

The Left-Left Constraint – a structural constraint on adjuncts

Hubert Haider

Dept. of Linguistics & Centre for Cognitive Neuroscience, Univ. Salzburg

Abstract

Left-hand side adjuncts of left-headed (= *head-initial*) phrases are constrained in a particular way. The constraint, which is absent for adjuncts of head-final phrases, is this. The head of the adjunct must be in the absolute phrase-final position. Anything that follows the head disqualifies the phrase as an adjunct. The effect of this *head-final-constraint* is adjacency between the head of the adjunct and the phrase the adjunct is adjoined to. This holds for adverbials, viz. adjuncts to VPs and APs, as well as for adnominal attributes.

This constraint does not follow from any known conditions on phrase structuring. It will be shown to arise from a licensing requirement that holds for phrases to be merged with a given phrase. Left adjuncts of head-initial phrases are not within the structural licensing domain of the head of the phrase and therefore they are in need of an alternative way of getting structurally licensed. This alternative way – proper attachment – results in the hitherto unaccounted adjacency effect.

2. The issue

Left-adjunction to *left*-headed major lexical phrases¹ is subject to a constraint that is absent for (left-)adjunctions to right-headed phrases (Haider 2004:782-784; 2010:194; 2013:13-16 and 34-37). For ease of reference in this paper, this constraint shall be referred to as the *Left-Left-Constraint* (LLC). In strictly head-initial languages such as English, the LLC applies to left adjuncts of any major lexical phrase, and in particular to adjuncts of NPs as well as VPs. For all these adjuncts, their heads must be strictly adjacent to the phrase they are adjoined to. The adjunct may be extended on its own left side, for instance by degree modifiers, but its head must be phrase-final in order to be adjacent to the host phrase. Note that the adjacency requirement holds for the *head* of the adjunct relative to the *phrase* to which the adjunct is adjoined. In other words, it is not a *head-to-head*-adjacency but a *head-to-phrase* adjacency. This is particularly clear when several adjuncts are involved. Each adjunct must be adjacent to the phrase it adjoins, even if this phrase already contains a left-adjoined adjunct.

In German and Dutch² and all other Germanic OV languages, the LLC applies only to adjuncts of NPs but not to adjuncts of VPs or APs. This is a predictable fact since NPs are head-initial while VPs and APs are head-final phrases in these languages.³ Since the LLC is a constraint on left-adjunction to head-initial phrases, VPs and APs are not in the scope of this constraint. Consequently, in strictly head-final languages – Japanese, for example – there is no context at all for the LLC to apply.

¹ "Major lexical phrases" are phrases headed by word-level categories, such as A°, N°, V°, and to a limited extent P°. These heads, unlike functional-category heads, such as complementizers or articles, are associated with an argument structure. Semantically, they are predicates that combine with arguments. So, the LLC is a constraint of left-adjoining to left-head phrases of argument-taking heads.

² Broekhuis (2013:292) formulates a "*Head-final Filter on attributive adjectives*":

"The structure [NP ... [AP ADJ XP] N#] is unacceptable, when XP is phonetically non-null and N# is a bare head noun or a noun preceded by an adjective phrase: [(AP) N]."

³ For Dutch, see Broekhuis (2013: 291-293).

The following English examples illustrate the LLC first for adjuncts (1) of VPs and then for adjuncts of NP (2). Preverbal adverbials may contain modifiers, but the head of the adverbial must be in the final position (1a-d), in order to meet the LLC. (1e) illustrates the head-to-phrase adjacency. Each of the two adjuncts must be head-adjacent to the VP they are adjoined to.

(1f) is instructive in two respects. First it shows that the adjective plus the comparative phrase form a single phrase, and second, it shows that a clause-initial position is not subject to the LLC since the functional head of a clause is not an argument-taking head.

The structure of (1f) can be analysed in two ways. If the adverbial is in a functional specification, the absence of LLC is predicted, since it constrains adjoined positions but not spec positions. Alternatively, if the position of the clause-initial adverbial is regarded as an adjoined position, it is adjoined to a functional projection. In this case, the LLC is not operative since it constrains lexical projections, as projections of heads with a grammatically defined directionality property, but it does not apply to functional projections.⁴

- (1) a. A finch is [[much more *often*] [heard in Blackwood Forest than an owl]]
- b. A finch is [[much more *often* (*than an owl)] [heard in Blackwood Forest]]
- c. He has [[more *carefully* (*than anyone else)] [analysed this problem]].
- d. She has [[much more *often* (*than him)] [*successfully* [reorganised the finances]]].
- e. She has [_{VP} very often [_{VP} publicly [_{VP} criticised Trump]]]
- f. [Much more *often* than an owl], a finch is heard in Blackwood Forest.
- g. One should *more carefully* analyse such data.
- h. *One should *with (more/great) care* analyse such data.

Eventually, the contrast between (1g) and (1h) reconfirms that a *structural* condition is at work. The adverbials are in the very same pre-VP position and semantically they are nearly equivalent, too, but the acceptability of the outcome is completely different, as a search in three big corpora⁵ confirms. The sequence "should more *ly", with "*" as a joker for a single word, is attested in each corpus (BNC: 17, CoCa 53, NOW 254). However, as expected for a PP in the pre-VP position, the sequences "should with care", "should with great care", or "should with more care" are completely absent in these three corpora, that is, in an aggregated corpus of 5.8 milliard words.

The situation is fully analogous for Romance. A Google search (Dec. 15, 2017) for "*doit soigneusement*" (must carefully) on news and book sites produced 59 and 14.100 hits, respectively. A search for "*doit avec soin*", (must with care) however produced zero hits on news sites and only eight in the unfiltered search, some of which are enclosed by commas, although "*avec*

⁴ Examples such as "*Rarely in this league do you get two long touchdowns*" are clear cases of a Spec-head-configuration, with "do" in the functional head-position. A corpus search in CoCa (520 million words) has confirmed that an adverbial like "*at this point*" is not attested in between a finite auxiliary and the following verbs, but it occurs between the subject and a finite auxiliary, that is, within a functional projection, as in (i) and (ii):

i. Nobody *at this point* has stepped out. ii. Support *at this point* has intensified.
The BNC as well CoCa do not contain a single token of "*has at this point*" followed by a verb, but "*at this point has*" is well attested. In this case, the adverbial is adjoined to the *functional* projection of the finite auxiliary.

⁵ BNC = British National Corpus (100 million: British, 1980s-1993); CoCa = Corpus of contemporary American English (520 million: US, 1990-2015); NOW = News on the web (5.2 milliard: Web news, since 2010).

soin" is attested 31.000 times for 'news' and more than 7 million times in general. In languages with head-final VPs, as for instance Dutch or German, such a difference does not exist (4).

As for attributes, Huddleston & Pullum (2002: 551) emphasize the "*virtual exclusion of post-head dependents. Attributive AdjPs, like other attributive modifiers, hardly permit post-head complements or modifiers.*" The hedging by "hardly" is motivated by apparent exceptions of the kind that will be dealt with in subsection 4 of this paper.

- (2) a. an [[obviously much less fascinating (*than the LLC)] [constraint]]
- b. an [[extremely fascinating (*to his audience)] [actor]]
- c. a [very good (*at math)] linguist
- d. a [generous (*to a fault)] examiner

In German, the LLC constrains left-adjunction to an NP as a head-initial phrase (3) in the same manner as in English. APs and VPs, however, are head-final and therefore 'immune' against the LLC (4a-c). German is representative of the Germanic OV-languages in this respect, and Dutch is, too (4g,h).

