

## The interaction of adjectival structure, concord and affixation

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### 1. Introduction

Theories of adjectives differ in whether the adjective is an adjunct (Svenonius 1994), a specifier (Cinque 1994) or a head on the nominal spine (Abney 1987). In the analysis of Ingason (2016), adjectival structure is variable; in Icelandic, low restrictives are adjoined to *nP* whereas higher adjectives with additional meaning components are specifiers that combine with *nP* via functional projections. This semantic contrast has morphological consequences in Icelandic because adjectives in specifier positions are interveners which block the suffixation of the definite article onto the noun whereas the low adjoined restrictives are not interveners and permit suffixation onto the noun.

The main point of this paper is to show that such a theory with variable adjectival structure can be extended to allow for two specific theoretical reductions without sacrificing empirical coverage. First, we subsume all types of agreement/concord under Agree; contra the split theory of concord phenomena by Baier (2015) where a distinction is made between concord by Agree (Chomsky 2000) and concord by Morphological Feature Copying (Norris 2014). Second, we subsume head-to-head Lowering under Local Dislocation under adjacency; contra the split theory of affixation (Embick & Noyer 2001) which distinguishes Local Dislocation from head-to-head Lowering of a head onto the head of its complement. Our proposal fits well with the scientific spirit of the Minimalist Program (Chomsky 1995) because it derives a range of superficially unrelated phenomena with the same limited set of theoretical primitives.

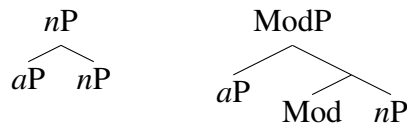
The paper is organized as follows. Section 2 presents the structural typology of adjectives which is the core of our theory. Section 3 discusses the notions of Concord and Agree and shows how a set of concord phenomena can be derived under a uniform mechanism which is valuation by Agree. Section 4 considers the distinction between head-to-head Lowering and Local Dislocation under adjacency proposed by Embick & Noyer (2001) and shows how our theory eliminates the need for the former mechanism. Section 5 concludes.

## 2. Structural typology of adjectives

Our theory is based on a structural typology of adjectives. The structural variability that we propose, coupled with the notions of Agree and c-command, is responsible for deriving the range of attested phenomena. In a manner similar to Pfaff (2015), we assume that adjectives can merge in a high, middle, or low position within the noun phrase. We assume that these height distinctions are universal but that each language will either merge an adjective at a given height as a specifier or as an adjunct, a parametric difference that speakers of each language must acquire.

We assume that restrictive adjectives combine with *nP* as Low *nP*-Adjuncts and that they are interpreted via Predicate Modification (Heim & Kratzer 1998), or, alternatively, as Low Specifiers of a Mod(ifier) Phrase. The two structures are shown below.

### (1) Low Adjunct: Low Specifier:



When a restrictive *aP* is adjoined to *nP*, both are of semantic type  $\langle e, t \rangle$  and the two combine via Predicate Modification at LF.

### (2) Predicate Modification

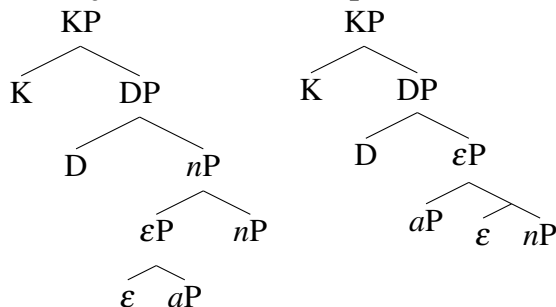
If  $\alpha$  is a branching node,  $\{\beta, \gamma\}$  is the set of  $\alpha$ 's daughters, and  $\llbracket \beta \rrbracket$  and  $\llbracket \gamma \rrbracket$  are both in  $D_{\langle e, t \rangle}$ , then  $\llbracket \alpha \rrbracket = \lambda x \in D_e . \llbracket \beta \rrbracket(x) = \llbracket \gamma \rrbracket(x) = 1$ . (Heim & Kratzer 1998, 65)

When a restrictive *aP* is merged as the specifier of *ModP*, we assume that the conjunction semantics is realized by the *Mod* head at LF.

$$(3) \quad \llbracket \text{Mod} \rrbracket = \lambda P_{\langle e, t \rangle} . \lambda G_{\langle e, t \rangle} . \lambda x . P(x) \wedge G(x)$$

In contrast to low adjectives, we assume that middle adjectives always involve some added meaning component which is expressed by a functional head  $\varepsilon$ . They are complements of *nP*-adjoined  $\varepsilon$  or specifiers of  $\varepsilon$ . All middle adjectives are above all low adjectives.

