Appendix A: The single-head restriction across Slavic

As discussed in section 3.4, denominal adjectives in Bulgarian are single (complex) heads: their nominal components cannot be modified or possessed; nor can they take complements. In other words, the pronouns and names (including kinship terms) that form the basis of denominal adjectives are non-branching projections of D, simultaneously minimal and maximal in Bare Phrase Structure terms.\(^1\) Obligatory non-branching nominal components of denominal adjectives are found in other Slavic languages as well. Consider the following nominalizations in Russian, where the denominal adjective is formed on the basis of the name Maśa by the addition of the -in suffix. The nominal component, however, must be non-branching, as the failure of modification in (1b) indicates (cf. the parallel Bulgarian examples in (28)).

\[(1)\]  
\[a.\] \textit{Maś-in-o} \hspace{1cm} \textit{postojannoe} \hspace{1cm} \textit{kritikovanie} \hspace{1cm} \textit{detej}  
\textit{Maśa-ADJ-N.SG.NOM} \hspace{1cm} \textit{constant.N.SG.NOM} \hspace{1cm} \textit{criticizing.N.SG.NOM} \hspace{1cm} \textit{child.PL GEN}  
\text{‘Masha’s constant criticizing of the children’} \hspace{1cm} \text{(Russian, East Slavic)}  
\[b.\] *\textit{staraja Maś-in-o} \hspace{1cm} \textit{kritikovanie} \hspace{1cm} \textit{detej}  
\textit{old.F.SG.NOM} \hspace{1cm} \textit{Maśa-ADJ-N.SG.NOM} \hspace{1cm} \textit{criticizing.N.SG.NOM} \hspace{1cm} \textit{child.PL GEN}  
\text{‘old Masha’s criticizing of the children’} \hspace{1cm} \text{(Russian, East Slavic)}

The constraint against branching nominal components of denominal adjectives is not active across Slavic, however. Corbett (1987) points out that denominal adjectives in Upper Sorbian allow their nominal components to be both possessed and modified (see also Sadock 1991). In the following examples, the “adjectivizing” suffix -ow attaches to the complex nominal phrases that mean my brother and old woman.\(^2\)

\[(2)\]  
\[a.\] \textit{moj-eho} \hspace{1cm} \textit{bratr-ow-e} \hspace{1cm} \textit{džěć-i}  
\textit{my-M.SG.GEN} \hspace{1cm} \textit{brother-ADJ-PL.NOM} \hspace{1cm} \textit{child-PL.NOM}  
\text{‘my brother’s children’} \hspace{1cm} \text{(Upper Sorbian, West Slavic; Sadock 1991, p. 159)}  
\[b.\] *\textit{staraja moj-eho} \hspace{1cm} \textit{bratr-ow-e} \hspace{1cm} \textit{džěć-i}  
\textit{old.F.SG.NOM} \hspace{1cm} \textit{my-M.SG.GEN} \hspace{1cm} \textit{brother-ADJ-PL.NOM} \hspace{1cm} \textit{child-PL.NOM}  
\text{‘old my brother’s children’} \hspace{1cm} \text{(Upper Sorbian, West Slavic; Sadock 1991, p. 159)}

\(^1\)As discussed in section 3.4, denominal adjectives themselves cannot be modified or compared and they cannot take complements either.  
\(^2\)It should be noted that these nominal phrases are not complex event nominalizations and may be structurally distinct from -N nominalizations in Bulgarian and the Russian nominalizations in (1). Accordingly, the focus here is just on the internal structure of the Upper Sorbian denominal adjectives.
The surface difference between languages like Upper Sorbian (West Slavic) and like Bulgarian and Russian is in whether denominal adjectives permit branching nominal components. The mechanisms proposed in the analysis of Bulgarian denominal adjectives provide an understanding of this crosslinguistic difference in terms of a parametric difference in the mapping from syntax to morphology. The non-branchingness of the nominal component in Bulgarian (i.e. the single-head restriction) follows from the application of M-Merger. In particular, since M-Merger outputs a (complex) head, it is not possible for its output to contain a syntactically branching phrase. If M-Merger is implicated in the formation of denominal adjectives in the other Slavic languages considered here, the possibility of branching nominal components (as in Upper Sorbian) can be understood as the non-application of M-Merger:

(3) FP
   DP
     F
     stareje žona
     old woman

   nP

This approach to understanding the difference between the two classes of languages (those with branching nominal components of denominal adjectives and those without) and, in particular, attributing the difference to a parametric difference in the mapping procedure leads to the expectation that the nominal components in these languages will exhibit no syntactic differences. Initial investigation of the binding properties of Upper Sorbian denominal adjectives bears this out. For example, Corbett (1987) reports that in Upper Sorbian “action nominals”, a non-pronominal denominal adjective can bind a reflexive: (4). This is expected if the nominal component of such an adjective occupies a specifier position in the syntax, like its Bulgarian counterpart.