- (3) a. eine [[offensichtlich viel *faszinierendere* (*als diese)] [Beschränkung]]
 an [obviously much-more fascinating (than this)] constraint
- b. eine [[hervorragend *geeignete* (*dafür)] [Kandidatin]]
 an [outstandingly eligible (for-it)] candidate
- c. eine [[um Vieles *bessere* (*als gedacht)] [Lösung]]
 a [by much better (than thought)] solution
- d. eine [[ebenso gut *geeignete* (*wie er)] [Kandidatin]]
 an [as well eligible (as him)] candidate
- (4) a. Diese Beschränkung könnte [[viel *faszinierender* als das EPP] sein]_{VP}
 this constraint could ((much-more fascinating than the EPP) be)
- b. Er hat [dieses Problem [so *präzise* wie alle anderen] analysiert]_{VP}
 he has this problem as precisely as any other analysed
- c. ein [[viel *häufiger* als jedes andere] verfügbares]_{AP} Gut
 a much more-frequent than any other available asset
- d. eine [viel *faszinierendere* (*als das EPP)]_{AP} Beschränkung]_{NP}
 a much more-fascinating (than the EPP) constraint
- e. eine [[so *präzise* (*wie alle anderen)] [Analyse des Problems]]_{NP}
 an as precise (as all others) analysis (of) the problem
- f. ein [[viel *häufigeres* (*als jedes andere)]_{AP} Gut]_{NP}
 a much more-frequent (than any other) asset
- g. dat beslissingen [veel *meer* dan werd gedacht] gedreven worden door emoties⁶ Dutch
 that decisions [much *more* than was thought] triggered were by emotions
- h. een veel *sneller* (*dan een paard) dier
 a much faster (than a horse) animal

⁶ <http://nha.courant.nu/issue/HD/1935-07-11/edition/0/page/2?query=>

As a consequence of the LLC, prenominal attributes in uniformly head-*initial* languages such as Romance, North-Germanic and English are complementless since any complement of the head of the attribute would intervene between the head and the target of adjunction and thereby violate the LLC. Complex attributes are obligatorily post-nominal (5). In Romance this is a regular option, in Germanic this is an instance of appositions (6).⁷ Unlike in Romance languages, adnominal attributes are prenominal. The difference is reflected in the lack of agreement (6a vs. 6b). Another option is extraposing the intervening phrase, if the grammar admits this (6c). French is representative for all other Romance languages in this respect.

- (5) a. a curious (*about his past) mother-in-law
 b. a mother-in-law, curious about his past
 c. un [plus grand (*que le précédent)]_{AP} nombre de personnes French
 a much bigger (that the preceding) number of persons
 d. un nombre de personnes [plus grand que le précédent]_{AP}
 e. une femme [fière de soi]_{AP}
 a woman proud of herself
 f. une [fière (*de soi)]_{AP} femme
- (6) a. Ein Schmetterling, *so selten wie* der Apollofalter, ist der Segelfalter.
 a butterfly, *as rare*_(no agreement) *as* the Apollo-butterfly is the Iphiclides-podalaris
 b. Ein so seltener (*wie der Apollofalter) Schmetterling ist der Segelfalter.
 a such rare_{Ag} (as the Apollo-butterfly) is the Iphiclides-podalaris
 c. Ein [[so seltener] Schmetterling *wie der Apollofalter*] ist der Segelfalter.
 a [[such rare_{Ag}] butterfly *as the Apollo-butterfly*] is the Iphiclides-podalaris

The LLC predictably holds for any language with unequivocally head-initial phrases. However, there are alleged SVO languages that violate the LLC, as for instance the Slavic languages. Upon closer scrutiny, these languages do not qualify as "unequivocally head-initial". In Slavic languages, the head position in the phrase is in fact not fixed. It is *flexible*. For details, the reader is referred to Haider & Szucsich (2019) and Szucsich & Haider (2015). Slavic languages are representative of a *third type* of head-positioning, namely *unspecified* head-positioning, in addition to the other two widely acknowledged types, namely head-*initial* and head-*final*. In such a 'Type-3' setting, adjuncts of an apparently head-initial phrase are not constrained by the LLC. A grammar with unspecified head positioning, that is, a type-3 language, allows for alternative serializations within a phrase. A head may alternatively be in an initial (7a), final (7b), or intermediate position (7c), that is, sandwiched between its arguments. Polish is representative of the majority of Slavic languages in this respect.

- (7) a. że Basia *pokazuje* Jarkowi swój dom. Polish
 that Basia_{NOM} *shows* Jarek_{DAT} her house_{AKK}

⁷ Prosodically, appositions are marked with a separate intonation contour ("comma intonation"; see Dehé (2014, sect. 2.3.3) for English. The analogous situation holds for German. In (i), the AP is an adjunct while in (ii) is is appositive and parenthetical. Here, adjectives do not agree and the AP is a separate intonation phrase.

i. Die [mageren und blau geäderten]Arme ragten aus einem schwarzen T-Shirt.
 the [meager_{Ag} and blue veined_{Ag}] arms protruded from a black T-shirt
 ii. Die Arme, [mager und blau geädert], ragten aus einem schwarzen T-Shirt.
 the arms, [meager and blue veined], protruded from a black T-shirt

- b. że Basia Jarkowi swój dom *pokazuje*.
- c. że Basia Jarkowi *pokazuje* swój dom.

In Polish and in Slavic languages that resemble Polish, the LLC effect is absent for preverbal adjuncts (8a) as well as for prenominal adjuncts (8b).⁸ The resemblance between (8b) and its English counterpart is misleading. The verb position in (8b) is just one of several available positions, as illustrated in (7). The contrast between English and Slavic languages in this respect confirms the conjecture that LCC is a property of adjuncts of genuinely head-initial phrases. If in Slavic, a head may license in either direction, it will license adjuncts in either position.

- (8) a. [[_{AP} wierny (swojej żonie)] mąż]_{NP} Polish
faithful (his wife_{DAT}) man
- b. [?]W zeszłym roku [[_{AdvP} *dużo więcej* (niż Jarek)] pracowała tylko Katarzyna]_{VP}
during last year *much more* (than Jarek) worked only Katarzyna

The absence of the LLC in Slavic languages is merely one feature out of a systematic set of contrasts between uncontroversial SVO languages and the Slavic languages. They are Type-3 languages that have been misclassified as SVO languages (Haider & Szucsich 2019, Szucsich & Haider 2015).

3. Previous attempts of accounting for LLC-constrained data

The adjacency property of adnominal attributes and of preverbal adverbials has each been seen as a theoretical challenge in the literature, but not as a common property of head-initial phrases. As for attributive APs in English, Emonds (1976) has raised the issue and Williams (1982) has deferred it to a filter-condition (i.e. *Generalized Head Final Filter*).

The following accounts⁹ have been tried out, namely a *head-to-head adjunction* proposal for adverbs (3.1), a *head-to-functional-head raising* account for adjectives (3.2), a *head-complement* relation for adjectives (3.3), and a *processing* account (3.4). In each case, adjacency is captured, but each account turns out to be empirically inadequate. None of these accounts is able to satisfactorily cover both instances – adnominal attributes and adverbial phrases – and the absence of adjacency of adjuncts when the host phrase is head final. Eventually, even the theoretical null-hypothesis – the apparent correlations are accidental – has found its advocate, with non-compelling arguments, though (3.5).

3.1. Adverbs as head-to-head adjoined items?

The fact that preverbal adverbials very frequently are simple adverbs has duped Bouchard (1995:409), who claims that preverbal adverbials in English or French are head-adjoined to the verbal head and therefore ‘simple’. Even if this were a correct option, which it is not, it would not rule out adjoining phrasal adverbials. The hypothesis merely postulates that word-level adverbials may be adjoined to a verbal head. By the same token, however, one would have to

⁸ The question mark is to indicate that the informants fully accepted the given serialization of (8b), but showed at the same time a preference for the alternatively available variant that avoid centre-embedding.

⁹ One reviewer tells me that – according to a forthcoming [sic!] publication – a “*final-over-final constraint*” (= a constraint that disallows structures where a head-initial phrase is contained in a head-final phrase in the same extended projection/domain) could account for the facts. *Evidently*, this cannot be the case: In languages like English, heads are uniformly *initial*, in any phrase, so the constraint cannot be operative at all since there are no head-final phrases involved. The LLC applies to head-initial phrases, and the adjunct phrases are head-initial in English as well as the NPs and VPs they are adjoined to.


assume that phrase-level adverbials would have to be adjoined to the phrase-level category, that is, the VP. Eventually, it would be entirely unclear what to do with adverbs that precede other adverbs as in "*She'd have surely more deeply regretted it.*"

It should be obvious that the head-head adjunction idea misses an essential generalization. Preverbal adverbials may be phrasal but only to the extent that the head remains phrase-final. For strictly head-initial languages like English or French this entails that a preverbal adverbial phrase can be extended only on its left side and not on the side where the complements would appear. Hence adverbial phrases in English may contain modifiers but no complements (9a), as attested in English, and other VO-languages, such as Romance languages (9b,c).