### (4) Mid Adjunct: Mid Specifier:



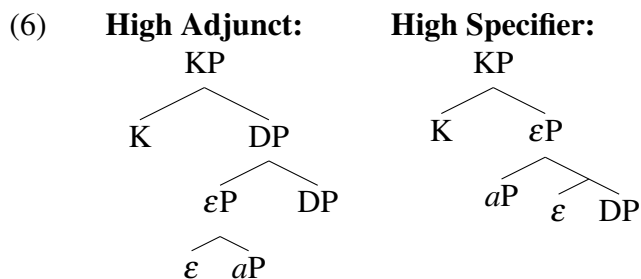
For those, the functional head in question may for example realize the meaning 'evaluative' for evaluative adjectives. This means that an adjective like *mysterious* is a middle adjective

in evaluative usage but it can also be used restrictively, in which case it is a low adjective. We present examples of evaluative adjectives in this paper, see Section 4, but this is not intended to suggest that evaluatives are the only class of adjectives which is merged at the middle height. The LF realization of  $\varepsilon$  is determined by contextual alloosemy in the sense of Marantz (2009a,b) and Wood (2015). If the label of its complement is  $aP$ , its denotation is (5a), but otherwise it is (5b).

- (5) a.  $\llbracket \varepsilon \rrbracket = \lambda P_{\langle e,t \rangle} . \lambda G_{\langle e,t \rangle} . \lambda x . G(x) \wedge \text{Rel}(P)(x) / \_ (aP)$   
 b.  $\llbracket \varepsilon \rrbracket = \lambda P_{\langle e,t \rangle} . \lambda G_{\langle e,t \rangle} . \lambda x . P(x) \wedge \text{Rel}(G)(x)$

In this semantics,  $P$  and  $G$  are the functions denoted by  $aP$  and  $nP$  and  $\text{Rel}$  is the relation contributed by the  $\varepsilon$ . For example, in evaluative usage,  $\text{Rel}$  might express something like ‘ $P$  is the opinion of the speaker about  $x$  in the present situation’ or ‘ $P$  holds of  $x$  according to the standards of the speaker in the present situation’.

In our analysis, high adjectives are merged between  $K/D$  (see Pfaff 2015), and their function is also expressed by some functional projection  $\varepsilon$ . As in the case of middle adjectives, they are complements of  $DP$ -adjoined  $\varepsilon$  or specifiers of  $\varepsilon$ .



Following Partee (1973), see also Pfaff (2015) for a case study on Icelandic adjectives, we assume that appositive modifiers are merged high. We will only discuss adjectives in this paper but the same holds for appositive relative clauses.

To summarize our typology, we assume that three height levels are available for adjectives universally but that languages differ in whether adjectives at each height are merged as specifiers or adjuncts. The case studies below will illustrate the importance of those structural distinctions.

### 3. Concord vs. Agree

In this section, we examine noun-modifier concord and develop an analysis in which all phenomena of this type involve valuation by Agree. We propose a uniform Agree/Concord mechanism which we refer to as Persistent Bidirectional Agree (cf. Baker 2008, Toosarvandani & van Urk 2014, Baier 2015; see also Béjar & Rezac 2009).

(7) **Persistent Bidirectional Agree**

An unvalued probe  $A$  is valued by a goal  $B$  if  $A$  c-commands  $B$  or  $B$  c-commands  $A$  at any point in the derivation.

This implementation of Agree has certain important properties. First, there is no uniform probing direction (upward/downward); valuation can take place whenever an unvalued probe is in a c-command relationship with a valued goal, given that the two nodes are phase-local to each other (cf. Chomsky 2000, 2001). Second, the mechanism is persistent so that any structure building operation which creates an appropriate c-command configuration can trigger Agree. This includes the first stages of the PF derivation, which is still operating on a tree structure. Notably for our purpose, the insertion of dissociated concord morphemes (Embick 1997) at PF can trigger Agree (nInfl in (8) stands for nominal inflection morpheme, see Ingason 2016).

