DAT book.**f** read-INF.**f** have.to-PFV.**f**
'Valji had to read the book.' (Grosz & Patel (2006))

LDA: Data 2

(45) Khwarshi

išet'u-l y-iq'-še [goli uža bataxu y-acc-u]
mother/OBL-LAT **G5**-know-PRS COP boy/ERG bread(**G5**) **G5**-eat-PTCP:PST
'Mother knows that the boy ate bread.' (Khalilova (2007))

(46) Chukchee

ənan qəlɣilu ləŋərkə-nin-et [iŋqun Ø-rətəm'ŋəv-nen-at qora-t]
he-INST regrets-**3-pl** that 3SG-lost-**3-pl** reindeer.**pl**.NOM
'He regrets that he lost the reindeers.' (Bošković (2007))

Observation:
In all these cases, the embedded V also has to agree with whatever the matrix V agrees with.

Analyses of LDA

Analyses of long-distance agreement (in phase-based or similar models that postulate local domains for syntactic operations):

1. Long-distance agreement is real; but the operation (unlike other syntactic operations) may violate standard locality restrictions (Stjepanović & Takahashi (2001), Sells (2006), Bošković (2007)).
2. Long-distance agreement only affects two items if they are fairly local (phase-mates) after all (Bhatt (2005), Boeckx (2004)).
3. Long-distance agreement involves movement into the higher local domain (phase) (Polinsky & Potsdam (2001), Polinsky (2003), Chandra (2005)).
4. Long-distance agreement involves cyclic Agree (Butt (1995), Chomsky (2001), Legate (2005)).

Analysis 2: Long-Distance Agreement is Local After All

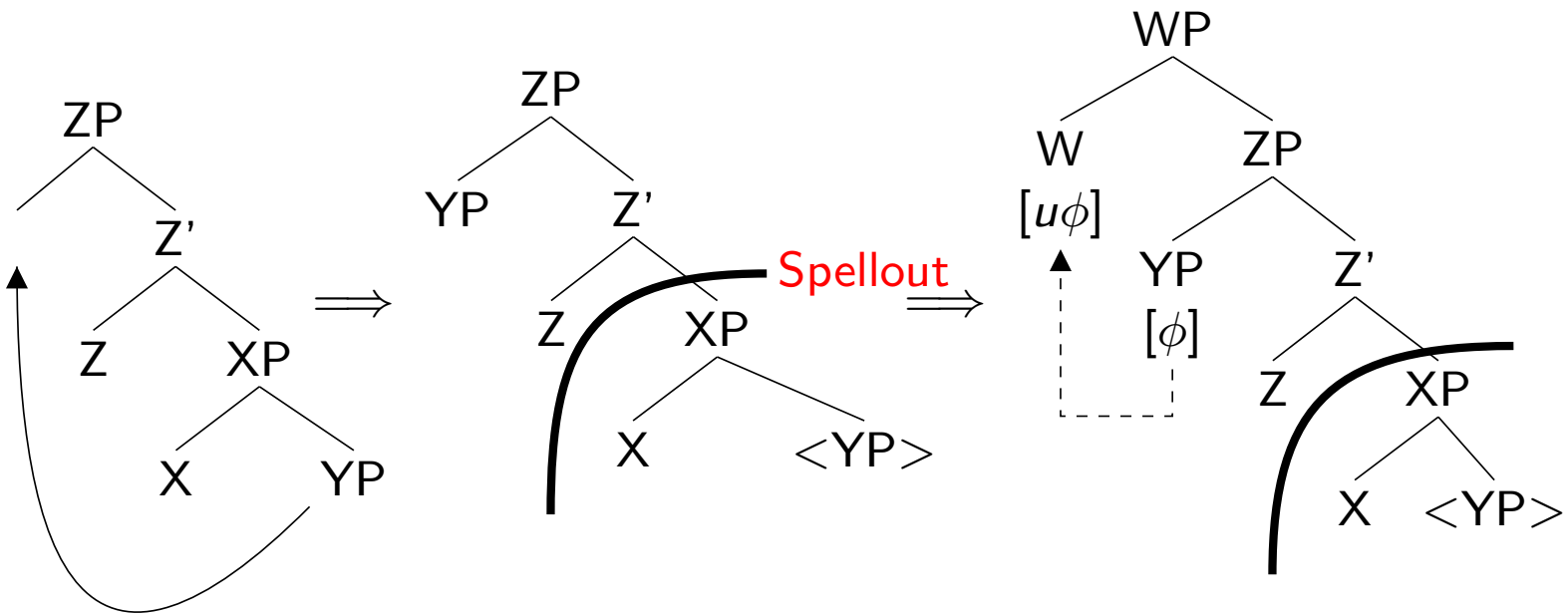
Assumption:
Matrix V and DP are part of the same phase; there is either very little phrase structure involved (Boeckx (2004)), or phases are somewhat bigger than normally assumed (Bhatt (2005)): LDA only affects restructuring ('coherent') infinitives.