- (9) a. She has *even much* earlier (**than him*) published in this field.
 b. Saint-Etienne a *plus souvent* (**que* Lille) gagné. French
 Saint-Etienne has *more often* (than Lille) won
 c. La sinistra *ha più volte* (**di* Fratelli d'Italia) *vinto* le elezioni. Italian
 the left (party) has *more times* (than Fratelli d'Italia) won the elections

3.2 Adjectival attributes with heads raised to functional heads selecting an NP?

A more sophisticated approach is the hypothesis that attributive APs are complements of a functional head, viz. an agreement head, in combination with the obligatory raising of the adjective to this functional head position. This is exactly what Corver (1997:291) has proposed, namely "*the existence of a head-final functional node Agr (heading AgrP) which can function as a landing site for adjectival heads that are moved rightward*".

- (10) a. $[[Agr-P \text{ PRO } [Agr' [\dots A^\circ \dots]_{AP} 0_{Agr^\circ}]]]_{Agr-P} [NP \dots N^\circ \dots]_{NP}$ base structure
 b. $[[Agr-P \text{ PRO } [Agr' [\dots e_i \dots]_{AP} A^\circ_{Agr^\circ}]]]_{Agr-P} [NP \dots N^\circ \dots]_{NP}$ raising of A° to Agr°
- 

This hypothesis correctly predicts that the adjectival head of an AP attribute in the NP will always be adjacent to NP because the functional head is NP-adjacent. However, the hypothesis demonstrably fails in other respects. There are equally immediate predictions of this hypothesis which are simply wrong. Head-movement to the right over-generates heavily. It predicts outcomes that do not exist. Here are two areas of counterevidence, one from English and one from German which are representative of the respective language type, that is, VO and OV, respectively.

If an adjective were raised out of the AP into a pre-nominal functional head position, then APs with complements (11a,b) would be turned into attributes in which the argument of the AP apparently precedes the adjective, but only in attributes. The predicted results (11c,d) are unquestionably discouraging. English is a case for the LLC but English obviously does not raise the adjectival head out of an AP attribute (11c,d), and English is representative of all other head-initial Germanic and Romance languages, all of which are constrained by the LLC. By the same token, participial constructions with particle verbs are predicted to strand the particle in German or Dutch, but they don't (11e).

- (11)a. He has always been [eager to improve]_{AP}
 b. He has always been [faithful to her]_{AP}
 c. *He has always been a $[[e_i \text{ to improve}]_{AP} \text{eager}_i]_{Agr-P}$ scientist
 d. *He has always been a $[[e_i \text{ to her}]_{AP} \text{faithful}_i]_{Agr-P}$ husband

- e. *der [[allen *ab-e_i* davon] *ratende_i*] Experte¹⁰
the everyone_{Akk} *dis-e_i* of-it *advising_i*; expert (ab+raten = dis+advise)

Raising an adjective to an agreement position would strongly resemble raising the finite verb to the verb second position in V2-languages. In Scandinavian languages, for instance, the finite verb crosses the subject and precedes it in its derived position, and it strands the particle. In the Germanic OV-languages, the fronting of the finite verb crosses all of its complements. In the case of adjective movement, the adjective in its derived position would be predicted to cross particles and objects, with such items ending up in a position in which they would precede the raised item. The facts do not support this hypothesis, however.

German provides another area of evidence, along the same line. Elements that obligatorily follow the adjective in the AP are banned from the attributive construction in German (and in Dutch as well) because of the LLC. A comparative PP obligatorily follows the adjectival head (12a,b). But, if the adjective raises, it would cross the comparative PP, resulting in (12c). This prediction turns out wrong (12c). The adjective in (12c) is treated just like the adjective in (12c), namely as an adjective with a wrong serialization.

- (12) a. Der Preis ist [höher *als der Wert*]_{AP}
the price is higher than the value
b. *Der Preis ist [*als der Wert* höher]_{AP}
c. *der [[*e_i* als der Wert]_{AP} höher_{e_i}]_{Ag-P} Preis

Eventually, a movement account for adjectives would merely cover NP-adjuncts. So, the account would have to be generalized in order to cover VP-adjuncts as well since the LLC applies in both contexts.

For VP adjuncts, there is a proposal by Cinque (1999) that is based on functional projections. The idea that preverbal adjuncts are contained in functional projections has been widely adopted since. In spite of its wide reception there exists unequivocal, robust and manifold counterevidence;¹¹ see Haider (2013, sect. 6.4 and 6.5) and Haider (2004). According to Cinque's proposal, which has become a standard assumption in Generative approaches, adverbials are expressions in spec positions of empty adverbial functional heads.

- (13) a. [Adv-P XP [Adv° 0 [VP V° ...]]]

¹⁰ This is exactly the structure Corver (1997: 350) argues for, with examples such as (i):

i. [DP een [NP [AgP PRO [Agr' [nauw t_i daaraan] [Agr verwante_i]]] [NP man]]]
a closely there-to related man

The problem shows when the moved item is a verbal element, that is, a participle, with an obligatorily stranded particle. The predicted outcome is clearly deviant. (11e), the participial construction corresponding to (ii) – stranded particle & extraposed PP – is ruled out by the LLC. The well-formed version is (iii).

ii. Der Experte riet_i [allen *ab-e_i* davon] (the expert 'suaded' everyone *dis-e_i* of-it); ab-raten = dis-suade
iii. der [allen davon *abratende*]_{AP} Experte (the [everyone from-it dissuading] expert)

¹¹ Here is a central and straightforward prediction that is wrong in any of the applicable OV languages: Any phrase that precedes an adverbial phrase in an OV language is predicted to be opaque for extraction. Such a phrase would inevitably be in a pre-VP-functional projection. That such positions are opaque for extraction is an established fact in the literature on extraction domains. This prediction is inevitable but empirically wrong. For example, if "*vergeblich*" (futile) in (i) had to be assigned to a functional spec-position, the infinitival clause preceding it is adjoined to or contained in a functional projection. In each case, extraction is predicted to be ungrammatical. However, there is no OV language that would unequivocally confirm Cinque's prediction (see Haider 2004).

i. Mich_i/Wen_i hat er [e_i damit zu überzeugen] *vergeblich* versucht/?
me/who(m) has he [with-it to convince] *vainly* attempted

b. Hillary has [[[very cleverly] 0_{Adv}] [figured out that]_{VP}]

Within this framework, an LLC-effect is completely unexpected and unpredicted. If an adverbial phrase is a phrase in a spec position, the LLC has no chance at all to apply. Typical and uncontroversial functional spec positions such as the clause-initial position in V2-languages or the subject position in SVO languages are open to phrases of any structural make-up. In particular, there is no evidence for a restriction such as the LLC to apply to phrases in such positions. Such evidence, if it existed, would be surprising since the LLC is a constraint on adjunctions and not on functional specifier position.

Note that in Cinque's account, a raising approach would not be admissible since the VP is regarded as the functional complement of the functional head. A VP with a preverbal adverbial is an adverbial phrase with a VP complement.¹² The adverbial phrase is a phrase in the spec position of the functional projection. An adverbial head could not leave the spec position and target the functional head position. In Corver's version, the AP is the complement of the functional head and the functional projection containing the adjective is adjoined to the NP.

In sum, a functional projection accommodating an attributive AP or an adverbial phrase of a VP is not the key for the solution but a road to predictions that fail. Its consequences are counterfactual.

3.3 Attributive adjectives as heads that select an NP complement?

A third avenue of attacking the problem has been contemplated by Abney (1987:339). He suggested that the NP following the attributive AP is a complement of the adjective (14a).