- (8) Dissociated Morpheme Insertion  
 $X \rightarrow [X + nInfl]$

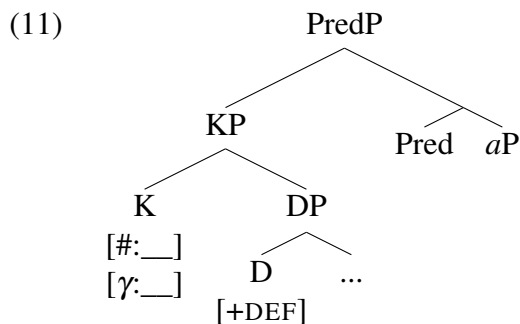
For simplicity, we will not include those dissociated morphemes in our tree diagrams below, but we assume that they enter the derivation unvalued at PF and that they are valued by Agree. If a feature of a dissociated morpheme does not receive a value, it is realized with a default value. One consequence of our approach is a changed status of the question of whether concord is syntactic (Carstens 2000, Danon 2011, 2013, Pesetsky 2013, Toosarvandani & van Urk 2014, Landau 2016) or whether it involves the PF derivation (Norris 2014, H.Á. Sigurðsson 2015). For us, the Agree mechanism is generalized in a way that includes a part of the PF derivation.

Baier (2015) argues on the basis of data from Noon that two types of nominal concord mechanisms are needed. Attributive adjectives in Noon show gender/number/definiteness concord (9) but predicative adjectives show only gender/number concord (10).

- (9) kann-faa          fi-yak-\*(faa)  
 house-2SG.DEF 2SG-big-2SG.DEF  
 ‘the big house’ (2=2nd class/gender)

- (10) kann-faa          ∅    fi-yak-\*(faa)  
 house-2SG.DEF COP 2SG-big-2SG.DEF  
 ‘The house is big.’

For us, valued gender and number features originate on *n* and Num, respectively, whereas gender and number enter unvalued at K where the relevant values are collected via Agree and percolate to the KP level (cf. Norris 2014). KP c-commands predicative *aP* but the locus of +DEF is D which does not c-command predicative *aP* as shown in (11). Note that in our system, +DEF is not a percolation feature, it is simply hosted at the D head.



While the analysis of Baier is motivated by facts from Noon, the analysis carries over to other languages in which definiteness concord does not apply to predicative adjectives, including Icelandic. In Icelandic, definiteness concord on adjectives is realized by the so-called weak Germanic inflection whereas adjectives get the strong Germanic inflection when definiteness concord is not triggered. The Icelandic pattern is shown in (12)–(13) below. The attributive adjective in (12) has the weak inflection but the predicative adjective in (13) has the strong inflection, despite the definite subject ‘the house’. Here, WK = weak inflection (definite), STR = strong inflection (not definite):

(12) stóra hús-ið  
big.WK house-the  
‘the big house’

(13) Hús-ið er stórt.  
house-the is big.STR  
‘The house is big.’

Our uniform Agree mechanism accounts for the facts from Noon but it raises questions about appositive *aP* in Icelandic. Icelandic appositives merge between K/D and escape definiteness concord (Pfaff 2015), getting the strong Germanic inflection like indefinite adjectives.

(14) Ég horfði upp í [KP [DP [εP [aP bláan]] [DP himin-inn]]].  
I looked up in [KP [DP [εP [aP blue.STR]] [DP sky-the]]]  
‘I looked up into the sky, which happened to be blue.’ (Thráinsson 2007, 3)

For us, such appositives are **High Adjuncts**; thus not in a c-command relationship with D, assuming +DEF is not a percolation feature. The fact that adjectives with weak inflection are obligatorily lower structurally than adjectives with strong inflection (Pfaff 2015) is compatible with our analysis: High adjectives are not in the c-commanding domain of D whereas low and middle adjectives are. The following examples from Pfaff (2015, 57) demonstrate that the appositive adjectives which escape definiteness concord precede other adjectives which do participate in concord when both types appear in the same DP.

(15) Blessað blessaða vatn-ið.  
blessed.STR blessed.WK water-the  
‘the damn blessed water’

- (16) \* Blessaða    blessað    vatn-ið.  
           blessed.WK blessed.STR water-the

Descriptively, the Icelandic appositives belong to the set of phenomena that are referred to as (apparent) agreement mismatches, see for example Wechsler & Zlatic (2000, 2003), Corbett (2006), Danon (2013), Pesetsky (2013), Landau (2016). In our analysis, the mismatch is simply a consequence of a systematic structural contrast.

#### 4. Lowering vs. Local Dislocation

This section extends our analysis to affixation phenomena. We propose that all post-syntactic affixation is driven by Local Dislocation under linear adjacency in the sense of Embick & Noyer (2001). This mechanism allows a morpheme X to be realized at PF as a suffix or a prefix on a linearly adjacent element Z.

