[WLG]
WIENER LINGUISTISCHE GAZETTE

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Sonderdruck aus: *Wiener Linguistische Gazette* (WLG) 82 (2017): 181–191

Themenheft *11-11-17. Festschrift für Martin Prinzhorn*
Hg. v. Clemens Mayr und Edwin Williams

Universität Wien · Institut für Sprachwissenschaft · 2017

Eigentümer, Herausgeber und Verleger:
Universität Wien, Institut für Sprachwissenschaft
Sensengase 3a
1090 Wien
Österreich

Redaktion: Christian Bendl, Mi-Cha Flubacher (Angewandte Sprachwissenschaft), Stefan Schumacher (Allgemeine und Historische Sprachwissenschaft)
Kontakt: wlg@univie.ac.at
Homepage: *http://wlg.univie.ac.at*

ISSN: 2224-1876
NBN: BI,078,1063

Die *Wiener Linguistische Gazette* erscheint in loser Folge im Open-Access-Format.
Alle Ausgaben ab Nr. 72 (2005) sind online verfügbar.

Phrasal comparatives and Parasitic Scope*

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This squib describes an analysis for a restriction found with Phrasal Comparatives, revealing an underlying homology between this and a seemingly unrelated class of constructions.

1. Phrasal comparatives

Phrasal Comparatives (PC), exemplified by (1), are degree constructions in which the standard marker *than* precedes a single, usually nominal, remnant.

(1) a. Ann is taller [than Bill].
b. Ann bought more books [than Bill].

Currently, there are two prominent accounts of PCs, the *Reduction Analysis* (Bresnan 1973; Lechner 2004; Merchant 2009; i.a.) and the *Direct Analysis* (Hankamer 1973; Napoli 1983; Hoeksema 1983; Heim 1985; Kennedy 1999; i.a.), which mainly differ across two dimensions. First, while the RA maintains that the degree complement of PCs embeds hidden structure, for the competing DA, PCs owe their characteristic shape to the presence of a base-generated PP headed by *than*. Second, the two accounts are associated with two different sets of assumptions to render the syntactic representations compositionally interpretable. Adopting a canonical semantics for degree predicates on which gradable adjectives denote individual-degree pairs ((2)a), it is common for ellipsis analyses to model the comparative morpheme *-er/more* as the quantificational determiner $MORE_2$ ((2)b). $MORE_2$ expresses a second order relation between degree predicates (Heim 2000; Gawron 1995):

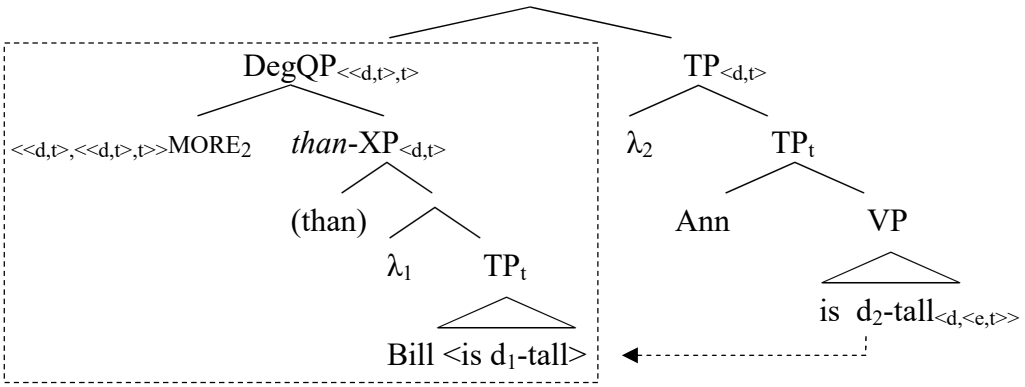
(2) a. $[\![\textbf{tall}]\!] = \lambda d.\lambda x.x \text{ is d-tall } (=_{def} \lambda d.\lambda x.\text{LENGTH}(x) \geq d)$
b. $[\![\textbf{MORE}_2]\!] = \lambda D_{<d,t>}.\lambda D'_{<d,t>}.\max(D') > \max(D)$ [Heim 2000]
c. $\max =_{def} \lambda D.\imath d.D(d) \wedge \forall d'[D(d') \rightarrow d' \leq d]$

*This is for Martin, who I have had the honor to get to know as an exceptional teacher, an inspiring linguist, a caring advisor, a connoisseur of polymathian scope and most of all, a unique, beloved friend.