3Cowper and Hall (2010) offer a similar structure for Upper Sorbian, in which “a special possessive n head” corresponds to F in (3).

4Corbett (1987) mentions another type of language that allows branching nominal components of denominal adjectives. In this kind of language, there are as many adjectival markers as there are words:

(i) a. Štev-ov-a Malin-ov-a záhrad-a
   Stephen-ADJ-F.SG Malína-ADJ-F.SG garden-F.SG
   'Stephen Malína’s garden’

   (Slovak, West Slavic; Corbett 1987, p. 333)

   b. Volodimer˘i vnuk˘ u Monomaxov˘ u
   Volodimer.ADJ grandson Monomax.ADJ
   ‘Volodimer Monomax’s grandson’

   (Old Russian; Corbett 1987, p. 334)

The question is whether Števova Malinova qualifies as a single denominal adjective here, or possibly as a compound of some kind. In this connection, I have not yet found examples of this type that do not involve a complex name or a combination of a kinship term and a name. Thus, it is an open question whether this
Further investigation is needed to corroborate such findings. In addition, it is, of course, still necessary to account for the sensitivity of the form of F in Upper Sorbian to features of the nominal component. What the appropriate analysis is depends on the nature of the relation between F and the nominal component. One possibility is that the form of F varies with the morphosyntactic features of the nominal component as the result of an agreement relation. Another possibility is that it varies as the result of contextual allomorphy sensitive to syntactic, morphological, or phonological features of the nominal component (or to a combination of these types of features). Teasing these possibilities apart requires careful investigation of the properties of the relation between F and the nominal component in Upper Sorbian.

At this point, it is worth pointing out that, if the relevant relation is one of contextual allomorphy, the assumptions about the locality of allomorphy presented in section 3.1 lead to the conclusion that F and the right-most element of the nominal component form a complex head. However, since the nominal component can, in fact, be branching, this complex head cannot be the result of M-Merger. It is plausible then, that it is, instead, the result of Local Dislocation, an operation that builds a complex head out of two linearly adjacent heads. Local Dislocation applies later in the PF derivation than M-Merger and, therefore, has access to the linearized structure and involves terminals only, unlike M-Merger. Yet, Local Dislocation applies before Vocabulary Insertion and, as a result, can have an effect on allomorph choice. Local Dislocation, thus, has distinct properties from both M-Merger (and Lowering, which M-Merger is a generalization of; cf. Embick and Noyer 2001) and later operations such as Prosodic Inversion or purely phonological “glomming”, which can be viewed as prosodic adjunction (see Myler 2017 for an explicit proposal).

**Appendix B: Adjective movement and clitic doubling**

It is worth asking whether examples like (59c) and (59d) in the main text, where the de-
nominal adjective is not left-most within the nominal phrase, might involve movement of the other adjective and whether it might be this movement that blocks clitic doubling rather than the presence of a denominal adjective.

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5A reviewer raises the possibility that denominal adjectives in Bulgarian and Upper Sorbian are derived by the same rebracketing operation. The difference between the two languages would then have to be attributed to an independent device which controls the admissible size of the nominal component (i.e. the specifier of the relevant functional head). The “complexity filters” of Koopman (2002, 2005) are such a device, required by her treatment of inflectional morphology, discussed in appendix D. In contrast, within the present framework of assumptions, the difference between Bulgarian and Upper Sorbian would be captured in terms of the timing of the independently motivated, distinct rebracketing operations involved in the formation of denominal adjectives in each language.
One relevant observation is that it is difficult to motivate adjective movement in such examples because the observed word order is not necessarily discourse marked. This is, in fact, reflected in the frequency of use of these orders: e.g. the Bulgarian National Corpus ([http://search.dcl.bas.bg/](http://search.dcl.bas.bg/)) contains 7 occurrences of the adjective posledval ‘subsequent’ from (59c) immediately followed by a pronominal adjective and no occurrences of the other order (such orders are actually attested, as revealed by Google searches, but they are vastly outnumbered by the alternative in which the adjective posledval ‘subsequent’ immediately precedes the pronominal denominal adjective).