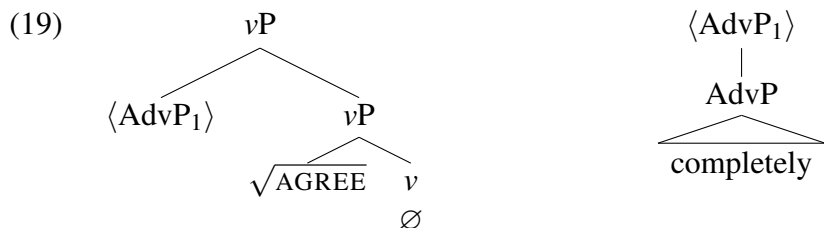
- (17) **Local Dislocation**  
 $[X * [Z * Y]] \rightarrow [[Z_0 Z+X] * Y]$  (Embick & Noyer 2001, 563)

Contra Embick & Noyer (2001), we argue that there is no distinct head-to-head Lowering process in the morphology. Whereas they argue that a Lowering analysis at PF is needed for Bulgarian definite articles and English T-to-*v* suffixation, we propose a Local Dislocation solution which is facilitated by our structural typology of adjectives and the view that adjuncts are invisible for the purpose of linear adjacency in affixation (cf. Bobaljik 1995). English Tense suffixation is a case where adjunct invisibility plays a role.

- (18) a. John agree-**d**. (T(ense) is a suffix)  
       b. \* John not agree-**d**. (Negation is an intervener for suffixation)  
       c. John di-**d** not agree. (In which case, *do* is inserted)  
       d. John completely agree-**d**. (*v*-adjoined adverbs are not interveners)

Consider the distribution of **-d** above. T(ense) is usually a suffix on the noun in English as shown in (18a). However, suffixation is blocked when negation intervenes between T/*v* and therefore (18b) is ungrammatical. Instead, *do*-support is used to express the intended meaning (18c). Interestingly, adjuncts like the *v*-adjoined adverb *completely* are not interveners for suffixation and therefore the suffixed form of T is used in (18d). For us, it is not crucial to determine exactly why adjuncts do not count when determining adjacency. One possible reason might be some implementation of the Late Adjunction of Lebeaux (1988); although see Sportiche (2016) for critical discussion of late mergers. In that case, the adjunct may just not be there yet when affixation takes place. For concreteness, we assume here that adjuncts are only merged as placeholders when they first enter the derivation.

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The placeholder analysis in (19) reflects that the adverb *completely* is derived in a separate workspace  $\langle \text{AdvP}_1 \rangle$  and because it is an adjunct, it is not retrieved for phonological realization until it is needed. At that point, T has suffixed onto *v*. For Embick & Noyer, the fact that English T skips adverbs like *completely* points to a head-to-head Lowering analysis, but for us, the placeholder analysis allows us to maintain the view that English Tense merges with the verb via Local Dislocation.

In addition to English Tense, Bulgarian definite articles are a prime example of Lowering for Embick & Noyer (2001). In this case, D attaches to the highest noun (20) or adjective (21) in DP, skipping adverbs (22)–(23). In these examples, adjoined adverbs are invisible but adjectives are not.

(20) kniga-ta  
book-DEF  
'the book'

(21) xubava-ta kniga  
nice-DEF book  
'the nice book'

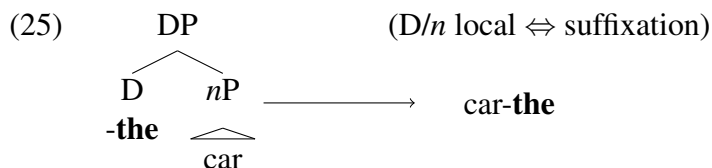
(22) \*mnog-ət star teatər  
very-DEF old theater  
'the very old theater'

(23) dosta glupava-ta zabeležka  
quite stupid-DEF remark  
'the quite stupid remark'

In our analysis, D targets either a complex *a* or *n* head to its linear right [+N] and all Bulgarian adjectives are specifiers (**Low/Mid/High-Spec**). Thus, we can apply a Local Dislocation analysis in which Bulgarian adjectives are never invisible, even if adverbs are.

In contrast to Bulgarian, the structure of Icelandic adjectives varies by function. Appositives between K/D are **High Adjuncts** (as discussed in the previous section), adjectives with special meaning functions below D are **Mid Spec**, e.g. 'evaluative', and restrictives are **Low Adjuncts**. We assume that the Icelandic definite article suffixes onto the noun to its immediate linear right. In the absence of adjectives, the application of this operation is straightforward.