- (14) a. [_{DP} the_{D°} [_{AP} very [_{A'} outspoken [_{NP} critic of this proposal]_{NP}]]]
 b. [_{DP} ein [[_{sich} seiner Sache sehr *sicherer*]_{AP} [_{Kritiker des Vorschlages}]_{NP}]_{NP}
 a REFL_{Dat} his cause_{Gen} very sure critic the proposal_{Gen}
 c. [_{DP} ein [_{sich} [_{A'} seiner Sache [_{A'} sehr [_{A' *sicherer*} A° [_{Kritiker des Vorschlages}]_{NP}]]]_{AP}]
 d. * [_{DP} ein [_{sich} [_{A'} seiner Sache [_{A'} sehr [_{A'} [_{Kritiker des Vorschlages}]_{NP} *sicherer* A°]]]_{AP}]

That (14a) cannot be a correct analysis becomes clear in a language in which the AP is head final. Here, the complements of the adjective precede the head, but the phrase is nevertheless subject to the LLC if it is an adjunct of a head-initial phrase. German is a language with this kind of setting. Abney's focus is merely on English. German clearly tells that an analysis that – due to the restriction imposed by LLC – might be contemplated for English would not work for German, as (14c,d) illustrate

In German, just like in English, adjectives do not permit accusative objects, but there are dative, genitive and prepositional objects. The adjective "*sicher*" (sure) takes a reflexive dative and a genitive NP as objects in a head-final AP. If we disregard the implausible semantic compositionality of (14c) for the moment, the NP as a complement in (14c), would be a structurally

¹² As an inevitable but unwelcome consequence, each auxiliary in (i) subcategorizes and selects an adverbial phrase while the very same auxiliaries in (ii) subcategorize and select a VP:

i. The new theory certainly may [_{Adv-P} possibly have [_{Adv-P} indeed been [_{Adv-P} badly formulated]]]
 ii. The new theory may [_{VP} have [_{VP} been [_{VP} formulated badly]]]

Moreover, intervening head, such as a negation particle trigger *do*-support (ii). The alleged adverbial heads are predicted to have the same effect but they don't (iv). The difference follows if adverbials are adjuncts of the VP.

iii. It does *not* work that way.

iv. It *never* works that way.

illicit complement nevertheless since an AP is head-final in German. So, NP complements have to precede. Consequently, if the NP were a structural complement of the adjective, it would have to precede (14d). The resulting expression is gibberish, however. No language is known with structures like (14d).

There is simply no evidence for a structure such as (14c). Moreover, the complementation idea would run into difficulties whenever a NP is modified by more than one attribute (15). In this case, in Abney's analysis, the lower adjective "sympathisch" (likeable) would select an NP as complement while the adjectival head "befremdlich" (strange) of the higher attribute would have to select an AP. Clearly, the result would be grammatical only if the lower AP is an attribute of an NP. Since the higher attribute cannot select the lower NP directly, the account will inevitably lead into over-generation.

- (15) der [[für mich befremdliche]_{AP} [[ihm sympathische]_{AP} Vorschlag]_{NP}]_{NP}
the [to me strange] him_{Dat} [him likeable] proposal

Abney's idea is in fact similar to Cinque's proposal for adverbials, except that Cinque postulates an empty functional head while Abney takes the adjective to be the selecting head. If Abney updated his analysis, he could join Cinque and postulate a functional head for attribution (or agreement, like Corver), that selects the NP. This analysis would fail, too. If he assumed, following Cinque, that adjuncts are phrases in spec positions, the LLC could not apply and rule out the ungrammatical cases. If, on the other hand, Cinque adopted Abney's analysis and applied it to adverbials, assuming that the head of an adjunct in reality selects the phrase it appears to be adjoined to, then the analysis fails for languages with head-final phrases, since they are not constrained by the LLC.

3.4 The LLC as a processing effect?

In a theoretically uncommitted approach, Fischer (2016) presents a tentative proposal in terms of processing effects. In particular, adjectival agreement is suspected to work as a boundary-signal. As a boundary signal for the boundary of the AP it is phrase-final. That's why it is bound to occur at the right *edge* of the AP.

Attractive though it might seem, such a parsing-based account does not satisfactorily work for various reasons. First, there are languages such as English without any adjectival agreement, but attributes are constrained by the LLC nevertheless. Second, Norwegian shows that the inflected adjective is not strictly adjacent to the following NP since "nok" (enough) may intervene; see examples (28) below. Third, the LLC effect for attributes is but a subset of the LLC phenomena. The LLC applies to adverbials as well, but in this case, it could not be treated as a violation of a morphological boundary condition since adverbials do not agree. Fourth, the boundary-signal hypothesis would lead to exactly opposite expectations with respect to the head-position of the host-phrase of the adjoined phrase. The LLC effect should be absent for head-initial phrases because here, the phrase-*initial* head of the NP or VP clearly signals the boundary for a preceding attribute. On the other hand, head-final phrases, such as German VPs, are notoriously ambiguous with respect to the boundary of an adjunct. If a boundary-signal-based condition applied in head final contexts, at least (16a) would be eliminated and (16a,b) would be disambiguated. The ambiguity between (16c) and (16d) is unavoidable since it is a

- b.*a [much smaller *than it*] building
 c.*a [much smaller *than it appears*] building¹³

Analogously, German and English, would have to be separated by rigid metrical constraints that make a structure like (18a) virtually unstressable in English, Italian (18d) or Swedish (18e), but not in German (18b) or Dutch (18c). Independent evidence for the operational details of the required metrical phonology is wanting, especially since it is implausible that a highly flexible property such as prosody, that adapts to variable structures, could exert a rigid bonding on structuring in exactly this case.¹⁴

- (18) a. [He [has [[more often (**than anyone else*)] scored] German
 b. [Er [hat [[viel *öfter* (*als jeder andere*)] gepunktet] Dutch
 c. Hij heeft vaker (dan iemand anders) gescoord. Italian
 d. Ha più spesso (**di chiunque altro*) abbia segnato.
 he has much more-often (than anyone else) scored
 e. Hon var lika djupt (**som oss*) [sårad över hans tystnad]. Swedish
 She was equally deeply (as us) [hurt by his silence]_{VP}

As for the suspected morphological constraint¹⁵ that allegedly separates German from English and Italian, independent evidence is missing. First, adjective inflection in German is definitely not a "phrasal affix". It is inflection, that is, a paradigm with strong and weak forms and agreement for case and number. Second, if it were an affix, it ought to parallel the relation between a T° head and the finite lexical verb of the English VP. But, in an English finite clause, a pre-VP adverbial (unlike a negation particle) does not prevent joining the T° present tense affix, viz. the present tense "-s", and the verb. Moreover, Russian and other Slavic languages would be wrongly subsumed under the adjacency requirement. In sum, Hinterhölzl's attempted dismissal of a single source for the cross-linguistically operative LLC effect lacks force. The theoretically stronger and empirically adequate solution is one that does not have to invoke several independent grammatical restrictions, especially when it can be shown that a *single* condition holds across categories as well as across languages (see section 5).

4. Apparent counterevidence for the LLC - cases of "acceptable ungrammaticality"

English is a representative instance for discussing apparent exceptions. The LLC constrains two patterns. First, adverbials in the slot between the subject position and the left boundary of the VP in English have to be head-adjacent to a head-initial VP. Second, prenominal attributes of head-initial NPs have to be head-adjacent to the NP. This section presents data that at first glance appear to contradict these predictions and forwards reasons and evidence as to why this is apparent counterevidence only. Here (19) are examples of the data areas to be discussed:

- (19) a. Research has [*at the same time*] come under increased scrutiny.

¹³ If meter were at issue, (i.) ought to be as unacceptable as (17c), which is not the case. An explanation is presented in the following subsection of this paper.

i. a much smaller *than expected* turnout (The Telegraph, online, January 24, 2020).

¹⁴ A line of a poem in a particular meter may be metrically deviant, but there is no meter for prose.

