PHRASAL COMPARATIVES AND PARASITIC SCOPE

Topics & Goals

- A restriction on phrasal comparatives (PCs)
- Homologies between PCs and reflexivization: evidence for base generation
- Conflicting evidence: arguments for reduction

1. BACKGROUND: PHRASAL COMPARATIVES

Comparatives express an asymmetric ordering between two degrees:

(1) a. John is more corrupt than he is alleged to be.
b. *The degree of John's corruptness exceeds the degree of John's alleged corruptness.*
c. John is more corrupt [*than*-XP than he is alleged to be <d-corrupt>]
degree head — *gradable property*; *degree/comparative complement*; *Comparative Deletion*

In *phrasal comparatives* (PCs), the standard marker *than* precedes a single nominal remnant:

(2) a. John is taller [*than*-XP than Bill is]. (clausal comparative)
b. John is taller [*than*-XP than Bill]. (phrasal comparative)

(3) a. John sent Bill more letters than Sally sent Mary.
b. John sent Bill more letters than Sally did Mary. (Pseudogapping)
c. John sent Bill more letters than Sally Mary. (Gapping)
d. John sent Bill more letters than Sally did (VP-ellipsis)
e. John sent Bill more letters than Sally. (Gapping/Stripping ⇨ PC)

(4) a. ***Reduction Analysis*** (RA; Bresnan 1973; Lechner 2004; Merchant 2009; i.a.)
PCs are the result of syntactic ellipsis operations (Gapping, Stripping, etc...).
b. ***Direct Analysis*** (DA; Hankamer 1973; Napoli 1980; Hoeksema 1983; Kennedy 1999; i.a.)
The degree complement does not embed unpronounced structure (base generated PP).

1.1. REDUCTION ANALYSIS OF PCS

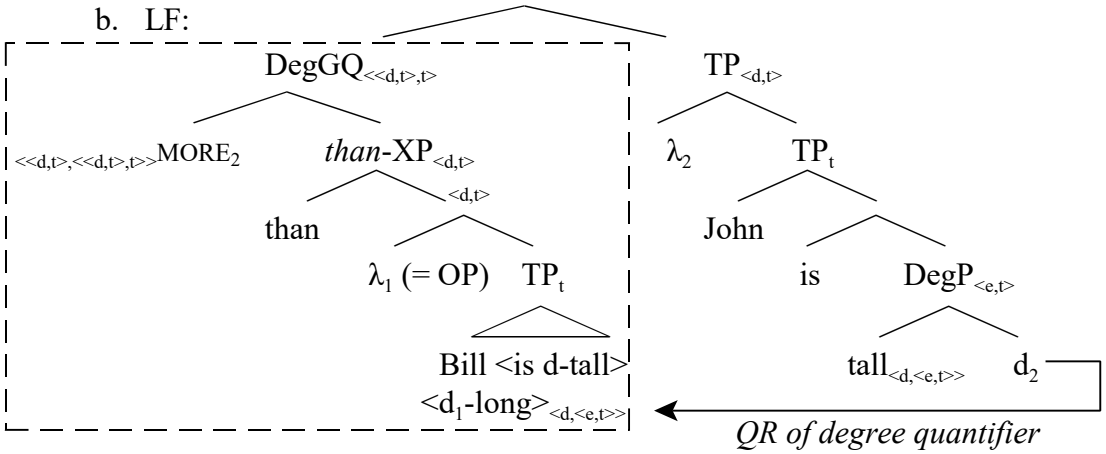
Generalized Quantifier analysis of comparatives (Gawron 1995; Heim 2000; Hackl 2000; i.a.). The standard denotes a derived degree predicate (empty operator movement; Chomsky 1976):

(5) *2-place version of MORE*
$[\![\textbf{MORE}_2]\!] = \lambda D_{<d,t>}\lambda D'_{<d,t>}.\max(D') \succ \max(D)$ [Heim 2000]

(6) a. $\max =_{def} \lambda D.\iota d[D(d) \wedge \forall d'[D(d') \rightarrow d' \leq d]]$
b. $[\![\textbf{long}]\!] = \lambda d\lambda x.\textsc{Length}(x) \geq d$ (short: $\lambda d\lambda x.x$ is d-tall)

(7) a. John is taller than Bill <is d-tall>.

b. LF:



c. ⟦MORE$_2$⟧ (⟦**(than) λ_1 the door is d_1-long**⟧) (⟦**λ_2 the table is d_2-long**⟧) =

d. ɪd.the table is d-long ≻ ɪd.the door is d-long

Two types of PCs: MEASURE PHRASES denote sets of degrees (Schwarzschild 2006). The degree quantifier analysis treats PCs with *explicit* standards (*than 6 feet*) as base generated:

(8) a. John is taller than 6 feet.
b. LF: [[MORE$_2$ [$_{<d,t>}$ 6 feet]] [λ_2 John is d_2-tall]]

1.2. DIRECT ANALYSIS OF PCS

On the Direct Analysis, *than* precedes as single REMNANT. Type polymorphic MORE$_3$ denotes a 3-place relation (Heim 1985; Kennedy 1999; Reinhart 1991; Bhatt & Takahashi 2011):

(9) *3-place version of MORE* [Bhatt & Takahashi 2011]
⟦**MORE$_3$**⟧ = $\lambda x \lambda A_{<d,<e,t>>} \lambda y.\max(\lambda d.A(d)(y)) \succ \max(\lambda d.A(d)(x))$

Surface, *in-situ* analysis for predicative comparatives:

(10) a. Sam$_{correlate}$ is taller than Bill$_{remnant}$
b. ⟦**MORE$_3$**⟧ (⟦**Bill**⟧) (⟦**tall**⟧) (⟦**Sam**⟧) =
c. ɪd.Sam is d-tall ≻ ɪd.Bill is d-tall

Attributive PCs involve Parasitic Scope (Bhatt & Takahashi 2007, 2011; Kennedy 2009):