(3) tracks the RA-derivation of example (1)a. As made explicit by (3)b, the generalized degree quantifier (DegQP) *MORE tall than Bill* cannot directly combine with its sister node (the gradable property *tall*) and accordingly needs to covertly raise in order to avoid a type mismatch. Movement results in the creation of a derived degree predicate:

(3) a. Ann is taller [$_{\textit{than}\text{-XP}}$ than Bill].

b. LF:



c. ɪd.Ann is d-tall > ɪd.Bill is d-tall

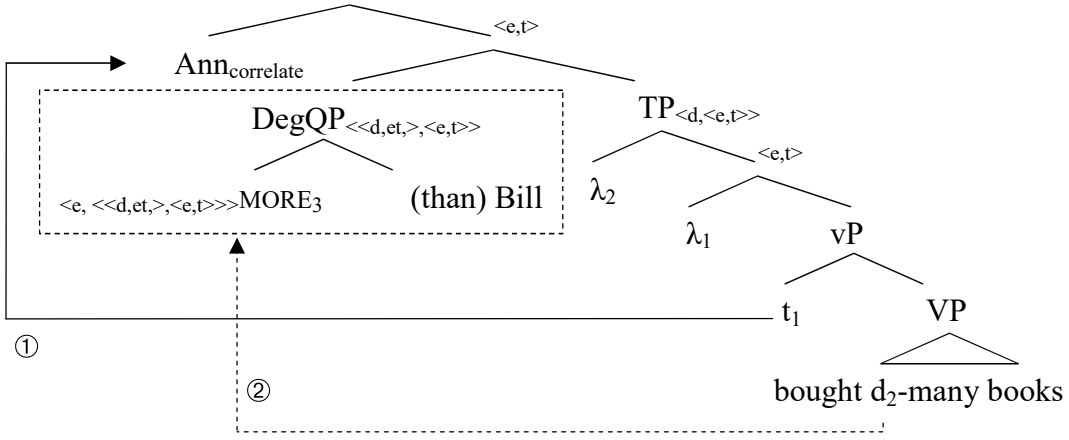
Under the base-generation account, the comparative morpheme denotes the 3-place relation MORE$_3$ defined in (4), which applies to the remnant, a degree relation and the correlate (Bhatt and Takahashi 2011; Kennedy 2009, i.a.):

(4) $[\![\textbf{MORE}_3]\!] = \lambda x.\lambda A_{<d,<e,t>>}.\lambda y.\max(\lambda d.A(d)(y)) > \max(\lambda d.A(d)(x))$

While on this conception, predicative comparatives can be interpreted *in-situ,* the derivation of attributive PCs such as (1)b involves the two covert movement steps detailed in (5)a. First, the correlate *Ann* moves to a propositional node, followed by QR of the complex unit *MORE$_3$ than Ann* inbetween *Ann* and its binder index. This establishes a relation of what has become to be known as *Parasitic Scope* (Barker 2007; Beck and Sauerland 2000; Nissenbaum 1998, i.a.). In constellations of Parasitic Scope, one operator takes scope inbetween another operator and the second operator's λ-binder (nuclear scope).