¹⁵ As predicted by the LLC, but in violation of the alleged morphological constraint, the *left-hand* AP of two *conjoined* attributes may violate the LLC, provided the second and NP-adjacent AP is head-adjacent indeed:

i. Jetzt steht dort ein [[genau so breites (*wie zuvor*)] aber [doppelt so hohes] Gebäude.
 now stands there a [[just as wide (as afore)] but [twice as high]] building.
 ii.* Jetzt steht dort ein [doppelt so hohes] aber [[genau so breites (*wie zuvor*)] Gebäude.

- b. a [*higher* than average/expected] proportion¹⁶
- c. ??an [*easy* to enter] competition

In (19a), the head of the adverbial PP is the preposition "at". The head of the attributive AP in (19b) is the adjective "higher", and in (19c), the head arguably is the adjective "easy". These heads are not adjacent to the target phrase of adjunction. Huddleston & Pullum (2003: 780) are deliberate when characterizing what they call the "central position" of adjuncts: "*Central position disfavors long and heavy adjuncts. Thus [...] PPs, NPs are for the most part less likely in this position than AdvPs.*"

As for (19a), the following table presents instructive search results from the three big corpora (see fn. 5) of written English for "has at the same time" in comparison to similar expressions with virtually the same structure. The scores show that (19a) is not representative of PP-adverbials in this position. The number before the slash is the number of occurrences of the given expression. The number following the slash is the number of occurrences of the PP in the respective corpus, that is, "at the same time" in (20a), and so on, in any position.

(20)	BNC	CocA	NOW
a. "has at the same time"	6 / 6835	11 / 34097	105 / 279.400
b. "has at the right time"	0 / 244	0 / 1208	0 / 21421
c. "has at a different time"	0 / 18	0 / 86	0 / 541
d. "has at that time"	0 / 2493	0 / 9772	2 / 83.806
e. "has at no time"	1 / 126	0 / 367	19 / 20.410

A side glance on German, with its head-final VP shows that it imposes no restraints on adverbials positions preceding the base position of the verb in the VP. This is directly reflected in corpora. A Google-search for "*hat zu dieser Zeit*" (= has at that time) – filtered for "news" and "book" sites – produced 1.380 hit on news-pages and 19.200 hits on book-sites.

The search results for English confirm that "at the same time" and, to a very small extent, "at no time" are the odd balls, but in a frequency range well below one-tenth of a percent. Both expressions are used like parenthetical¹⁷ idiomatic expressions. Whenever the very same NP headed by "time" has to be interpreted compositionally and therefore structured compositionally, the corpora confirm the LLC-gear prediction at a 100% level (20b-d). This indicates that such expressions, viz. (20a and (20e), are treated like an *adverbial idiom*, in place of "simultaneously" or "never"

The pattern (21b) stands for an intriguing class of apparent counterexamples. Again, the exceptions are limited to a small set of candidates. The outstanding items are "expected" and "average" and the profile is again uneven. In each case, the comparative expression intervenes between the head of the attribute and the target phrase of adjunction. This is a structure clearly ruled out by the LLC.

¹⁶ I am especially grateful to Kerstin Hoge und Amir Zeldes for making me aware of this particular type of data in the discussion period at the conference.

¹⁷ Some writers typographically mark the parenthesis, as in the following example:

i. And it's ridiculous to have someone who *has* – at various points in his life – paid little or no taxes, ...
<http://www.post-gazette.com/opinion/Op-Ed/2018/11/26/Ruben-Navarette-Jr-Donald-Trump-flip-flops-on-immigration-make-for-one-wild-ride/stories/201811260022> (accessed Nov. 27, 2018).

(21)		CocA	BNC	NOW
a.	a better than <i>expected</i> ...	8	3	351
b.	a better than <i>average</i>	14	8	141
c.	a better than <i>necessary</i> ...	0	0	0
d.	a better than <i>usual</i> ...	2	0	6
e.	a higher than <i>expected</i> ...	5	3	220
f.	a higher than <i>average</i> ...	29	13	361
g.	a higher than <i>necessary</i> ...	1	0	3
h.	a higher than <i>usual</i>	5	2	131
i.	a faster than <i>expected</i> ...	1	0	65
j.	a faster than <i>average</i> ...	0	0	1
k.	a faster than <i>necessary</i> ...	0	0	0
l.	a faster than <i>usual</i> ...	0	0	6

The key for understanding these findings comes from languages in which the head of the attribute is inflected. German is such a language. Here are the German counterparts (22). They confirm the LLC *and* they show how language users try to outfox it (23), in German and in English. As expected and predicted, the LLC correctly blocks structures with interveners. In (22), the head is identified by agreement inflection, it is not adjacent to the NP, and the result is ungrammatical and robustly unacceptable.

- (22) a. *ein besseres als erwartet Ergebnis
 a better_{sg.n.nom/acc} than expected result
 c. *ein teureres als nötig Eingreifen
 an more-expensive_{sg.f.nom} than necessary intervention
 d. *den besseren als üblich Ausblick
 the better_{sg.m.acc} outlook

Corpus search, however, produces a non-negligible number of specimen of the kind illustrated by (23). Here, an *adjacent* inflectable item is inflected although it is surely not the head of the attribute since it is embedded in the comparative phrase introduced by "*als*" (than). In fact, (23) is a 'fake' way of fulfilling the LLC. The adjacent item is treated as if it were the head although it is definitely not the head of the attribute. Why this? The source is a rule conflict.

- (23) a. ein [besser als erwartetes] Ergebnis¹⁸
 a [better than expected_{n.nom.sg.}] result
 b. die [besser als durchschnittlichen] Erfolgsstatistiken¹⁹
 the [better than average_{fem.nom.sg.}] statistics-of-success
 c. ein [teurer als nötiges] Eingreifen²⁰
 a [more-expensive than necessary_{n.nom.sg.}] intervention
 d. den [besser als üblichen] Ausblick²¹
 the [better than usual_{m.acc.sg.}] outlook

¹⁸ <https://www.cash.ch/news/top-news/boersen-ticker-aktien-new-york-weiter-zurueckhaltung-unter-anlegern-1067114>

¹⁹ <http://www.krebs-kompass.org/showthread.php?t=3605&page=7>

²⁰ <https://www.gruene-bundestag.de/parlament/bundestagsreden/2011/oktober/gerhard-schick-errichtung-des-europaeischen-finanzaufsichtssystems.html>

²¹ <http://www.finanzen.net/nachricht/aktien/gute-aussichten-gute-branchennews-treiben-chipwerte-infineon-auf-langzeithoch-5293416>

The rule conflict is this. The LLC enforces an adjacent head position but the comparative construction requires the comparative *than*-phrase to follow the comparative adjective and thereby intervene. This is a catch-22 dilemma, that is, if one rule is obeyed, the other is violated, and vice versa. In such a situation, speakers tend to waive what they feel to be the minor rule. The results are phenomena of "acceptable ungrammaticality", also known as "grammatical illusions" (Bever 1976, Frazier 2015, Haider 2011, Phillips et als. 2011). Examples such as (23) sound acceptable and are only recognized as ungrammatical upon closer scrutiny.²² This phenomenon – *acceptable ungrammaticality* – is the key for understanding (21).

In German, but not in English, the 'fake head'-strategy is betrayed by inflection. The German data show what happens in English. Speakers treat an adjacent item as a fake head for the purposes of the LLC. Let us check this explanation. An immediate prediction is this. Uninflectable items or items of a different category than that of the real head are fully unacceptable. This turns out to be correct. In (24) "*expected*" is a finite verb, and in (24b), "*bullet*" is a noun, and "*the median*" is a DP (in 24c)

- (24) a. *a better than I expected result
 b. *a faster than a bullet interceptor plane²³
 c. *a higher than the median temperature

The category mismatch makes the very same strategy unviable in the case of adverbials. A corpus search for the counterparts of attributes in adverbial usage, such as (25), produced zero results. If "*better than expected*" were a licit adnominal attribute it ought to be a licit adverbial, too. But it isn't.