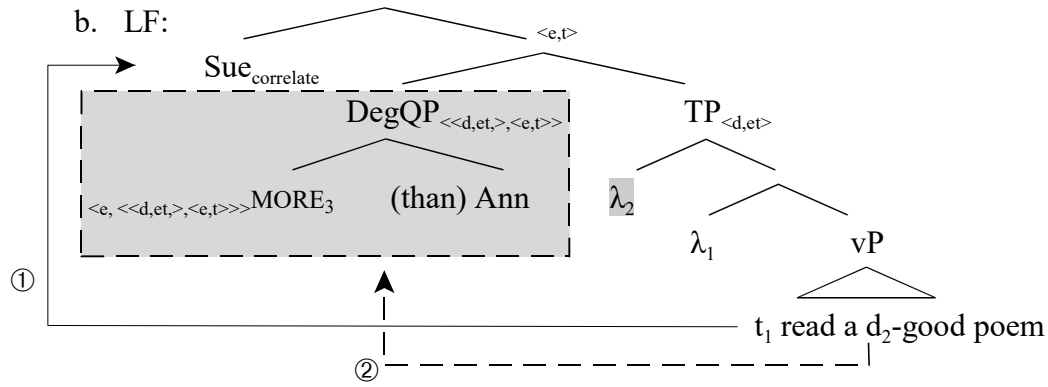
(11) ***Parastic Scope derivation of attributive PCs***

a. ① Move correlate *Sue*. Attach binder index to sister node of moved category

b. ② Move Degree-Quantifier (*[MORE$_3$ than Ann]*) inbetween *Sue* and its binder index ('tucking in'; Richards 1997; see Nissenbaum 1998; Barker 2007 on parasitic gaps)

(12) a. Sue$_{correlate}$ read a better poem than Ann$_{remnant}$.

b. LF:



c. ⟦**MORE$_3$**⟧ (⟦**(than) Ann**⟧) (⟦**λ_2 λ_1 t_1 read a d_2-good poem**⟧) (⟦**Sue**⟧) =
d. ɪd.Sue read a d-good poem ≻ ɪd.Ann read a d-good poem

Diagnostics which have been used to adjudicate between RA and DA include case matching, anaphor licensing, extraction, disjoint reference effects, single remnant condition, scope w.r.t. intensional operators and Russell sentences (surveyed in Lechner, to appear).

Typology of PCs (Bhatt & Takahashi 2011; Beck et al. 2004, 2009; Pancheva 2007; Kennedy 2009; Merchant 2009; Hofstetter 2009; Shimoyama 2012; Sudo 2014; Wunderlich 2001; a.m.o.)

(13) a. *RA-languages* (English, German): all PCs are derived by reduction.
b. *DA-languages* (Hindi-Urdu, Turkish, Korean): all PCs are base generated.
c. *RA/DA-languages* (Russian, Polish, Serbo-Croation, Greek, Hungarian) employ both strategies of PC-formation, often distinguished by shape of standard marker.
d. *PC-only languages* (Japanese, Mandarin) lack clausal comparatives all together

(14) *Table 1: Cross-linguistic distribution of $MORE_2$ vs. $MORE_3$*

	Ellipsis	*Principle C*	*Scope of QP*	*Multiple remnants*	***PCs derived by***
English	✓ ⇒ RA	RA	RA	✓⇒ RA	RA
Hindi-Urdu	* ⇒ DA	DA	DA	* ⇒ DA	DA
Greek	✓ ⇒ RA	?	?	✓$_{ap'oti}$ /*$_{apo}$	RA/DA
Japanese	✓⇒ RA	DA	DA	✓ ⇒ RA	RA/DA

2. A RESTRICTION ON PHRASAL COMPARATIVES

Pancheva (2009) observes a curious syntactic restriction on PCs in Slavic:

(15) ***Subject Restriction***
"In the Slavic languages, a *more-NP* cannot be an underlying subject (an external argument) in phrasal comparatives." [Pancheva 2009: (1)]

(16) *$SUB_{[COMP]}$ - $DO_{correlate}$ (Polish)* [Pancheva 2006: (6)]
a. ??/*Więcej uczniów zwiedziło Czechy *od* Słowacji. (DA)
more students visited Czech R. $THAN_1$ Slovakia$_{GEN}$
'More students visited the Czech Republic than Slovakia.'
b. Marek zwiedził więcej miejsc *od* Anny. (DA)
Marek visited more places $THAN_1$ Anna$_{GEN}$
'Marek visited more places than Anna.'

Two types of PCs: Polish, like Russian and Serbo/Croation, distinguishes between two versions of PCs: base generated PCs ((16)a [= (17)a]/(16)b) and PCs derived by ellipsis ((17)b). Only base generated PCs are affected by the subject restriction:

(17) *$SUB_{[COMP]}$ - $DO_{correlate}$ (Polish)* [ibid. (7c)]
a. ??/*Więcej uczniów zwiedziło Czechy *od* Słowacji. (DA)
more students visited Czech R. $THAN_1$ Slovakia$_{GEN}$
b. Więcej uczniów zwiedziło Czechy *niż* Słowacj. (RA)
more students visited Czech R. $THAN_2$ Slovakia$_{ACC}$
'More students visited the Czech Republic than Slovakia.'

Typology I: The Subject Restriction is (i) operative in Polish, Bulgarian, Serbo/Croatian, Slovenian, Greek and Hungarian but (ii) inactive/masked in Turkish, Korean, Japanese, Hindi, Dari and English.

(18) $*SUB_{[COMP]}$ - $DO_{correlate}$ *(Bulgarian)* [ibid. (4)]
a. ??/*Pove turisti posetixa Sofia *ot* Varna. (DA-PC)
more tourists visited Sofia from Varna
'More tourists visited Sofia than Varna'.
b. Pove turisti posetixa Sofia *ot-kolkoto* Varna. (RA-PC)
more tourists visited Sofia from-how-many Varna
'More tourists visited Sofia than visited Varna'.

Typology II: Surprisingly, effects of the restriction are also attested in German, a language in which PCs have been hypothesized to be uniformly derived by ellipsis (RA-language):

(19) $*SUB_{[COMP]}$ - $DO_{correlate}$ [Lechner (1997)]
a. Die $Maria_{correlate}$ mag bessere $Komponisten_{[COMP]}$ als der Peter
the $Mary_{NOM}$ likes better $composers_{ACC}$ than the $Peter_{NOM}$
'Mary likes better composers than Peter likes.'
b. *$Bessere\ Komponisten_{[COMP]}$ mögen die $Maria_{correlate}$ als den Peter.
better $composers_{NOM}$ like the $Mary_{ACC}$ than the $Peter_{ACC}$
'Better composers like Mary than like Peter.'

