Contextual allomorphy “at a distance” in the Hungarian DP

Abstract

Myler (2017) proposes an algorithm for root-outward cyclic Spell-Out (Bobaljik, 2000) where the order in which heads are spelled out may deviate from their linear order when phrasal movement within the phonological word causes a mismatch between this linear order and the syntactic hierarchy (so-called Mirror Principle violations). Myler uses this method to account for cases where a morphophonological process applies across an intervening morpheme. I extend his model to morphosyntactically conditioned contextual allomorphy in Hungarian possessive DPs. Myler’s algorithm allows us to preserve strict locality, where only adjacent morphosyntactic nodes may condition contextual allomorphy (Embick, 2010).

Keywords: distributed morphology, contextual allomorphy, locality, Spell-Out, Mirror Principle

1 Introduction

The Hungarian DP has been a frequent and influential source of study, in particular its expression of possession, which is marked on the possessed noun. In this work, I address cases of allomorphy involving the interaction of possession and number markers under two frequent assumptions of Distributed Morphology: cyclic Spell-Out proceeding outward from the root (Bobaljik, 2000), and what Merchant (2015) calls the Node Adjacency Hypothesis, namely that contextual allomorphy can only be conditioned by adjacent morphosyntactic nodes (Embick, 2010). In the standard syntactic account of the Hungarian DP (e.g. Szabolcsi, 1994; É. Kiss, 2002; Dékány, 2015), the surface order of noun–Poss–Num is reflected by a syntactic hierarchy in which the DP contains a noun stem inside a PossP inside a NumP; this analysis cannot account for all of the allomorphy

given the two aforementioned assumptions. These issues can be solved if we assume that Num is merged before Poss, followed by a disruption of linear order due to phrasal movement of the noun stem—a violation of the Mirror Principle (Baker, 1985) in the sense that one affix, Poss, appears closer to the root than another, Num, on the surface despite being merged later (that is, further out). The Spell-Out algorithm of Myler (2017) handles such cases by allowing the temporal order in which heads are spelled out to deviate from the order in which they are linearized. Although Myler introduces this model to account for “morphophonological ‘action at a distance”’, his model applies to the Hungarian case of morphosyntactically conditioned contextual allomorphy as well.

2 Basic assumptions

This paper is based on two common assumptions in Distributed Morphology. The first originally proposed by Bobaljik (2000), is that Vocabulary Insertion starts at the root and proceeds outward, one head at a time. This means that a given head’s context at Spell-Out includes *phonological* information from heads closer to the root that have already been inserted, and *syntactic* information from heads further from the root that have yet to be spelled out. The second assumption is that of strict locality, as proposed by Embick (2010). Under this assumption, contextual allomorphy of a given head can only be conditioned by directly adjacent heads. In Embick’s model, when a head is spelled out as null, it becomes transparent.

Suppose we have three heads in a hierarchy X > Y > Z, which, following Embick (2010), gets linearized as X–Y–Z before Spell-Out, which proceeds in an outward direction: first Z, then Y, then X. If Y is spelled out as null, then Spell-Out of X may be conditioned on Z. However, Spell-Out of Z, which takes place before Y is spelled out, may only be conditioned on Y, not X—since Y only becomes transparent once it is spelled out as null.

3 Possession and plurality

3.1 Plurals without possessives

We will first look at the basic Hungarian plural suffix *-(V)k*, where *V* is a “linking vowel” that attaches to consonant-final roots (with some exceptions). The vowel is either *o* or *a*, depending on the lexical item (Siptár and Törkenczy, 2000):[1]

(1) a. csont -ok
bone -PL
‘bones’

b. fog -ak
tooth -PL
‘teeth’

I assume that the plural suffix is the exponent of a Num head bearing a [PL] feature and that its basic allomorph is *-k*. Given that linking vowels appear in a number of suffixes, I further assume that they are inserted with readjustment rules, and that stems like *fog* that take the low linking vowel *a* are marked as class *L*. Following Gouskova and Bobaljik (2019), I assume that noun class membership is visible after Vocabulary Insertion. Similarly, suffixes like the plural that undergo linking vowel alternations will be marked with class *LV*. I assume conservatively that readjustment rules are subject to the same locality restrictions as Vocabulary Insertion.

This yields the following Vocabulary Item and readjustment rules:

(2) *Vocabulary Item for* [PL]

$\text{Num}_{[\text{PL}]} \leftrightarrow \text{-k}_{LV}$

(3) *Readjustment rules for linking vowels*

a. $\emptyset \rightarrow \text{a} \;/\; [-\text{vowel}]\ ]_{L}\ \_\_\_\ ]_{LV}$

b. $\emptyset \rightarrow \text{o} \;/\; [-\text{vowel}]\ ]\ \_\_\_\ ]_{LV}$

The Vocabulary Item in (2) inserts the suffix *-k*, marked as being a “linking vowel suffix”, for a plural Num head. The readjustment rules in (3) then assure that the linking vowel *o* surfaces for

consonant-final roots like in (1a), and that the low linking vowel *a* surfaces for lowering stems as in (1b).