- (25) a. *She has better than expected solved the problem
 b. *She has higher than average scored on this task

A special case of the pattern illustrated by (21) is triggered by the distribution of "*enough*" and its cognates in the Germanic languages (Haider 2011). This is the only degree modifier that does not precede its target (26). In all Germanic languages, it has survived and preserved its exceptional status over already a period of more than a millennium, apparently due to its high frequency. Being a degree modifier, it is an uninflected word.

- | | | | |
|--------------------------|---|---------------------|--------|
| (26) a. sufficiently big | – | big <i>enough</i> | |
| b. genügend groß | – | groß <i>genug</i> | German |
| c. voldoende groot | – | groot <i>genoeg</i> | Dutch |
| d. tilstrækkeligt stor | – | stor <i>nok</i> | Danish |

The fact that this modifier follows the head of the AP should disqualify such an AP for attributive usage. It would violate the LLC, and indeed, such constructions are robustly deviant, as the examples (27a,b) exemplify. However, the corpora reveal attempts of outwitting the LLC such as the following sample (26c,d), which is also confirmed by Fischer (2016), and the spell-checker of my text software marks them as incorrect.

²² A less frequent but also attested alternative attempt of dodging the conflicting rule situation is inflecting both, the adjectival head *plus* the NP-adjacent inflectable item. Google (16 Jan. 2020) produces 158 hits for "*besseres als erwartet*", as in: "ein besseres als erwartetes Ergebnis" (a better_{Ag} than expected_{Ag} result).

²³ Amir Zeldes (p.c.) made me aware of structures of the type "*a faster-than-light travel*", which could be mistaken for attribute + N structures but are in fact compounds whose initial part is a graft.

- (27) a. *keine großen genug Triebwerke
 no big_{fem.pl.nom.} enough engines
 b. *auf festen genug Beinen
 on strong_{n.pl.dat} enough legs
 c. ?keine groß genügen Triebwerke²⁴
 no big enough _{fem.pl.nom.} engines
 d. ?auf fest genügen Beinen²⁵
 on strong enough_{n.pl.dat} legs

In (27c,d), the intervener is inflected, although it is an uninflectable item. In German, even in combination with a noun, "genug" (enough) remains uninflected, in either position, prenominal or postnominal.²⁶ The inflection in (27c,d) is a way of compromising the LLC by violating the minor rule (i.e. inflecting the uninflectable) for saving the major rule, namely LLC, by pretending that "genug" (enough) is the head, by virtue of being inflected.

Dutch, German, English, and Norwegian provide a nice minimal-pairwise setting for relevant contrasts in this respect. English does not inflect attributes, but Dutch (Brokhuis 2013:454), German and Norwegian (Fabricius-Hansen 2010:180) do. Among the inflected group of these languages, Norwegian tolerates an inflected adjective followed by "enough", but Dutch and German don't. So, these data show that the difference between English and Norwegian on the one hand, and German and Dutch on the other hand should not be sought in conditions of attribute inflection. What accounts for the acceptability of (28a,d) in contrast to (28b,c) cannot be a principle of inflection.

- (28)a. a big enough room
 b. *een groote genoeg inzet – ??een groot genoeg inzet
 a big_{agr} enough dedication
 c. *ein großer genug Raum – ??ein groß genüger Raum
 a big_{nom.sg.m.} enough room
 d. et stort nok rom – det store nok leveranser²⁷
 a big_{sg.} enough room the big_{pl.} enough supplies

Why are English and Norwegian tolerant against "enough" as intervener, but Dutch and German aren't? English and Norwegian are VO languages and in VO languages, particles of particle verbs follow the verb. Consequently, participial attributive constructions with particle verbs always have particles intervening between the participial attribute and the noun phrase:

- (29) a. a washed *out* road, a switched *off* phone, a rolled *up* ribbon;
 b. eine *ausgewaschene* Straße, ein *abgeschaltetes* Telefon, ein *aufgerolltes* Band;

Particles of particle verbs do not count as interveners for LLC since particles are part of a complex verb and this complex verb is the head. This opens an escape hatch for (28a,d). The degree

²⁴ http://www.kleinezeitung.at/international/5295011/A380-notgelandet_RiesenAirbus-zerriss-es-ein-Triebwerk

²⁵ <https://www.pickupforum.de/topic/152024-toter-bester-freund-der-freundin-würde-euch-das-stören/?page=2&tab=comments#comment-2193863>

²⁶ Cf.: Geld genug (money enough) – genug Geld (enough Money) – genug Münzen (enough coins) – genug Abstand (enough interspace) – *genüges Geld – *genüge Münzen – *genüger Abstand.

²⁷ <https://www.an.no/bodoby/vi-har-fatt-landets-storste-fiskebutikk/s/1-33-7147807>

particle is interpreted as part of a complex adjectival head.²⁸ This escape is not available in Dutch or German since in these languages, the particle of complex verbs obligatorily precedes. Hence there is no licit pattern for post-head degree particle to be associated with.

Let us turn now to the third pattern, namely (19c). The German counterparts (30) are unproblematic since inflection shows that the head of the attribute is in final position. The construction is a participial construction in which the adjective serves as an optional adverbial.

- (30) a. ein nicht (leicht) zu lösendes Problem
 a not (easy) to solve problem ('a problem that is not (easy) to solve')
 b. eine nicht (einfach) zu beantwortende Frage
 a not (easy) to answer question ('a question that is not (easy) to answer')

For the pattern (19c), illustrated once more by (31a), there is a variant in English, namely (31b), in which the adjective clearly is the adjacent head. Corpus search²⁹ shows that the type (31b) outnumbers the type (31a) by far. This result is stable across other predicates such as "difficult", "hard" or "simple."³⁰ Huddleston & Pullum (2002:551) rule out and star "*an easy to find place*" but admit a "*ready to eat TV meal*" as having "*something of the character of a fixed phrase*."

In fact, (31b) is an independent construction, and not merely the extraposition variant of (31a), as the examples in (31c-d) illustrate. For predicates such as "convenient" or "comfortable", a construction type such as (31a) is unquestionably deviant but an infinitival clause as a complement of N is grammatical and acceptable.

- (31) a. ??*an easy to answer question*
 b. *an easy question to answer*
 c. *a convenient place to begin* – **a convenient to begin place*
 d. *a comfortable car to drive* – **a comfortable to drive car*

Once more, and in analogy to (22), (31a) is an instance of a 'fake-headed' attribute. Grammars of English qualify such a structure as deviant (Huddleston & Pullum 2002:551). This judgement matches the corpus search results. The construction "*an easy to N*" is totally absent in the BNC. CoCA produced a single hit. Even the biggest corpus consulted, namely the NOW corpus, contains merely a single token of the string "*an easy to answer*", in the context of "*an easy to answer question*". There are other instantiations of this construction type that are somewhat more frequent. For example, there are 146 tokens of "*an easy to understand ...*" in the NOW corpus, but not a single token is attested in the BNC corpus. The CoCA corpus contains four tokens of this expression. Therefore, it is safe to conclude that these are instances of acceptable ungrammaticality.

The attributes in (31) are treated as if the infinitival verb were the head. After all, it is the NP that provides the referent for the object slot of "answer" in (31a). But even in this situation of acceptable ungrammaticality, LLC is clearly respected since anything to the right of the verb

²⁸ Consequently, 'enough' should be a tolerated intervener also for preverbal adverbials, which is the case indeed:
 i. "Security" has *often enough* become a stand-in for whatever intelligence operatives decide to do. (NOW)

²⁹ Here are the results for the following searches:

 i. "is an easy to": BNC 0; CoCA 1; NOW 147.
 ii. "is an easy * to" ("*" = joker for a word slot): BNC 30; CoCA 177; NOW 1601.

³⁰ NOW corpus: "is a *difficult* to": 26, "is a *difficult* * to": 1690; "is a *hard* to" 22, "is a *hard* * to" 1416; "is a *simple* to" 13, "is a *simple* * to" 770.

makes the construction strictly deviant in the pattern (32a). Here, the LLC is violated, as above, but the fake head strategy would not work, either, since in VO languages, adverbials must not intervene between the verb and a direct object.