(20) a. Sofia besucht kultiviertere Städte als ihre Freundin Sofia
'Sofia visited more cultivated cities than her friend Sofia.'
b. *Kultiviertere Touristen besuchen Sofia als Varna.
'More cultivated tourists visit Sofia than Varna.'

(21) a. Salzburg zieht ältere Besucher an als Wien.
'Salzburg attracts older visitors than Vienna.'
b. *Ältere Patienten ziehen Alzheimer an als Parkinson.
'Older patients attract Alzheimer than Parkinson.'

(22) a. Clinton unterstützte aufgeschlossenere Wähler als Trump.
'Clinton supported more open minded voters than Trump.'
b. *Aufgeschlossenere Wähler unterstützen Clinton als Trump.
'More open minded voters supported Clinton than Trump.'

(23) a. Hamilton fuhr eine schnellere Runde als Rosberg.
'Hamilton drove a faster lap than Rosberg.'
b. *Ein schnellerer Fahrer fuhr das Rennen als die Ausscheidung.
'A faster driver drove the race than the qualifying.'

(24) *Corollary*: German attributive comparatives are base generated (contra Lechner 2004).

Empirical extension I: The condition is more general, it also excludes combinations of indirect object comparatives with accusative remnants, while exempting deep subjects (s.a. Pancheva):

(25) $*IO_{[COMP]}$ - $DO_{correlate}$
a. Maria hat dem $Peter_{correlate}$ bessere $Komponisten_{[COMP]}$ als dem Fritz vorgestellt.
Mary has the $Peter_{DAT}$ better $composers_{ACC}$ than the $Fritz_{DAT}$ introduced
'Mary introduced better composers to Peter than to Fritz.'

b. *Maria hat besseren Komponisten$_{[COMP]}$ den Peter$_{correlate}$ als den Fritz vorgestellt.
Mary has better composers$_{DAT}$ the Peter$_{ACC}$ than the Fritz$_{ACC}$ introduced
'Mary introduced Peter to better composers than Fritz$_{ACC.}$'

c. Maria hat ihn besseren Komponisten$_{[COMP]}$ vorgestellt als ich.
Mary has him$_{ACC}$ better composers$_{DAT}$ introduced than I$_{NOM}$
'Mary introduced him to better composers than I$_{NOM.}$'

(26) ✓*SUB$_{[COMP], passive/unaccusative}$ - DO$_{correlate}$*

a. Ein besserer Vertrag$_{[COMP]}$ als der Maria wurde nur dem Peter$_{correlate}$ angeboten.
a better contract$_{NOM}$ than the Mary$_{DAT}$ was only the Peter$_{DAT}$ offered
'Only Mary was offered a better contract than Peter.'

b. Ein schlimmerer Fehler$_{[COMP]}$ als mir ist dem Pete$_{correlate}$ unterlaufen.
a worse mistake$_{NOM}$ than me$_{DAT}$ is the Peter$_{DAT}$ occurred
'A more serious mistake occurred to me than to Peter.'

Empirical extension II: In German - but not in Slavic - the prohibition on subject/dative PCs is abrogated with numerical amount comparatives. Descriptively, German abides by (28):

(27) ✓*SUB$_{[COMP], amount}$ - DO$_{correlate}$*

a. Mehr Leute$_{[COMP]}$ mögen anscheinend Mozart$_{correlate}$ als Biber.
More people$_{NOM}$ like apparently Mozart$_{ACC}$ than Biber$_{ACC}$
'Apparently, more people like Mozart than Biber.'

b. Maria hat mehr Komponisten$_{[COMP]}$ den Peter$_{correlate}$ als den Fritz vorgestellt.
Mary has more composers$_{DAT}$ the Peter$_{ACC}$ than the Fritz$_{ACC}$ introduced
'Mary introduced Peter to more composers than Fritz$_{ACC.}$'

(28) ***Attributive Comparative Generalization*** (Lechner 1997)
In attributive degree comparatives, the correlate c-commands the comparative DP.

2.4. PANCHEVA (2006): A SMALL CLAUSE ANALSIS

Pancheva (2006) argues that the subject restriction can neither be accomodated by DA nor RA:

Problem for RA:

- Clausal versions are well-formed ((18)b vs. (18)a). Moreover, there is no known reason that would block ellipsis. Hence, RA fails.

Problems for DA:

- Asymmetry cannot be attibuted to ban on extraposition of *than*-phrase, because *in-situ* variants are also ill-formed (see Pancheva 2009 for details and data).
- DA would have to stipulate a ban on movement of *more-NPs* in subject position ((17)a vs. (16)b).

Pancheva's own account includes two components, an anti-locality condition and the CED.

2.4.1. Anti-Locality

Pancheva invokes the tension between the size of the *than*-phrase and Anti-Locality (Grohman 2003; Abels 2003) to derive the subject restriction:

(29) *Assumptions*

a. Relevant class of PCs are parsed as small clauses (Heim 1985; Lechner 1999, 2004).
b. DP containing degree predicate moves inside the *than*-phrase (Kennedy 1999)
c. Movement of degree predicate observes Anti-Locality.

(30) a. Marek is taller than [$_{SC}$ Anna d-tall$_{<e,t>}$]
b. Marek d-tall [MORE than [$_{SC}$ Anna d-tall$_{<e,t>}$]

In subject PCs, OP-movement is too short to respect Anti-Locality:

(31) a. Marek visited more places than Anna.
b. ... than Anna$_2$ [**d-many places$_1$** [$_{vP}$ t$_2$ visited ✓**t$_1$**]]

(32) a. *More students visited the Czech Republic than Slovakia [in Slavic]
b. ... than [Slovakia$_2$ [**d-many students$_1$** [$_{vP}$ ✘**t$_1$** visited t$_2$]]] (✗Anti-Locality)

2.4.2. Typological variation - CED

Alternative for deriving subject PCs (speaker variation): movement of degree operator only.

(33) a. ??More students visited the Czech Republic than Slovakia
b. ... than [Slovakia$_2$ [OP λ_1 [$_{vP}$ ✓**d$_1$ -many students$_1$** visited t$_2$]]] (✓Anti-Locality)

Degraded acceptability due to CED. CED effects correlate with position of subject (Lasnik and Park 2003: 651; Chomsky 2008; Haegeman et al. 2014; Jurka 2010 for experimental evidence).