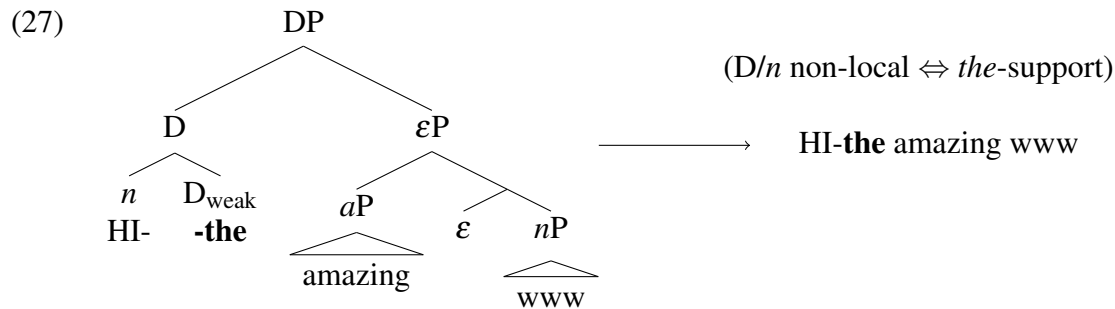
(24) bíll-inn  
car-the



When the definite article is licensed by situational uniqueness, rather than anaphoricity, it is a weak definite article in the sense of Schwarz (2009, 2013) and Icelandic  $D_{\text{weak}}$  has a

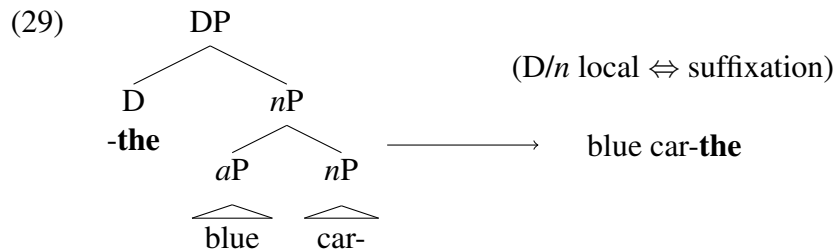
morphosyntactic distribution which resembles the distribution of English Tense in its use of support morphology.  $D_{\text{weak}}$  is realized with what Ingason (2016) refers to as *the*-support (i.e., a free standing definite article *hinn*) when interveners (like evaluative adjectives) block  $D/n$  locality. Evaluative adjectives are **Mid Specifiers**, introduced in Spec, $\epsilon$ , and when they are present,  $D/n$  are non-local and therefore suffixation cannot take place. In that case, the support morpheme *hi-* is merged with the definite article to save the derivation, similar to English *do* in *do*-support.

- (26) **hinn** ótrúlegi veraldarvefur  
 HI-**the**<sub>weak</sub> amazing<sub>evaluative</sub> world.wide.web



Icelandic D is realized as a suffix when it is local to the noun and this includes noun phrases where there are no adjectives or where there are only restrictive adjectives like ‘blue’ below. The analysis of such cases is that restrictive adjectives are **Low Adjuncts**, adjoined to  $nP$ . Thus,  $D/n$  are local.

- (28) blái bíll-**inn**  
 blue<sub>restrictive</sub> car-**the**



In this section, we have shown that our structural typology of adjectives allows us to analyze apparent cases of head-to-head Lowering in terms of Local Dislocation under linear adjacency. While the distinction between High, Middle and Low adjectives is presumably present in all languages, the languages differ in whether an adjective at a given height is merged as a specifier or as an adjunct. In Icelandic, High and Low adjectives are adjuncts whereas the Middle adjectives are specifiers. In Bulgarian, all adjectives are specifiers. This approach derives the range of attested data and it makes redundant the head-to-head Lowering operation of Embick & Noyer (2001), a pleasing result.



## 5. Conclusion

In this paper, we have re-examined the case for a split theory of concord (Baier 2015) which distinguishes between concord by Agree and Morphological Feature Copying as well as a split theory of affixation which distinguishes between head-to-head Lowering and Local Dislocation under linear adjacency. We have shown that both complications are redundant once we adopt our structural typology of adjectives. The empirical differences which gave rise to those split theories can in fact be accounted for by systematic variation in the structure of adjectives.

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