- (32) a. *an [easy to answer *correctly*] question
 b. an easy question [to answer *correctly*]

In sum, it seems warranted to conclude that the allegedly 'apparent' counterevidence is apparent indeed. The LLC is not challenged by these data. Taken together with the existing positive evidence, they confirm the existence of such a constraint on adjunction to head-initial phrases.

5. The grammatical source of the LLC constraint

The LLC is real, but a satisfactory account of this constraint is still missing. Let us recapitulate what the desired account has to cover. *First*, it has to capture a directionality property. The LLC constrains left adjuncts of *left-headed* phrases, that is, head-*initial* phrases. It is absent for left adjuncts of right-headed, that is, head-*final* phrases, and it is absent for adjuncts of phrases with unspecified directionality of the head, as for instance in the VPs or NPs³¹ of Slavic languages.

Second, the desired condition has to be category-neutral since the LLC applies to NP adjuncts (i.e. attributes) as well as to adjuncts of VPs and APs (i.e. adverbials). This disqualifies accounts in terms of an agreement relation between the head of the adjunct and the head of the hosting phrase. In other words, the fact that there are languages in which adnominal attributes agree with the NP they are adjoined to is irrelevant since in the very same languages the adverbials do not agree but both contexts are equally constrained by the LLC.

Third, the LLC only constrains *adjuncts* of lexical projections but it crucially does not apply to phrases in spec positions. This disqualifies accounts that place attributes or adverbials in spec position of functional heads. Taken these facts together, they call for a fresh approach. The approach suggested here is one in terms of a directionality-based licensing theory (Haider 2013, 2015). Directionality of licensing is a property of lexical categories. Functional categories do not license arguments. Their structure is invariant across categories³² and languages. The specifier precedes and the complement follows; see Haider (2013) and (2015).

Why should the directionality of a lexical head matter at all for adjuncts?³³ After all, adjuncts unlike arguments do not depend on the head. But – and this matters – an adjunct position³⁴ is a position within the phrasal projection of head and needs to be licensed just as any position within a phrase. Hornstein & Nunes (2008: 57) characterize the situation as follows. "*It is fair to say that what adjuncts are and how they function grammatically is not well understood. The*

³¹ The LLC holds for attributes in the South Slavic BCS languages, that is, Bosnian, Croatian, Serbian and Slovenian but not in the other Slavic languages (see Szucsich & Haider 2015). In the BCS languages and Slovenian, the directionality of N° is specified as 'progressive', producing *head-initial* NP-structures.

³² Contrary to widely assumed but empirically unfounded assumptions, functional positions as targets of lexical head movement are universally preceding their complement. Hence, their serialization is not directionality dependent.

³³ One of the reviewers justly suggested that this issue calls for a clarification.

³⁴ This approach dodges the traditional structural analysis of *adjuncts* (i.e. *Chomsky-adjoined phrases*), as phrases that are *adjoined* to their host phrase. Attributes are adjuncts adjoined to NPs; adverbials are adjuncts of verbal, adjectival and in certain cases of nominal constituents.

current wisdom comes in two parts: (i) a description of some of the salient properties of adjuncts (they are optional, not generally selected, often display island effects, etc.) and (ii) a technology to code their presence (Chomsky-adjunction, different labels, etc.)."

The LLC is part of the "*technology to code their presence*". The LLC is the reflex of a strict structural management of admissible *positions* in a phrasal projection of a lexical head. This paper focuses on the very property imposed on *structure* (and not on the syntactic or semantic content). Adjuncts that *precede* their host phrase are *structurally* constrained if and only if their host phrase is a *head-initial* phrase. This constraint is absent for adjuncts of head-final phrases or phrases with flexible head positioning, such as in the Slavic languages.

Adjuncts preceding a head-initial NP, VP, or AP are phrases whose position is obviously not in the directionality domain of the progressively licensing head of the phrase. That is the crucial distinction between head-initial and head-final phrases. Adjuncts preceding the head of a head-final phrase, such as ZP in (31a), are within the directionality domain of the regressively licensing head of the phrase. In (31b), ZP is not within the directionality domain of x° , but in (33a) it is.

- (33) a. head-final: $[_{XP} ZP \leftarrow [\dots \leftarrow x^\circ]_{XP}]_{XP}$
 b. head-initial: $[_{XP} ZP [x^\circ \rightarrow \dots]_{XP}]_{XP}$

In (31a), an adjunct ZP is within the licensing domain of x° because x° is a *regressively* licensing head and therefore it is directionally licensed by x° . In (31b), ZP is outside the directionality domain of x° and therefore not licensed by x° . For the details of the licensing system and the derivation of the systematic contrasts between head-final and head-initial phrases, the reader is referred to Haider (2015) and (in press).

For the present purpose it is sufficient to realize the directionality difference between (33a) and (33b) and to accept the condition that a *structural position* of a phrase to be integrated in another phrase needs to be *directionally licensed* in the containing phrase. This leaves exactly one context of a phrase that is not licensed by the head of the phrase it is a part of. This context is the context of left adjuncts to left-headed phrases. This is the case singled out by the LLC. Here, the 'glue' for integrating a phrase is not the directional license by a head. The phrase must produce its own glue for attaching to another phrase. Let us call this relation '*proper attachment*' and define a principle to that effect:

- (34) a. *Principle of Proper Attachment (PPA)*: A phrase XP contained in a constituent YP that is *not in the directional licensing domain* of the head of YP must be properly attached to YP.
 b. A phrase XP is *properly attached* to a constituent YP if it is *adjoined* to YP and the head of the projection XP is *minimally distant* from YP.
 c. The head x° of XP is *minimally distant* from YP if there is no ZP (\notin projection nodes of x°) dominated by XP that is closer to YP than x° in linearization.

This principle is sufficient for covering all the phenomena discussed above. The LLC is the joint result of properties of the adjoining phrase and the host phrase. Head-initial host phrases are unable to license their *left* adjuncts directionally. So the adjoined phrase must license its position by itself. It must properly attach to the host phrase. This is the source of the LLC

effects. For adjuncts that are properly attached and precede a head-initial phrase, *each node* on the projection line of the adjunct is adjacent to the host phrase.

In head-final phrases, adjuncts are directionally licensable in any adjunction position preceding the head. So there is no need for a last resort option for obtaining a positional license via the PPA, whence the complete absence of LLC effects. In Type-3 phrases, the head is free to license in either direction since the directionality is not fixed to a particular value, that is, either progressive or regressive.

As a closing remark, I do not hesitate to admit that the definition of (34) resorts to a potentially unwelcome ingredient for an entirely structural condition, namely to "linearization", that is, a string-based condition. Two items α and β are adjacent if there is no *intervening* (= string-based) item γ . For the time being, I do not see how to dispense with the string-based part of PPA in order to arrive at a purely structure-based definition.

6. Conclusion

The LLC is the effect of a principle that governs the attachment of phrases to other phrases outside of the directionality domain of the head of the host phrase. It is a principle necessitated by the conditions of licensing phrases in a projection, based on the directionality of a head and its projections (see Haider 2015 for the details of the licensing system and the systematic syntactic consequences that correlate with the head-initial and head-final property). Phrases *adjoined* to a phrase outside of the directionality domain of the head are nevertheless licensed but under a different condition. They are 'glued' to the respective phrase, which requires 'tight' attachment. This is defined as proper attachment by the PPA (34). *Each* node on the projection line of the head of a PPA-adjoined phrase is *adjacent* to the host phrase since there are no interveners between the head of the adjunct and the boundary of the phrase the adjunct is pre-adjoined to.

For strictly head-initial languages with prenominal attributes, the PPA strips these attributes of all their complements. Apparent counterexamples are cases of acceptable ungrammaticality and reflect the users' attempts to circumvent the PPA. In head-final phrases, all these effects are absent. In sum, the PPA completes the licensing system for joining phrases by defining the licensing condition for adjunct position outside of the directionality domain of the extended projection of the head of the host phrase.