(34) a. Which candidate were there [posters of] all over the town?
b. *Which candidate were [posters of] all over the town?

2.5. PROBLEMS FOR PANCHEVA'S ANALYSIS

2.5.1. Small clause analysis is incomplete

Arguably, antilocality is a unversal constraint. And in fact, English displays reflexes of the subject restriction with *different* ((35)a/b). But the ill-formedness of (35)b cannot be attributed to their SC-hood, since regular SC-PCs ((35)c) are impeccable:

(35) a. John read a different book from/than Mary. (RA)
b. *A different student read the book from/than than the newspaper. (✗DA)
c. A different student than Mary read the book (✗SC-comparative)

2.5.2. Anti-locality condition is too weak

Inserting material between the trace and the OP should improve Slavic subject PCs. This prediction is, at least at first sight, not confirmed. The raising PC (36)a is ill-formed in Bulgarian (Roumi Pancheva, pc), despite the fact that OP and its trace are separated by a raising predicate (underlined), indicating that Anti-Locality is not the relevant factor excluding subject PCs:

(36) a. *More students are likely to visit the Czech Republic than Slovakia (in Bulgarian)
b. ... than [Slovakia$_2$ [**d-many students$_1$** <u>are likely to</u> [$_{vP}$ ✓**t$_1$** visit t$_2$>]]] (✓Anti-Locality)

Potential confound: Bulgarian does not have standard English-style raising.

Next:
- Syntactic conditions on Parasitic Scope
- Two additional restrictions on PCs (Hankamer's puzzle, atemporal readings)
- The puzzling typology of PCs

3. CONDITIONS ON PARASITIC SCOPE

3.1. LF-TRANSPARENT ANALYSIS OF REFLEXIVES

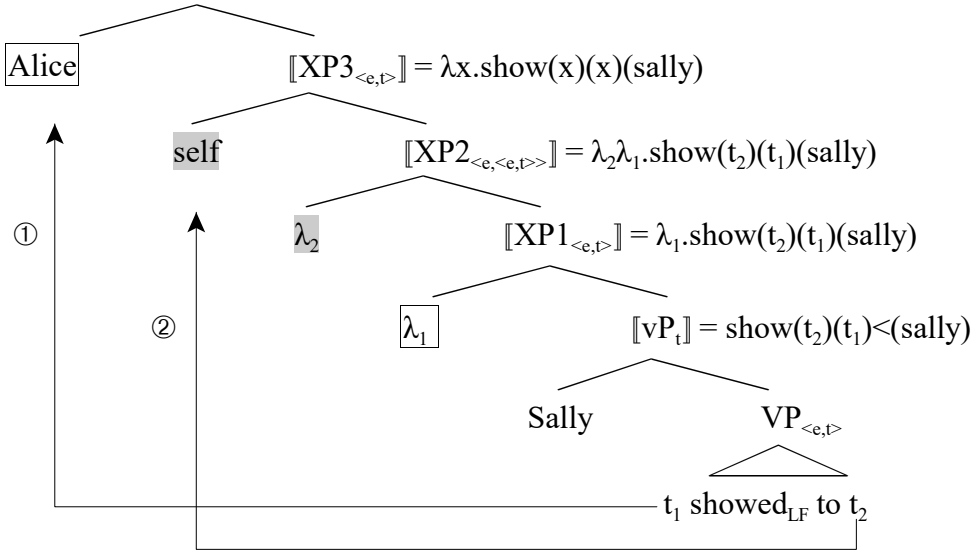
Reflexives as arity reducers (Bach & Partee 1980; Keenan 1987; Szabolcsi 1987; Spathas 2010; i.a.):

(37) $[\![\textbf{self}]\!] = \lambda R_{<e,<e,t>>}.\lambda x.R(x)(x)$ (reflexives *self* as arity reducer)

LF-transparent analysis of reflexive anaphors implicates *Parasitic Scope***.**

(38) a. Sally showed *Alice* to *herself*

b. $[\![XP4]\!] = show(alice)(alice)(sally)$



(39) ***Syntactic requirement: move higher node first***

a. Feature on functional head attracts antecedent and reflexive (Bruening 2001).

b. Movement economy (Shortest) dictates order of movements and functionally determines landing site: higher node moves first, second movement tucks in.

(40) ***Semantic requirement: move antecedent first***

Step 2: $[\text{antecedent}_e \quad [_{<e,t>} \ \lambda_1 \ [\ldots t_1 \ldots \text{reflexive} \ldots]]]]$

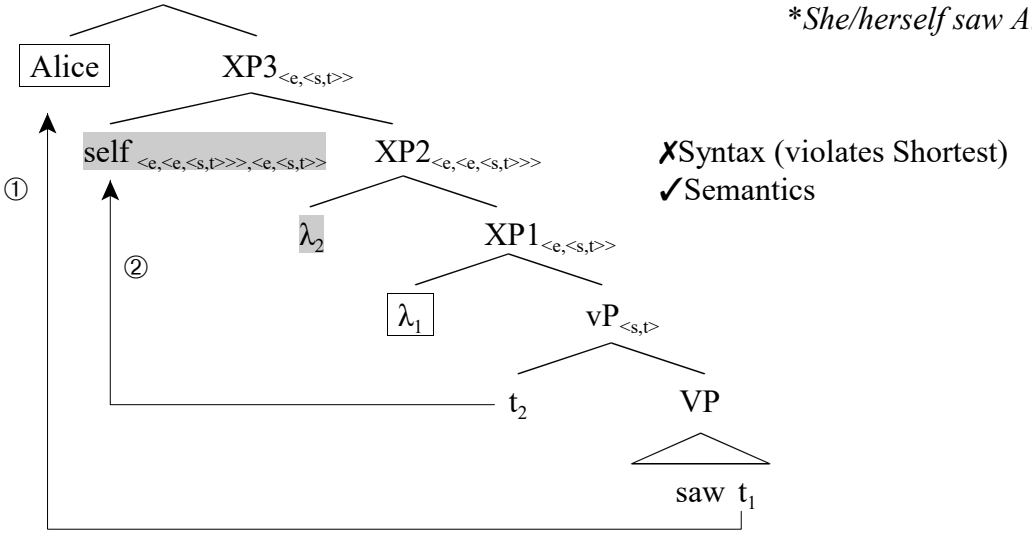
Step 4: $[\text{antecedent}_e \ [\text{reflexive}_{<<e,<e,t>>,<e,t>>} \ [_{<e,<e,t>>} \ \lambda_2 \ [_{<e,t>} \ \lambda_1 \ [\ldots t_1 \ldots \quad t_2 \ldots \quad]]]]$

Combination of (39) and (40) derives c-command condition on anaphors.