(5) a. $\text{Ann}_{\text{correlate}}$ bought more books than $\text{Bill}_{\text{remnant}}$.

b. *Parasitic Scope derivation of PCs*



c. ιd.Ann bought d-many books > ιd.Bill bought d-many books

Diagnostics from a variety of phenomena including case matching, anaphor licensing, extraction, disjoint reference effects, restrictions on the number of remnants and scope with respect to intensional operators indicate that PCs cannot be given a uniform treatment cross-linguistically, but are subject to systematic typological variation (Beck et al. 2004, 2009; Kennedy 2009; Merchant 2009; Bhatt and Takahashi 2011; Lechner, to appear a,b; i.a.). To illustrate on the basis of two prominent classes, PCs in languages such as German and English are uniformly derived by ellipsis. By contrast, Polish, Russian, Greek and Hungarian, among others, employ both RA and DA, disambiguating between the ellipsis and base generation option by different choices for the standard marker. As we will see below, this clean taxonomy does not survive exposure to the full paradigm of data, though.

2. The Attributive Comparative Generalization

In a number of languages, attributive PC-formation is subject to a curious restriction which is a consequence of the *Attributive Comparative Generalization* in (6) (Lechner 1997 for German; Pancheva 2009 for Polish, Bulgarian and Russian).

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

As documented by paradigm (7) from Pancheva (2009), combining subject comparatives with object remnants in Polish leads to strongly degraded results. (Pancheva's original ??/* judgements are throughout scaled to * for typographic reasons.)

(7) *SUB_{MORE} - $DO_{correlate}$ [Polish; Pancheva 2009: (6)]

a. Marek$_{correlate}$ zwiedził więcej miejsc$_{DO}$ od Anny.
Marek visited more places than$_{DA}$ Anna$_{GEN}$
'Marek visited more places than Anna.'

b. *Więcej uczniów$_{SUB}$ zwiedziło Czechy$_{correlate}$ od Słowacji.
more students visited Czech R. than$_{DA}$ Slovakia$_{GEN}$
'More students visited the Czech Republic than Slovakia.'

Pancheva also demonstrates that the effect visible in (7) is operative in base-generated PCs only. (Recall that Polish belongs to those systems which has both access to DA and RA.)

But reflexes of the Attributive Comparative Generalization are also attested in German (Lechner 1997, 2017). This is surprising inasmuch as German is a language in which PCs are widely held to be indiscriminately derived by ellipsis:

(8) *SUB_{MORE} - $DO_{correlate}$ [German; Lechner (1997)]

a. Die Maria$_{correlate}$ mag bessere Komponisten$_{DO}$ als der Peter.
the Mary$_{NOM}$ likes better composers$_{ACC}$ than the P.r$_{NOM}$
'Mary likes better composers than Peter likes.'

b. *Bessere Komponisten$_{SUB}$ mögen Biber $_{correlate}$ als Mozart.
better composers$_{NOM}$ like Biber$_{ACC}$ than Mozart$_{ACC}$
'?Better composers like Biber than Mozart.'

(9) a. Sofia besucht ältere Städte als Peter.
'Sofia visited older cities than Peter.'

b. *Ältere Touristen besuchen Sofia als Varna.
'Older tourists visit Sofia than Varna.'

It is suggested that the Attributive Comparative Generalization is the consequence of two independent factors: (i) the assumption that attributive PC-formation implicates Parasitic Scope and (ii) standard syntactic locality conditions of the type familiar from configurations of multiple movement, which essentially have the effect of limiting possible Parasitic Scope configurations to those described by (6). These conditions reveal themselves, among others, in the laws governing the distribution of anaphors, to be taken up in the section to follow.