(47) a. $[_{\text{ZP}}$ Z[uϕ] $[_{\text{XP}}$ X YP[ϕ]]] $\Longrightarrow$
b. $[_{\text{ZP}}$ Z[ϕ] $[_{\text{XP}}$ X YP[ϕ]]]

Analysis 3: Long-Distance Agreement by Movement to Higher Phase

Assumption (Polinsky & Potsdam (2001), Polinsky (2003), Chandra (2005))):
DP moves to the left edge of the embedded phase (possibly higher) and thereby reaches the matrix V's local domain. Possible triggers: case requirements or semantic/information-structure related reasons (topic interpretatian). (Also see Alexiadou & Anagnostopoulou (1999, 2002) on raising and long-distance agreement in Modern Greek.)

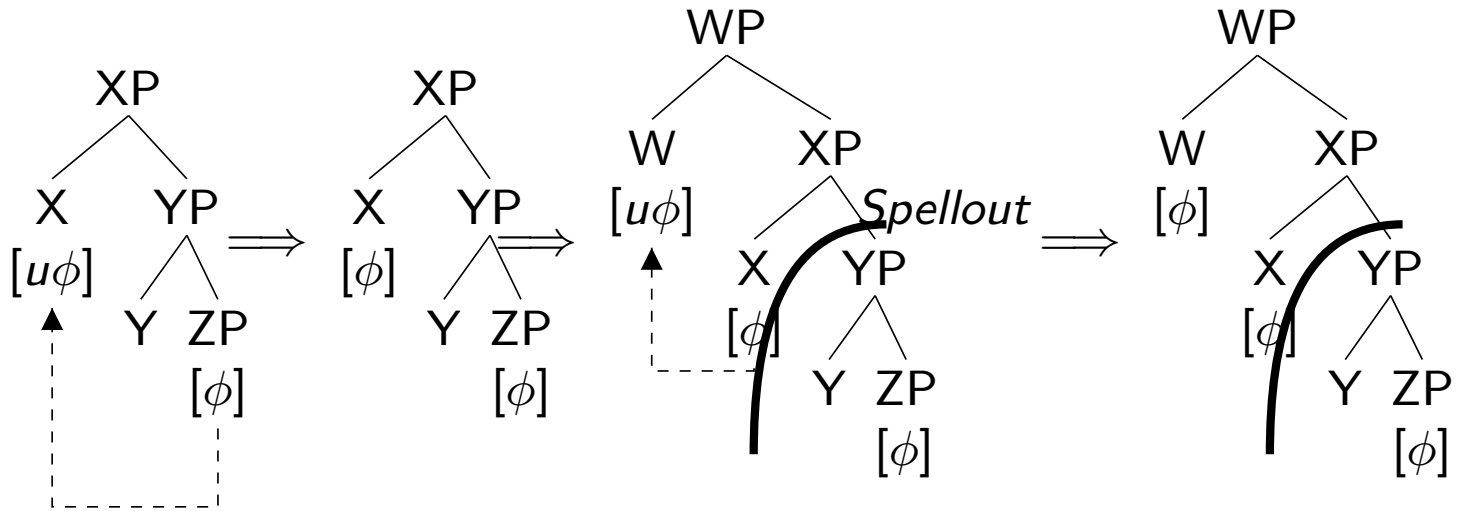
(48)