Derivation (41) violates syntactic requirement that higher nodes are attracted first.

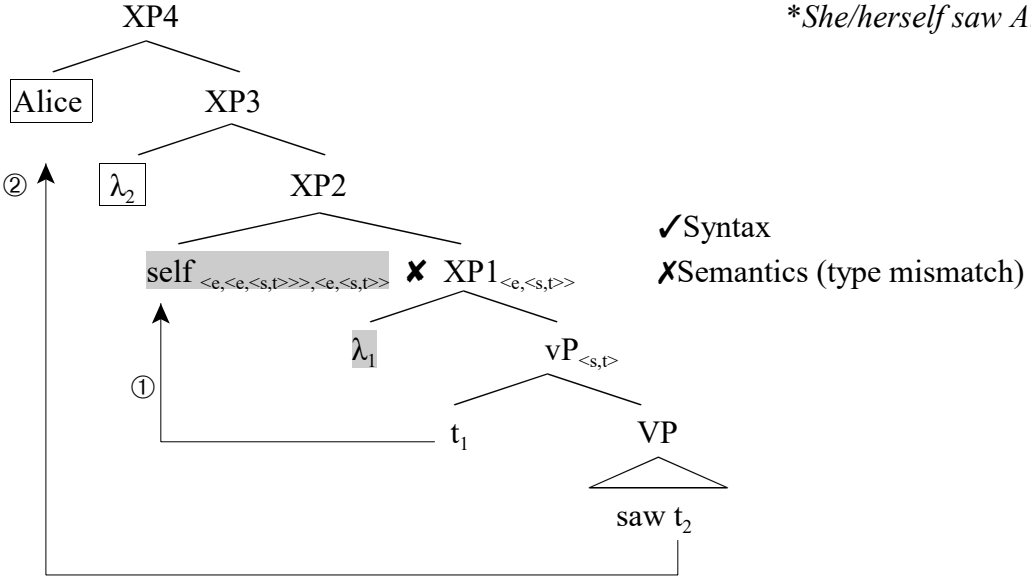
**She/herself saw Alice*

(41)



Derivation (42) is consistent with movement calculus, but the representation is not interpretable:

(42) **She/herself saw Alice*



(43) ***Parasitic Scope Generalization (PSG)***
In environments where movement of α provides the semantic context for type driven movement of β, the base position of α c-commands the base position of β.

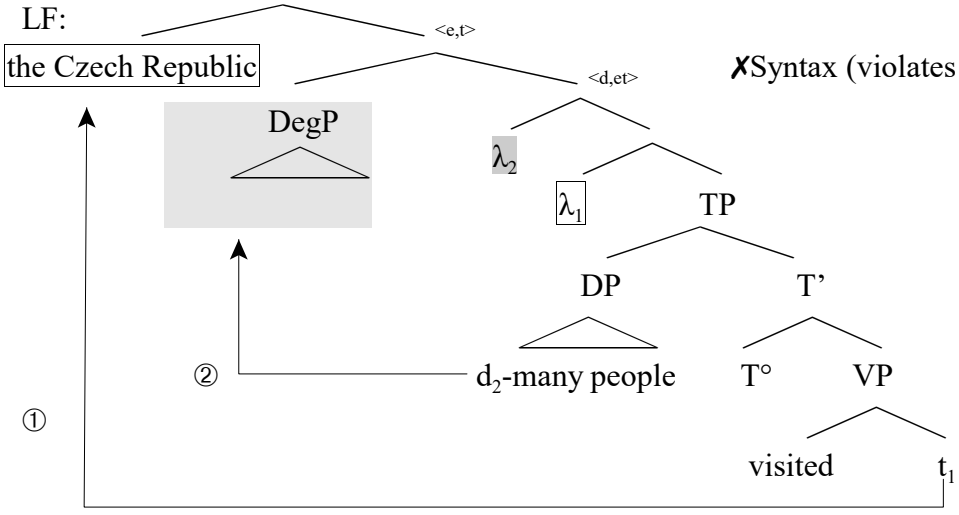
3.2. REVISITING THE SUBJECT RESTRICTION

In attributive PCs, the DegQP (*[MORE than-XP]*) tucks in below the correlate (see (44)b). In subject comparatives, the comparative is *higher* than the correlate, in violation of the *Parasitic Scope Generalization* (43). Hence, (44)a is blocked for the same reason that ? is.

NB: The account directly extends to ditransitives, unaccusatives and passive subjects. In all theses cases, the correlate needs to c-command the comparative, possibly after reconstruction.

(44) a. *More students visited the Czech Republic than Slovakia. [in Slavic]

b. LF:



✗Syntax (violates Shortest)

c. ⟦**MORE$_3$**⟧ (⟦ **Slovakia**⟧) (⟦**λ$_2$ λ$_1$ d$_2$-many people visited t$_1$**⟧) (⟦**the Czech R.**⟧) =

d. ιd.d-many people visited the Czech Rep. ≻ ιd.d-many people visited Slovakia

(45) ***Interim summary***
- a. In non-elliptical PCs, the DegQP and the correlate move, resulting in Parasitic Scope.
- b. The conditions on these movements are syntactic in nature (MLC, 'tucking-in').
- ➜ Common analysis of reflexives and subject restriction in terms of (43).
- ➜ German (an RA language) includes selected instances of base generated PCs.

Evidence for movement: island effects certify that the correlate moves.

(46) a. Sie ist eine ihren Prinzipien treuere Frau als Maria <ihren Prinzipen d-treue Frau>
she is a her principles more faithful woman than M.
'She is a woman who is more faithful to her principles than Mary (is).'
b. *Sie ist eine ihrer Berufung treuere Frau als ihren Prinzipien
she is a her vocation more faithful woman than her principles
'She is a woman more faithful to her vocation than to her principles.'
c. Sie ist ihrer Berufung treuer als ihren Prinzipien.
'She is more faithful to her vocation than to her principles'

Movement of *her vocation* violates left branch condition (on DA and locality s. a. Heim 1985):

(47) *[**her vocation** [[MORE than her principles] [λ_2 λ_1 [$_{DP}$ a [d_2-faithful to ☛ **t_1**] woman]]]]

4. TWO ADDITIONAL CONDITIONS ON PCS

Two restrictions indicate that (i) ellipsis in PCs is subject to semantic parallelism (Rooth 1992) and that (ii) ellipsis may vary in size. This strongly suggests that PCs contain structure.