Second, even if there are interpretive differences among alternative adjective orders in these cases, it is not immediately clear that they are the result of movement. For instance, there is no positive evidence that the required adjective movement is actually possible in Bulgarian. It is, in fact, possible that alternative adjective orders are base generated, with any interpretive differences arising as the result of semantic composition (Bošković 2009, Cinque 1994, 2010; for alternatives, see Scott 2002:92, Truswell 2004, 2005:40ff, Alexiadou et al. 2007:320, Svenonius 2008:35, Cinque 2010:59 (section 5.1), Abels and Neeleman 2012, section 5.3, p. 64).

Third, it is unclear why adjective movement, if it were possible, should block other DP-internal movements, and in particular the A-movement involved in clitic doubling. In this connection, note that clitic doubling in (56a) in the main text is also possible if the adjectives appear in the opposite order:

(i) brutal-na-to im postojanno razgrabvane na gradovete  
   brutal-the 3.PL constant looting of the.cities  
   ‘the constant brutal looting of the cities’

Finally, examples like (59a) only involve the addition of a doubling clitic (i.e. there are no other adjectives), which is sufficient to render the example unacceptable.

### Appendix C: Denominal adjectives and coordination

The structure in (63) in the main text correctly predicts the behavior of denominal adjectives in examples that involve coordination of the following type:

(5) a. negovo-to i nejno sâbirane na gâbi  
   he.ADJ-the and she.ADJ collecting of mushrooms  
   ‘his and her picking of mushrooms’

b. tjahno-to i moe podpisvane na dogovora  
   they.ADJ-the and l.ADJ signing of the.contract  
   ‘their and my signing of the contract’

In such cases, there are two distinct mushroom picking events and two distinct contract signing events. Specifically, the denominal adjectives in (5a) and (5b) each get an agent \( \theta \)-role associated with the corresponding nominalization. A non-split reading, whereby *negovo-to i nejno ‘his and her’* (and *tjahno-to i moe ‘their and my’*) is a coordinate phrase that receives

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6I thank a reviewer for suggesting coordination as a testing ground.
a single external θ-role as a whole, does not arise in these examples. Furthermore, if the
nominalization involves a collective predicate, it cannot contain such a coordinate structure
either:

\[(6)\] a. *moe-to / Ivanovo-to ežednevo sābirane v kluba
i.ADJ-the / Ivan.ADJ-the daily gathering in the.club
‘my/Ivan’s daily gathering at the club’
b. *moe-to i Ivanovo ežednevo sābirane v kluba
i.ADJ-the and Ivan.ADJ daily gathering in the.club
‘my and Ivan’s daily gathering at the club’

The syntactic structure (63) of denominal adjectives allows an understanding of these facts
along the following lines: coordination of the type illustrated above must involve denominal
adjectives where each is associated with a distinct nP, as in (7). If the two nPs happen to be
identical in the relevant sense, it is possible for only the right-most nP to surface.7

\[(7)\] -to [ [ negovo sābirane na gābi ] i [ nejno sābirane na gābi ] ]
the he.ADJ collecting of mushrooms and she.ADJ collecting of mushrooms

The split readings in (5) arise since there are presumably two distinct, albeit identical, nPs in
the corresponding base structures. When the nominalization is based on a collective
predicate, as in (6b), the structure involves its illegitimate merger with a single denominal
adjective; thus, the unacceptability of (6b) has the same source as the unacceptability of
(6a).

Appendix D: M-Merger and syntactic movement

Although the issue does not arise for denominal adjectives, it is worth considering if and how
M-Merger as a post-syntactic operation interacts with syntactic movement. In particular,
if M-Merger takes place at PF while (Internal) Merge takes place in the syntax, the output
of M-Merger should not be able to serve as the input to (Internal) Merge, unless further
assumptions are made. Yet, it is standardly assumed that derived complex heads (including,
in this case, heads derived by M-Merger) as a whole are accessible for further syntactic
movement.

To address this issue, Matushansky (2006) assumes “a strongly cyclic view of syntax,
where each newly merged node is a phase,” which ensures that “a head created by m-merger
[...] forms part of the input to the next syntactic cycle” (section 5.2.1). However, as a
reviewer points out, Matushansky’s (2006) strongly cyclic view of syntax is too strong as far
as morphophonology is concerned since it predicts word-internal cycles that are not actually
observed. For example, the strongly cyclic view appears to rule out conditioned allomorphy
between T and V, since V would have been spelled out too early for it to interact with T.