3. Reflexivization

It is well-known that Principle A of traditional Binding Theory is afflicted by a number of conceptual shortcomings, among them: the intransparency of the semantic contribution of the anaphor; the question why anaphors require a linguistic antecedent; and the lack of a deeper motivation of the c-command condition. Searching for answers to these and related questions, Lechner (2007, 2012) proposes a semantically transparent analysis of reflexivization that embeds aspects of the categorial grammar tradition (Bach and Partee 1980; Keenan 1987/1989; Szabolcsi 1987) within a derivational model of the grammar. Specifically, it is suggested that the core properties of Principle A fall out from the two

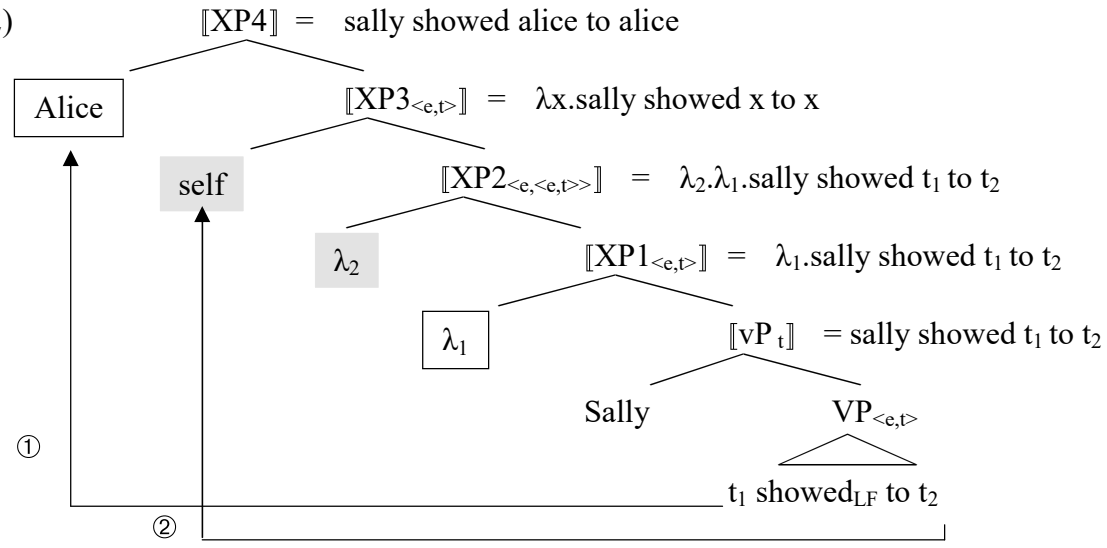
assumptions that *self* serves as a arity-reducing reflexivizer ((10)), and that LF-representations are modulated by the same syntactic principles which are operative in configurations of multiple overt displacement (Nissenbaum 1998; Richards 2001):

(10) $[\![\textbf{self}]\!] = \lambda R_{<e,<e,t>>}.\lambda x.R(x)(x)$

On this view, the derivation of the intended truth conditions of a sentence like (11), shown in (12), involves two LF-movements. In a first step, the antecedent *Alice* raises, followed by QR of *self* to a position inbetween the antecedent and its binder index, generating a relation of Parasitic Scope.

(11) Sally showed Alice$_1$ to *herself$_1$* (in the mirror).

(12)



Assuming that Parasitic Scope formation is subject to the same syntactic principles which regulate multiple movements to a single head, the derivation creates order preserving, crossing dependencies (Richards 2001). (13) states this *syntactic* requirement in a more precise way:

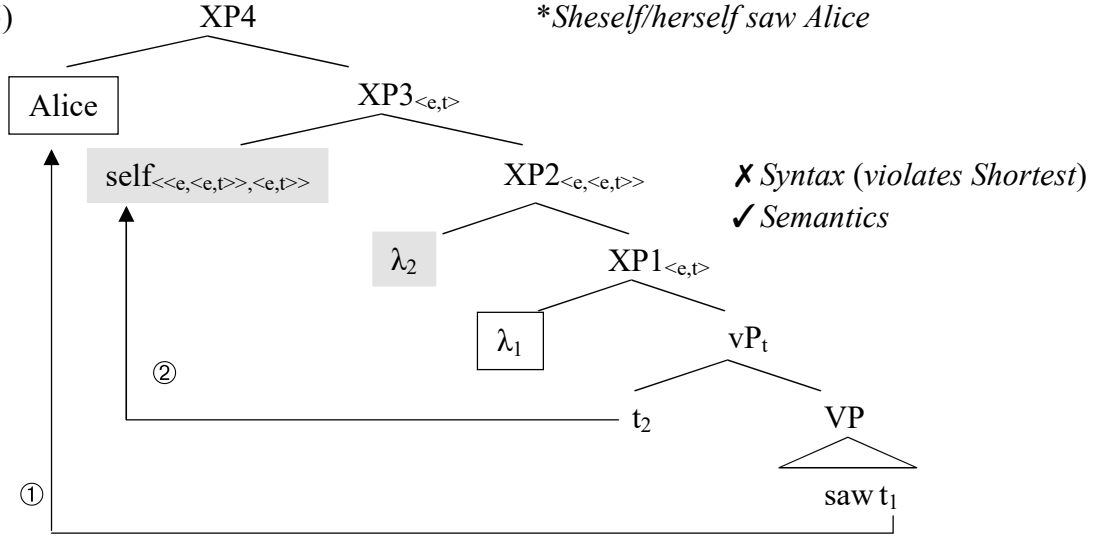
(13) *Syntactic Requirement: higher nodes move first*
Economy ('Shortest' or MLC) dictates that higher node moves first and that additional movements land right below previously moved nodes ('tucking-in'; Richards 2001).

The particular format of the lexical entry for *self* also imposes a type-theoretic *semantic* requirement on the computation: the antecedent must move first, in order for *self*-movement to be able to provide a suitable two place-relation for the reflexive to combine with. Together, this semantic condition and the syntactic restriction (13) derive the c-command condition of Principle A. (For expository convenience, I switch to the transitive example (14)).

(14) *Sheself/herself saw Alice.

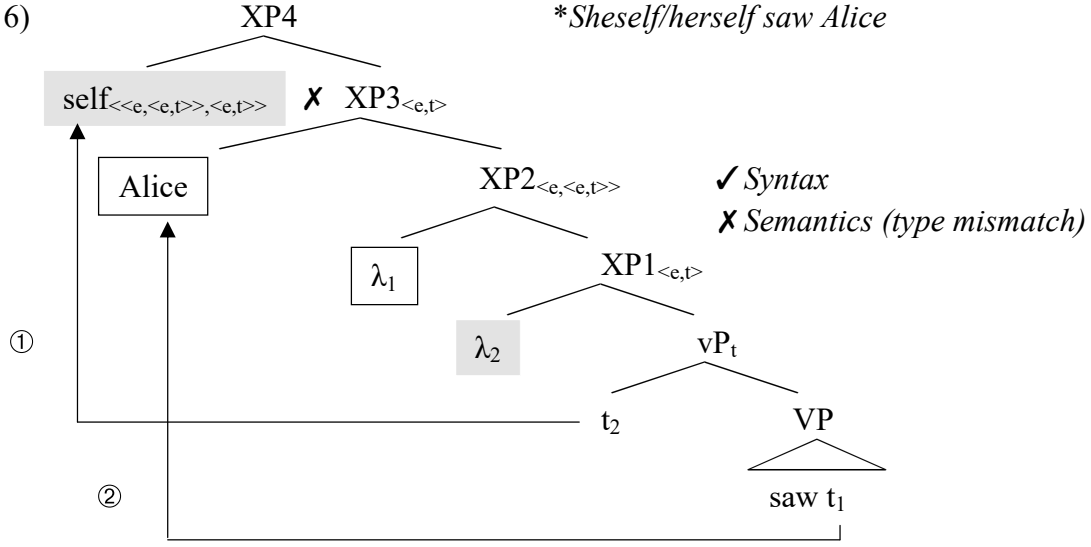
If the antecedent moves first, as in (15), the result is semantically well-formed, but the derivations violates the syntactic requirement (13), which mandates that higher nodes are attracted prior to lower ones:

(15) **Sheself/herself saw Alice*



Reversing the order of movements, as is done in the alternative parse (16), ensures consistency with Shortest. The output representation fails to be compositionally interpretable, though, due to a type mismatch between the denotations of *self* and its sister XP3.