4.1. HANKAMER'S PUZZLE

Hankamers (1973): in PCs, GF of comparative must match GF of Comparative Deletion site:

(48) Bill kissed more girls than Alex. [Hankamer's 1973, 198: fn. 1]
- a. ...than Alex kissed <d-many girls>
- b. *...than <d-many girls> kissed Alex

(49) *Sie küssten mehr Mädchen als den Peter.

A. Direct analysis: MORE$_3$ reconstructs *identical* relations for the remnant and the correlate.

(50) a. *Bill kissed more girls than Alex$_1$ <d-many girls kissed t_1> (= (48)b)
- b. Bill$_1$ [[MORE$_3$ than Alex] [λ_2 λ_1 [t_1 kissed d_2-many girls]]]
- c. **MORE$_3$** (⟦**Alex**⟧) (⟦**λ_2 λ_1 t_1 kissed d_2-many girls**⟧) (⟦**Bill**⟧)
- d. ɪd.Bill kissed d-many girls ≻ ɪd.Alex kissed d-many girls

DA does not even allow the comparative to serve as correlate (comparative above MORE):

(51) *[**d_2**-many girls [[MORE$_3$ than Alex] [λ_2 λ_1 [Bill kissed t_1]] (d_2 unbound)

B. Reduction analysis: Hankamer's puzzle follows from standard assumption that ellipsis is licensed under semantic parallelism (Rooth 1992; Fox and Takahashi 2006; i.a.).

(52) *Assumptions*
- a. Ellipsis consists in vP or TP-deletion ((48) is *not* the result of verb deletion).
- b. Parallelism ignores focused categories (*Bill* and *Alex* in (48); Rooth 1992).
- c. Remnants need to move to escape ellipsis (Merchant 2004, 2013, i.a.).

(53) ***Ellipsis licensing (part I)*** [adapted from Fox and Takahashi 2006]
For every elliptical node α, there is a Parallelism Domain (PD) and there is an antecedent AC, such that
a. PD reflexively dominates α and
b. PD is semantically identical to AC *modulo* focus-marked constituents.

(54) PD is ***semantically identical*** to AC *modulo* focus-marking iff there is a focus alternative $[\![PD_{Alt}]\!] \in [\![PD]\!]^f$, s.t. for all assignment functions g: $[\![PD_{Alt}]\!]^g = [\![AC]\!]^g$
(*The ellipsis must not embed variables bound from outside the PD.*)

In (48)a, there is a focus alternative PD_{Alt} that matches the antecedent denotation:

(55) a. Bill kissed more girls than $Alex_{SUB}$ <kissed d-many girls> (= (48)a)
b. [[MORE $\underbrace{[\lambda d \text{ (than) Alex <kissed d-many girls>}]}_{PD}$]] [λd Bill kissed d-many girls]]
c. $[\![AC]\!]$ = λd.Bill kissed d-many girls
d. $[\![PD]\!]^f$ = {λd.x kissed d-many girls|$x \in D_e$}
e. $[\![PD_{Alt}]\!]$ = λd.Bill kissed d-many girls
f. $\exists PD_{Alt} \in [\![PD]\!]^f$ s.t. $\forall g, [\![PD_{Alt}]\!]^g = [\![AC]\!]^g$ (✓Ellipsis licensing)

Such a focus alternative is missing for the ill-formed (48)b:

(56) a. *Bill kissed more girls than $Alex_{1, DO}$ <d-many girls kissed t_1> (= (48)b)
b. [[MORE λ_2 (than) $Alex_1$ λ_1 <d_2-many girls kissed t_1>] [λ_2 Bill kissed d_2-many girls]]
c. $[\![AC]\!]$ = λd.Bill kissed d-many girls
d. $[\![PD]\!]^f$ = {λd.d-many girls kissed x|$x \in D_e$}
e. $\neg\exists PD_{Alt} \in [\![PD]\!]^f$ s.t.$\forall g, [\![PD_{Alt}]\!]^g = [\![AC]\!]^g$ (✗Ellipsis licensing)

Adverbial comparatives are ambiguous, depending on choice of focused correlate:

(57) John likes Bill more than $Mary_{SUB/DO}$
a. ... than Mary d-much likes Bill (PD relative to focus alternatives of *John*)
b. ... than John d-much likes Mary (PD relative to focus alternatives of *Mary*)

Conclusion: Hankamer's puzzle does not provide support for one account over the other.

4.2. ATEMPORAL READINGS OF PCS

(58) *Corollary:* On RA, Hankamer's puzzle is a consequence of ellipsis parallelism. Elliptical PCs are predicted to display sensitivity to ellipsis parallelism also in other domains.

Some PCs are temporally underspecified, resulting in ATEMPORAL readings (Pinkham 1982: 130; McCawley 1988 [1998: 716]):

(59) *Transitives, $DO_{[COMP]}$ & $SUB_{correlate/remnant}$*
John will visit more friends than Sam_{SUB}.
a. ...than Sam will visit d-many friends
b. ...than Sam (has) visited d-many friends (✓atemporal reading)

(60) ***Observation***: Atemporal readings are subject to the structural condition that the comparative DP be lower than (i.e. c-commanded by) the correlate/remant (Lechner 2004).