7I leave open questions concerning the mechanism responsible for the surface string and whether it
involves Right Node Raising (as a reviewer suggests), some kind of deletion/ellipsis, or some other process.
Likewise, the level at which coordination takes place (FP vs. for example, DP) is inconsequential as far as
the predictions made by this account are concerned.
An alternative is to deny that the output of M-Merger actually serves as the input to (Internal) Merge. The challenge for this view is to explain why it may sometimes appear that a complex head X+Y, derived by m-merging X into Y, undergoes syntactic movement from position A to position B (for a case like this, see Harizanov 2014, section 5.2). Consider the following approach. First, suppose that the head Y undergoes movement in the syntax from position A to position B. This leads to Y having two occurrences in the structure, one in position A and one in position B. Second, suppose that the head X subsequently m-merges into one of the occurrences of Y at PF (for concreteness, assume that X m-merges into the occurrence of Y that occupies the lower position A). Since Y is a single syntactic object—which nonetheless occupies two distinct structural positions—the M-Merger of X into Y affects that single object Y, which is now represented as X+Y (i.e., a complex head containing X and Y). As a result, once M-Merger has applied, it is X+Y that occupies two distinct structural positions in the structure, A and B. Depending on how Chain Reduction is parameterized in the language, X+Y could be pronounced only in the higher position in which it occurs, i.e. position B. This derivation yields the surface pattern that has often led to the conclusion that the formation of a complex head feeds syntactic movement without actually involving such a feeding relation.

Appendix E: Remnant movement and spec-head affixation

The same type of mismatch between syntax and prosody as the one discussed in section 5.3, where elements in a specifier-head configuration come to be contained within a single Prosodic Word, arises in a number of cases according to a strand of research that attempts to model inflection via roll-up remnant phrasal movement. For example, Koopman (2002, 2005) argues that inflected words in Korean and Japanese are derived from head-initial syntactic structures by phrasal movement. According to this approach, certain verbal suffixes (X in (8)) are, in fact, heads of head-initial phrases in the syntax. Such a head may attract a phrase (YP in (8)) to its specifier and, due to its bound phonological nature, attach to the right of its specifier phonologically. Thus, a single Prosodic Word can come to contain both the suffix and (part of) the constituent that occupies its specifier in the syntax. According to this approach to the formation of Prosodic Words, there need not be any intermediate, post-syntactic level of representation at which the elements that constitute a Prosodic Word form a unit. That is, no morphological (complex) head is ever formed that contains both the specifier and the head, in what is an instance of derivation (73) in the present terms.

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8The structures in (8) are based on Koopman’s (2005) structure (8) on p. 606. In it, Y can be taken to be a lexical head (e.g. a verb) and X a functional head that appears as an inflectional affix on Y. In this case, the arguments of the verb and any other VP-internal material must have already vacated the VP (here, YP) prior to the remnant VP movement to the specifier of the relevant functional head.
This approach and closely related ones have been extended to the analysis of inflection in a number of languages, such as Zulu (Buell 2005) and Wolof (Buell and Sy 2005). Leu (2008, 2015a,b) applies a similar approach to weak inflection in Germanic, which involves syntactic movement of an NP or AP into the specifier of a functional head in the extended nominal projection that hosts inflection. Julien (2002) argues that suffixation in OVG agglutinating languages more generally involves such a derivation. Myler (2017) argues that such an approach can explain a correlation, explored by Hyman (2003), between morpheme orders taken to violate the Mirror Principle and certain non-local phonological effects. These accounts involve potentially successive, remnant phrasal movement and eschew head movement in the derivation of inflected words, suggesting that the formation of Prosodic Words is purely phonological.  

References


The assumption that elements in a specifier-head configuration can be parsed as a single Prosodic Word, without an intermediate stage of complex head formation, is also made (explicitly or implicitly) by Cinque (2005, 2014) and Kayne (2005, 2010). More generally, Compton and Pittman (2010) argue, on the basis of data from Inuit languages, that entire DP and CP phrases can be parsed as single Prosodic Words; each such Prosodic Word may contain elements that stand in a specifier-head, head-head, or head-complement relation in the syntax.


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