(16) **Sheself/herself saw Alice*



Thus, constellations that violate the c-command condition of Principle A are excluded by the conflicting demands of the semantic and the syntactic side of the derivation. Empirically, successful conflict resolution manifests itself in the *Parasitic Scope Generalization* (PSG; (17)):

(17) ***Parasitic Scope Generalization (PSG)***
In contexts where movement of α feeds creation of an n-place relation (n ≥ 2) by movement of β, the base position of α c-commands the base position of β.

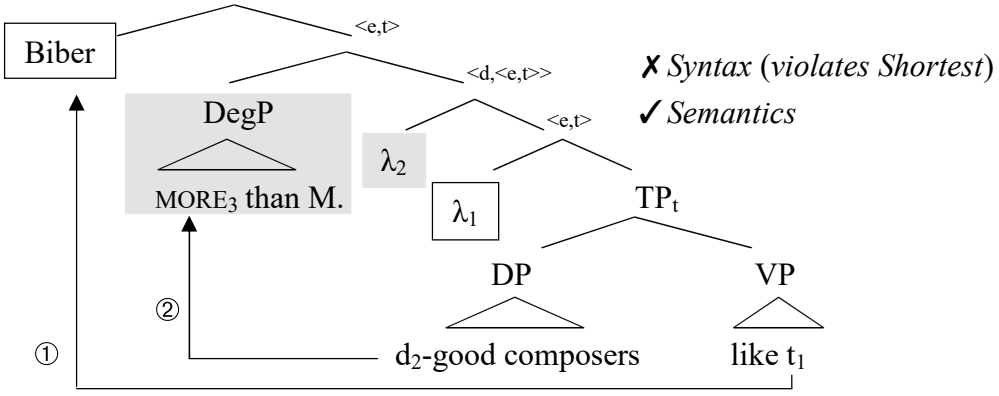
To exemplify, α in (12) would be witnessed by *Alice* and β by *self*.

4. Explaining the Attributive Comparative Generalization

Returning to PCs, it was seen above that Slavic and German prohibit (attributive) subject PCs like (18)a. As the tree in (18)b reveals, the derivation of (18)a precisely mimics that of illicit cases of binding by non-c-commanding antecedents (see (14)). The correlate (*Biber*) and the DegQP (*more than Mozart*) move covertly, with the former creating the diadic relation which serves as the input of the latter. But since the comparative originates in a position *higher* than the correlate, the derivation fails to abide by the PSG (17). Hence, (18)a is blocked for exactly the same reasons that (14) is, revealing an underlying homology between two at first sight unrelated constructions.[1]

(18) a. *Better composers like Biber than Mozart. [in German]

b.



c. d. ɪd-good composers like Biber > ɪd.d-good composers like Mozart

A prediction of the analysis, which is corroborated by the contrasts in (19), is that indirect object (dative) comparatives should not be able to co-occur with direct object (accusative) remnants, because these combinations display the same signature characteristic of (18), with the comparative DP c-commanding the remnant (see also Pancheva 2009).

[1]Extraposition of the degree complement, which is orthogonal for present concerns, is ignored.

(19) *IO_{MORE} - $DO_{correlate}$ [Lechner (1997)]

a. Maria hat dem Peter$_{correlate}$ bessere Komponisten$_{MORE}$ vorgestellt
Mary has the Peter$_{DAT}$ better composers$_{ACC}$ introduced
als dem Fritz.
than the Fritz$_{DAT}$
'Mary introduced better composers to Peter than to Fritz.'

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

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

Moreover, the analysis correctly exempts the deep subjects in (20), which are generated below accusative correlates, from the verdict of the PSG:

(20) $SUB_{MORE,\ passive/unaccusative}$ - $DO_{correlate}$ [ibid]

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

b. Ein schlimmerer Fehler$_{MORE}$ 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.'