(61) *Transitives, $SUB_{[COMP]}$ & $DO_{correlate/remnant}$*
More friends will visit John than Sam_{DO}.
a. ... than d-many friends will visit Sam
b. *... than d-many friends (have) visited Sam (✗atemporal)

(62) *Double object constructions, $DO_{[COMP]}$ & $IO_{correlate/remnant}$*
Mary will show John more sketches than Sam_{IO}.
a. ... than Mary will show Sam d-many sketches
b. ... than Mary has shown/showed Sam d-many sketches (✓atemporal)

(63) John will promise her more money than Sam_{IO}.
a. .... than John will promise Sam
b. .... than John (has) promised Sam (✓atemporal)

(64) *Double object constructions, $IO_{[COMP]}$ & $DO_{correlate/remnant}$*
Mary will show more people her sketches than her $prints_{DO}$.
a. ... than Mary will show d-many people her prints
b. *... than Mary has shown/showed d-many people her prints (✗atemporal)

(65) John will promise more people money than $love_{DO}$.
a. .... than John will promise love
b. *.... than John (has) promised love (✗atemporal)

(66) *Double object constructions, PP-frame, $PP_{[COMP]}$ & $DO_{correlate/remnant}$*
John will subject this year's students to a harder exam than last year's $students_{DO}$.
a. ... than John will subject last years students to a d-hard exam
b. ... than John subjected last years students to a d-hard exam (✓atemporal)

(67) *Double object constructions, PP-frame, $DO_{[COMP]}$ & $PP_{correlate/remnant}$*
John will subject more students to this year's exam than to last year's $exam_{PP}$.
a. ... than John will subject d-many students to last year's exam
b. ??.. than John subjected d-many students to last year's exam (??atemporal)

Observation: atemporal readings are only found with comparatives.

(68) John will visit his mother and Sam his brother
a. ... and Sam will visit his brother
b. *... and Sam has visited his brother (✗atemporal)

(69) *Table 2: Distribution of atemporal readings in PCs*

Comparative	*Correlate (= remnant)*		
	SUB	*DO*	*IO*
SUB	n/a	*	*
DO	✓	n/a	✓
IO	✓	*	n/a

(70) ***Atemporal PC Generalization***
In atemporal PCs, the correlate c-commands the comparative DP. Note that (70) is strongly reminiscent of the *Attributive Comparative Generalization* ((28)):

cf. (28) ***Attributive Comparative Generalization***
In attributive degree comparatives, the correlate c-commands the comparative DP.

4.3. ANALYSIS OF ATEMPORAL READINGS

A. Direct analysis: Reconstruction of individual-degree relation into comparative complement invariably results in temporally fully specified reading.

(59) a. John will visit more friends than Sam_{SUB}.
b. ...than Sam (has) visited d-many friends

(71) John will visit more friends than Sam <visited d-many friends>
a. **MORE$_3$ (⟦Sam⟧) (⟦λ$_2$ λ$_1$ t$_1$ will visit d$_2$-many friends⟧) (⟦John⟧)**
b. ιd.John will visit d-many friends ≻ ιd.Sam will visit d-many friends

Conclusion: temporally underspecified PCs are elliptical.

B. Reduction analysis: Atemporal PC generalization is a consequence of ellipsis paralellism, the assumption that PC-remnants need to move to escape ellipsis and MaxElide.

(72) ***Max-Elide (ellipsis licensing, part II)*** [Fox and Takahashi 2006; Hartmann 2011]
Elide the biggest deletable constituent reflexively dominated by the PD.

(73) *Assumptions*
a. Subjects are introduces by v° (Kratzer 1994).
b. In atemporal PCs, the elided constituent is a bare vP or VP lacking T° and Asp°.
☞ c. Remnants that escape ellipsis move to position above T° (Merchant 2004, 2013, i.a.).
d. In temporally fully specified PCs, the missing node is at least as large as TP.
e. d-variables are ignored for the computation of MaxElide. (Why?)

Object comparatives: remnant (underlined) does not have to move to produce correct surface order. PD is VP, and VP must be elided (MaxElide), resulting in atemporal reading.

(74) a. John will visit more friends than Sam_{SUB}. (✓atemporal)
b. [MORE [λ$_2$ than [$_{TP}$ <u>Sam$_3$</u> [$_{vP}$ t$_3$ <[λ$_1$ [$_{vP}$ t$_1$ [$_{VP}$ visit d$_2$-many friends]]]>]]]
[λ$_2$ [$_{TP}$ John$_3$ will$_4$ [$_{AspP}$ t$_4$ [$_{vP}$ t$_3$ <u>[λ$_1$ [$_{vP}$ t$_1$ [$_{VP}$ visit d$_2$-many friends]]]</u>]]]
PD = intermediate vP
(includes t_1 and its binder, but excludes T° and trace of 'will')

Subject comparatives: remnant moves to escape ellipsis. As a result, PD, which must include binder of remnant is large (TP), containing temporal specification (T°) and *will.* Parallelism requires tense features of antecedent and ellipsis to match. Thus, atemporal readings are missing.

(75) a. More friends will visit John than $Sam_{DO.}$ (✗atemporal)
b. [MORE [λ$_2$ than [$_{CP}$ <u>Sam</u> <[λ$_3$ [$_{TP}$ d$_2$-many friends$_1$ [$_{vP}$ t$_1$ [$_{VP}$ visit t$_3$]]]]>]]
[λ$_2$ [$_{CP}$ John <u>[λ$_3$ [$_{TP}$ d$_2$-many friends$_1$ will [$_{vP}$ t$_1$ [$_{VP}$ visit t$_3$]]]]</u>]]]
PD ≥ TP (includes t_3, λ_3, T° and will)

MaxExlide: ensures that ellipsis cannot affect node (vP) properly contained inside PD (TP).

(76) *More friends will visit John than $Sam_{DO,\,3}$ have <visit(ed)> t_3. (✗MaxElide)

DO-comparative & IO-remnant: remnant does not have to move. PD and ellipsis are small (vP; verb movement of *promise* to left of IO reconstructs, and is not represented).

(77) a. John will promise her more money than Sam_{IO}. (✓atemporal)

b. $John_1$ ...
[MORE [λ_2 than [$_{TP}$ t_1 [$_{vP}$ t_1 [$_{VP}$ Sam <[promise d_2-much money]>]]]]]
[λ_2 [$_{TP}$ t_1 will [$_{vP}$ t_1 [$_{VP}$ her [promise d_2-much money]]]]]]]
PD = VP

IO-comparative & DO-remnant: remnant must move to SpecCP to escape deletion. Hence, PD is large (full *than*-clause) and includes T°, bleeding temporally underspecified interpretation.