6. Afterthought in connection with the topic of this volume – headedness or anarchy

"Adjunct" is a well-studied concept in terms of its semantical properties. It's appropriate syntactical coverage is still a matter of dispute. As Dowty (2003:33) points out, "*The distinction between 'complements' and 'adjuncts' has a long tradition in grammatical theory, and it is also included in some way or other in most current formal linguistic theories.*" But he emphasizes that "*it is a highly vexed distinction for several reasons, one of which is that no diagnostic criteria have emerged that will reliably distinguish adjuncts from complements in all cases.*"

The only reliable distinctive property of adjuncts and complements, which Dowty (2003) notes, seems to be the following. Adjuncts can be instantiated in an arbitrary number within the same phrase, complements cannot. Grammar does not set a principal upper bound for attributes in

combination with a single noun phrase or adverbials in combination with a single verb phrase. *"Multiple adjuncts (an unlimited number), can accompany the same head while only a fixed number of complement(s) can accompany a head (viz. just the one (or two, etc.) subcategorized by the particular head."* (Dowty 2003: 39).

From a theoretical point of view, this tells us that what we usually call an adjunct is not under strict control of the head of the phrase it is adjoined to. It is neither semantically nor categorially selected. As a consequence, even the number of admissible occurrences is not fixed. Adverbs may 'come or go' without permission by the head of the phrase they are associated with. Does this certify adjuncts as structural anarchists in the tightly ruled realm of phrasal heads, defying the grammatical authority of their heads? Hornstein & Nunes (2008:58) make out *"a deeply held, though seldom formulated, intuition: the tacit view that adjuncts are the abnormal case, while arguments describe the grammatical norm. We suspect that this has it exactly backwards. In actuality, adjuncts are so well behaved that they require virtually no grammatical support to function properly."*

They are well-behaved indeed, respecting all the constraints which the phrasal and the clausal architecture imposes. Phrase structure determines possible slots for adjuncts. What is a possible slot differs across phrase structure types. (35) illustrates the differences between English, as a head-initial [S[VO]] language, and German, with a V2-clause structure based on a head-final verb phrase.

- (35) a. The second show will be held *tomorrow evening at the same time at the same venue*.
 b. [*Morgen Abend, zur selben Zeit, am selben Ort*] wird die zweite Show stattfinden.
tomorrow evening, at the same time, at the same venue will the second show happen
 c. [*Morgen Abend*] wird *am selben Ort* die zweite Show *zur selben Zeit* stattfinden.
 d. [*Morgen Abend*] wird die zweite Show stattfinden, *zur selben Zeit, am selben Ort*.

Typically, in clauses based on head-final VPs, unlike head-initial ones (see Haider 2010:12, 43; 2015), adverbials may intervene between the arguments of the verb. In addition, there is – like in English – room in the clause-initial area. Here, multiple adjuncts, unlike arguments, may be stacked in German (35a). Eventually, there is the clause-final areas, the extraposition range at the end of VPs, which provides structural space for extraposed adverbial PPs and clauses. Altogether, this amounts to more than fourteen additional word order variants for (35b), two of which are listed as (35c) and (35d). In English, the head-initial phrase-structure and the SVO clause structure restrict the kind of adverbial phrases in (35a) to the peripheral positions of the clause.

That adjuncts *"require virtually no grammatical support"* is a correct observation, but *"virtually"* as a restrictor on *"no"* is a necessary part of this characterization. Adjuncts lack grammatical support whenever the adjunction site is outside the directionality domain of the head of the phrase they are adjoined to. Exactly in this case, LLC comes into play and guarantees that the adjunct is tightly 'glued' to its host phrase.

Bibliography

- Abney, Steven. 1987. *The English noun phrase in its sentential aspect*. Unpublished PhD dissertation. Cambridge, Mass.: MIT.
- Bever, Thomas G. 1976. Analogy or ungrammatical sequences that are utterable and comprehensible are the origins of new grammars in language acquisition and language evolution. In: Bever, Thomas G., Katz Jerold J., Langendoen D. Terence (eds). *An integrated theory of linguistic ability*. 149-182. New York: Thomas Y. Crowell Company.
- Bouchard, Denis. 1995. *The semantics of syntax*. University of Chicago Press.
- Broekhuis, Hans. 2013. *Syntax of Dutch: adjectives and adjective phrases*. Amsterdam University Press: Amsterdam.
- Chomsky, Noam. 1986. *Barriers*. Cambridge, Mass.: MIT Press.
- Cinque, Guglielmo. 1999. *Adverbs and functional heads: a cross-linguistic perspective*. Oxford University Press.
- Corver, Norbert. 1997. The internal syntax of the Dutch extended adjectival projection. *Natural Language and Linguistic Theory* 15: 289-368.
- Dehé, Nicole. 2014. *Parentheticals in Spoken English: The Syntax-Prosody Relation*. Cambridge: Cambridge University Press.
- Dowty, David. 2003. The dual analysis of adjuncts/complements in categorial grammar. In Lang, Ewald, Claudia Maienborn & Cathrine Fabricius-Hansen (eds.) *Modifying adjuncts*. 33-66. Berlin: Mouton de Gruyter.
- Emonds, Joseph. 1976. *A transformational approach to English syntax*. New York: Academic Press.
- Fabricius-Hansen, Cathrine. 2010. Adjektiv/Partizipialattribut im diskursbezogenen Kontrast (Deutsch – Englisch/Norwegisch). *Deutsche Sprache* 38: 175-192.
- Fischer, Klaus. 2016. Vertextungsstrategien im Deutschen und Englischen: die Attribution in der Nominalphrase. In: Hennig, Mathilde (ed.) *Komplexe Attribution*. Berlin: de Gruyter
- Frazier, Lyn. 2015. Two interpretive systems for natural language? *Journal of Psycholinguistic Research* 44(1): 7–25. doi:10.1007/s10936-014-9328-0
- Haider, Hubert. 2020. VO/OV-base ordering. In Richard Page & Michael T. Putnam (eds.) *Cambridge handbook of Germanic linguistics* (chapter 16). Cambridge University Press.
- Haider, Hubert. 2015. Head directionality – in syntax and morphology. In: Antonio Fábregas, Jaume Mateu, Mike Putnam (eds.) *Contemporary linguistic parameters*. London: Bloomsbury Academic. 73-97.
- Haider, Hubert. 2013. *Symmetry breaking in syntax*. Cambridge University Press.
- Haider, Hubert. 2011. Grammatische Illusionen. *Zeitschrift für Sprachwissenschaft* 30: 223-257.
- Haider, Hubert. 2010. *The syntax of German*. Cambridge: Cambridge University Press.
- Haider, Hubert. 2004. Pre- and postverbal adverbials in VO and OV. *Lingua* 114 (6): 779-807.
- Haider, Hubert. & Luka Szucsich. 2019. *Slavic languages – "SVO" languages without SVO qualities?* lingbuzz/004973.
- Hinterhölzl, Roland. 2016. On the variable nature of head final effects in German and English: an interface account. In Bidese, Ermengildo, F. Cognola & M. Moroni (eds.), *Theoretical approaches to linguistic variation*. 177-202. Amsterdam /Philadelphia: John Benjamins.
- Hornstein, Norbert & Jairo Nunes. 2008. Adjunction, labeling, and Bare Phrase Structure. *Biolinguistics* 2(1): 57-86.
- Huddleston, Rodney & Pullum, Geoffrey K. 2002. *The Cambridge grammar of the English language*. Cambridge: Cambridge University Press.

- Phillips, Colin, Matt Wagers, & Ellen Lau. 2011. Grammatical illusions and selective fallibility in real-time language comprehension. In J. Runner (ed.) *Experiments at the interfaces. Syntax & Semantics* (vol. 37), 153-186. Bingley, UK: Emerald.
- Szucsich, Luka & Hubert Haider. 2015. Freie Wortstellung in slawischen Sprachen und die VO/OV-Unterscheidung. In Elena Dieser (ed.) *Linguistische Beiträge zur Slavistik: XX. JungslavistInnen-Treffen in Würzburg, 22.-24. September 2011*. (Specimina Philologiae Slavicae). p. 94-124. München: Verlag Otto Sagner.
- Williams, Edwin. 1982. Another argument that passive is transformational. *Linguistic Inquiry* 13: 160-163.