In sum, the PSG not only captures the distribution of attributive PCs, but also affords a common analysis of reflexives and PCs. Notably, rendering these intricate underlying structural similarities visible crucially implicated Parasitic Scope derivations. This finding, which signals that syntactic principles co-determine the shape of admissible LF-representations, supplies a strong argument in support of a syntacto-centric model in which symbolic information is transduced from the syntactic to the semantic component, and against parallel architectures as e.g. envisioned by proponents of categorial grammar.

5. Puzzles

While attractive both from an empirical and conceptual perspective, the unified account outlined above also has consequences in various areas which are in need of further clarification. To begin with, the Attributive Comparative Generalization requires a re-assessment of the typology of PCs. German has, after all, base generated PCs, even though they do not reveal themselves readily. Next, in German - but not in Slavic - the prohibition on subject and dative PCs is systematically abrogated with numerical amount comparative. The amount PCs in (21) (*more composers*) contrast with degree comparatives (14) and (19)b, respectively (*better composers*):

(21) *SUB/IO$_{MORE,\ amount}$ - DO$_{correlate}$*

a. Mehr Komponisten$_{MORE}$ mögen Biber$_{correlate}$ als Mozart.
More composerspe$_{NOM}$ like Biber$_{ACC}$ than Mozart$_{ACC}$
'More composers like Biber than Mozart.'

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

The paradigm (21) suggests that amount PCs can - unlike degree comparatives - be given an ellipsis analysis, which exempts them from the PSG. Pursuing this analytical options generates two questions: why do attributive PCs falling under the PSG not admit the reduction analysis? And why do amount comparatives not require the direct analysis? Tentatively, one might entertain the hypothesis that the difference between amount and degree PCs is related to the fact that amount comparatives are headed by an isomorphism invariant logical operator (*more d-many*), while degree PCs include in their meaning model dependent adjective denotations (*more d-good*). How to translate this idea into an analysis remains unclear at the moment, though.

Third, and related to the above, the present account entails that the typology of PCs is more articulated than standardly assumed in that German does not treat all PCs as elliptical. PSG-sensitive attributive PCs in German are base generated. It has to be seen to which extent this conclusion is consistent with other commonly employed tests for the presence of hidden structure (disjoint reference effect, scope, etc..).

Finally, there is an independent property characteristic of PCs that appears, at least at first sight, to be regulated by a version of the Attributive Comparative Generalization (6). In certain environments, the event time of the silent predicate of PCs can be temporally underspecified, subject to the structural condition that the comparative DP be c-commanded by the remnant (Lechner 2004). To exemplify, the object PC in (22) admits an 'atemporal' reading which is missing for subjects comparatives like (23):

(22) *DO$_{MORE}$ - SUB$_{correlate}$: atemporal reading*
John$_{correlate}$ will visit more friends$_{MORE}$ than Sam.
a. ...than Sam will visit d-many friends
b. ...than Sam (has) visited d-many friends

(23) *SUB$_{MORE}$ - DO$_{correlate}$: no atemporal reading*
More friends$_{MORE}$ will visit John$_{correlate}$ than Sam.
a. ... than d-many friends will visit Sam
b. *... than d-many friends (have) visited Sam

The distribution of atemporal readings is captured by the *Atemporal PC Generalization*, which includes exactly the same structural condition (underlined) that was seen to be operative in the Attributive Comparative Generalization (6):

(24) ***Atemporal PC Generalization***
In atemporal PCs, the correlate c-commands the comparative DP.

A further objective of future inquiries in this domain should accordingly consist in determining to which extent the two phenomena (atemporal readings vs. distribution of PCs) can be reduced to a common source.[2]

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[2] MORE$_3$ copies the whole predicate, including the temporal specification, into the position following the remnant. Thus, a common analysis might be hard to obtain simply for the fact that it is difficult to devise a phrasal analysis for atemporal PCs (Lechner 2017).

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