(78) a. John will promise more people money than $love_{DO}$. (✗atemporal)

b. $John_1$ ...
[MORE [λ_2 than [$_{CP}$ love <[λ_3 [$_{TP}$ [$_{vP}$ t_1 [$_{VP}$ d_2-many people promise t_3]]]]>]]
[λ_2 [$_{CP}$ money [λ_3 [$_{TP}$ ...will [$_{vP}$ t_1 [$_{VP}$ d_2-many people promise t_3]]]]]]
PD ≥ TP (includes t_3, λ_3, T° and 'will')

NB: Some speakers report that (67) admits an atemporal reading more easily than (65). This is compatible with a parse in which the PP attaches high, above the VP *subject d-many students* (an option not available to DO in (65)), such that PD = VP.

(79) a. John will subject more students to this year's exam than to last year's exam. ((67))
b. than ..... [$_{VP}$ [$_{VP}$ λ_2 subject d_2 -many students] to last year's exam]
PD = outer VP

Conclusion: Atemporal PC Generalization falls out from RA and ellipsis licensing conditions (similar to analysis of Sluicing and VP-ellipsis in Hartmann 2011; but see Messick and Thoms 2015).

4.4. TYPOLOGY AND THE ATTRIBUTIVE VS. AMOUNT DISTINCTION

(80) *Typology of PCs (fragment)*

a. RA_{German}: German employs RA for PCs.
i. RA derives Atemporal PC Generalization.
ii. RA-PCs are not subject to the Parasitic Scope Generalization .
iii. Restricted to amount PCs (*more NP*)

b. DA_{German}: German also uses DA for PCs (contra Lechner 2004; B&T 2011)
i. DA derives *Attributive Comparative Generalization* (28)
ii. DA-PCs are subject to the Parasitic Scope Generalization (43).

c. $DA_{Japanese/Hindi}$: Japanese and Hindi only have non-elliptical PCs.

(81) *Table 3: Typology of PCs in German*

GF of comparative	*Direct Analysis*	*Reduction Analysis*
Attributive SUB (and IO in DOC)	yes (* due to PSG (43))	no (to account for (28); but why?)
Attributive DO	yes	yes (atemporal readings, Principle C...)
Amount	no (to account for Principle C,...)	yes

These findings are in line with Bhatt & Takahashi (2011): lexicon universally contains both MORE$_2$ and MORE$_3$. Particular constellations (DA and/or RA) are blocked by syntactic principles.

(82) *An at first sight not unattractive non-starter:* All attributive PCs are base-generated (DA), while amount PCs also have a clausal analysis (RA).

Problem with (82)*:* If (82) were correct, degree PCs should lack contrasts in disjoint reference effects characterstic of elliptical PCs in (83) (Lechner 2004; ex. from Bhatt & Takahashi 2007):

(83) *Disjoint reference effect reveals hidden structure*
a. *More people introduced *him$_3$* to Sally than to *Peter$_3$*'s sister.
b. More people introduced *Peter$_3$* to Sally than to *his$_3$* sister.

(84) *RA predicts contrast*
a. *More people introduced *him*$_3$ to Sally than ...<introduced <u>him$_3$</u>> to <u>*Peter*$_3$</u>'s sister.
b. More people introduced *Peter*$_3$ to Sally than ...<introduced <u>Peter$_3$</u>> to <u>*his*$_3$</u> sister.

(85) *DA predicts no contrast*
a. LF: Sally$_1$ [MORE than <u>*Peter*$_3$</u>'s sister]$_2$ [λ_2 λ_1 d$_2$-many people introduced <u>*him*$_3$</u> to t$_1$]
b. LF: Sally$_1$ [MORE than to <u>*his*$_3$</u>'s sister]$_2$ [λ_2 λ_1 d$_2$-many people introduced <u>*Peter*$_3$</u> to t$_1$]

(86) *Hindi (DA-language) lacks contrast*
Atif-ne [*Ravi-kii$_3$* behen-kii foto]-se *us-ko$_3$* [Hindi; Bhatt and Takahashi 2011: (35)]
Atif-ERG Ravi-GEN sister-GEN picture-than he-DAT
Mohan-kii behen-kii foto zyaadaa baar dikhaa-ii
Mohan-GEN sister-GEN picture more times show–PERF
'Atif showed Mohan's sister's picture to *him$_3$* more times than *Ravi$_3$*'s sister's picture.'

(87) *English lacks contrast*
a. *Younger people introduced *him$_3$* to Sally than to *Peter$_3$*'s sister.
b. *Younger people introduced *Peter$_3$* to Sally than to *his$_3$* sister.

Potential interference by subject restriction on attributive PCs ((28)) can be avoided by considering adverbial cases - which once again pattern with (84), though.

(88) *Adverbial comparatives*
a. *She recommended *him$_3$* more often to her boss than to *Peter$_3$*'s father
b. She recommended *Peter$_3$* more often to her boss than to *his$_3$*'s father

(89) a. *....than <she recommended <u>*him$_3$*</u>> to <u>*Peter*$_3$</u>'s father
b. ....than <she recommended <u>*Peter$_3$*</u>> to <u>*his*$_3$</u>'s father

Conclusion: attributive PCs admit RA, invalidating (82).

(90) ***Three open questions***

a. Why do attributive subject PCs not admit the reduction analysis?
b. What is the source of speaker variation? Some informants are more liberal in accepting attributive subject PCs than others (see also discussion in Pancheva 2011). Obvious candidate: some speakers use RA for attributive subject PCs.
c. Why do amount comparatives not admit the direct analysis?

Factors possibly implicated in the explanation of (90)a include *morphology* and *logical properties* (adjective denotations are model dependent, while logical operators such as *more* are *isomorphism invariant*; possible angle: *good* has an additional situation argument that is absent in *more,* and licensing of this situation variable becomes impossible in subject comparatives on RA, because the constellation would involve improper movement paths.

5. SUMMARY

(91) a. Distribution of base-generated PCs (*Attributive Comparative Generalization*) is determined by the same laws that regulate the distribution of reflexives.

b. These laws can be expressed in terms of syntactic constraints determining licit configurations of multiple movement (*Parasitic Scope Generalization*).

c. Atemporal readings of PCs are subject to constraints which are superficially similar to those governing base-generated PCs (*Atemporal PC Generalization*), yet turn out to be a consequence of MaxElide operating on elliptical PCs.

d. German employs RA as well as DA. The typology is complex, yet systematic:
   i. All amount comparatives are derived by ellipsis.
   ii. Attributive PCs which do not abide by the Attributive Comparative Generalization (subjects, IO in DOC) are base generated.
   iii. All other attributive PCs are ambiguous between a parse in terms of DA or RA.

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