Analysis 4: Long-Distance Agreement by Cyclic Agree

Assumption (Legate (2005), Keine (2008)):
At no stage of the derivation is there an Agree relation between matrix V and the embedded DP. Rather, the DP's ϕ features first valuate $[u\phi]$ of a phase head, which by definition (PIC) is also part of the higher phase. Matrix V then probes the embedded phase head's ϕ features.

(49)



Possible problem:
One and the same set of ϕ features (on embedded T) must act as a probe in one case, and as a goal in another.

Long-Distance Agreement: Conclusion

Conclusion:

1. In analysis 1, LDA is real (but mysterious).
2. In analysis 2, LDA does not exist.
3. In analysis 3, LDA does not exist (it is a side effect of movement).
4. In analysis 4, LDA does not exist (it has the same status as, e.g., (50), under an indirect wh-dependency approach, as in Dayal (1994)).

(50) Indirect wh-dependency of German wh-scope marking:

Was glaubst du [$_{\text{CP}}$ wen wir t einladen sollen] ?
what believe you whom we invite should

Alternative analysis 5:
Local percolation of agreement information in LDA.

Global Case Assignment 1

(51) Silverstein Hierarchy:

a. Person scale: 1 $\succ$ 2 $\succ$ 3
b. Animacy scale: human $\succ$ animate $\succ$ inanimate
c. Definiteness scale: pronou $\succ$ proper name $\succ$ definite $\succ$ indef. specific $\succ$ non-specific

Silverstein (1976): Local vs. global case splits

(52) Differential object marking in Modern Hebrew as a local case split:

a. Ha-seret her?a ?et-ha-milxama
the-movie showed acc-the-war
b. Ha-seret her?a (*?et)-milxama
the-movie showed (acc-)a-war

Global Case Assignment 2

(53) Global case split in Yurok:

a. ke?l nek ki newoh-pa?
2.sg.nom 1.sg.nom fut see-2>1sg
'You will see me.'

b. yo? nek-ac ki newoh-pe?n
3.sg.nom 1.sg.obj fut see-3sg>1sg
'He will see me.'

Assumption: the person hierarchy is $1/2 \succ 3$.
Observation: The split is on the internal argument, which bears accusative case if it is higher on the person hierarchy than the external argument.

Global Case Assignment 3

(54) Global case split in Tauya:

a. ʔw fenaʔa*(-ni) fanu yau-e-ʔa
dem woman-erg man 3s.o-see-1s.a-ind
'I saw the man.'

b. ʔw fenaʔa/*-ni pai yau-e-ʔa
dem woman-erg man 3s.o-see-1s.a-ind
'I saw the pig.'

Assumption: the relevant hierarchy is animate $\succ$ inanimate
Observation: The split is on the external argument, which bears ergative case if it is lower on the animacy hierarchy than the internal argument.

Global Case Assignment 4

Problems for a local approach to case assignment:

- Look-ahead: The case of an internal argument depends on properties of the external argument. However, the external argument is not yet part of the structure when case for the internal argument is assigned.
- Backtracking (violation of strict cyclicity): The internal argument does nto get its case before the external argument is merged.
- Communication: With both kinds of global splits, how can the head that assigns the case features to the external or internal argument know about the remaining argument's properties?

Refs.: Aissen (1999), de Hoop & Malchukov (2008), Béjar & Řezáč (2009), Keine (2009), Georgi (2009).

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