3.2 The possessive suffix

Next, I introduce the possessive suffix *-ja/a*, whose allomorphs are lexically conditioned to appear with certain stems. Hungarian marks possession on the possessed item, as in (4a) below. Pronominal possessors are optional:

(4) a. az (ő) csont -ja -Ø
the (her) bone -POSS -3S
“her bone”

b. az (ő) fog -a -Ø
the (her) tooth -POSS -3S
“her tooth”

I assume, following Szabolcsi (1994) and others, that this possessive suffix is the expression of a Poss head that introduces the possessor in its specifier, or at least hosts it at some point in the derivation. For the sake of illustration, I assume that the *-ja* allomorph is the default and that nouns that take *-a* are marked as class *POSS_A*, yielding the following Vocabulary Items:[2]

(5) *Vocabulary Items for Poss*

a. Poss ↔ -a / $]_{POSS\_A}$ ___

b. Poss ↔ -ja

When a possessed nominal is also plural, number is marked with the allomorph *-i* instead of the usual *-k* (cf. (1a)):

(6) az (ő) csont -ja -i -Ø
the (her) bone -POSS -PL -3S
“her bones”

This can be accounted for by supplementing (2) with an additional Vocabulary Item, namely (7a). Under the assumption of cyclic Vocabulary Insertion, Poss has already been replaced by *-a/ja* at

the point of Vocabulary Insertion of Num. However, there must be some syntactic information passed through to distinguish the word-final *-a* coming from the spelled-out Poss head from noun roots that end in *-a/ja*, such as *alma* ‘apple’, whose plural is *almá-k* (including phonologically regular lengthening of *a* to *á*), not **almá-i*. I mark this information here with a subscript Poss:

(7) *Vocabulary Items for* [PL] *(to be revised)*

a. $\text{Num}_{[\text{PL}]} \leftrightarrow$ -i / $]_{\text{Poss}}$ ___

b. $\text{Num}_{[\text{PL}]} \leftrightarrow$ -k$_{LV}$

3.3 Possessor agreement

When a Hungarian nominal has a pronominal possessor, it marks agreement with the ϕ-features of this possessor (Bartos, 1999; Dékány, 2015). This agreement marker appears outside of the plural marker, as in (8b); when the possessed noun is singular (and there is thus no intervening overt plural) and the possessor is first or second person, i.e. [+participant] (Harley and Ritter, 2002), the possessive suffix disappears, leaving just the agreement suffix and a linking vowel, if needed. We see this in (8a):

(8) a. az (én) csont -Ø -om
the (my) bone -POSS -1S
‘my bone’

b. az (én) csont -ja -i -m
the (my) bone -POSS -PL -1S
‘my bones’

Following Halle and Marantz (1993), Bobaljik (2008), Dékány (2018), and others, I assume that possessive agreement features represent the Spell-Out of Agr nodes formed through dissociated morpheme insertion (which Choi and Harley (2019) call “sprouting”) before Vocabulary Insertion. This yields Vocabulary Items such as:

(9) *Vocabulary Items for Agr*

a. $\text{Agr}_{[1\text{S}]} \leftrightarrow$ -m$_{LV}$

b. $\text{Agr}_{[2S]} \leftrightarrow$ -d$_{LV}$

...

Since these suffixes are marked for taking linking vowels, the readjustment rules in (3) apply in forms like (8a). At the point when it is spelled out, Agr is phonologically adjacent to the noun: even if Poss and Num heads intervene syntactically, they have already been spelled out as null and are thus transparent for adjacency purposes, as described in Section 2.

Let us now turn to allomorphy of Poss, which is null when linearly adjacent to a first or second person agreement marker. The simplest solution would be the Vocabulary Item in (10), which captures this distribution:

(10) *Proposed Vocabulary Item for Poss (to be slightly revised)*

$\text{Poss} \leftrightarrow$ -Ø / ___] $\text{Agr}_{[+\text{participant}]}$

This Vocabulary Item is straightforward but problematic: assuming that the linear order of morphemes corresponds to the syntactic hierarchy, at the point where (10) might apply in the derivation of (8b), Poss is directly adjacent to Num, not Agr. Although singular Num will eventually be spelled out as null, this crucially happens *after* insertion of Poss, meaning that it is *not yet* transparent at the point of Poss insertion. Thus, the conditions for (10) are never met, and it cannot apply.[3]

One solution to this problem would be to loosen our locality condition somewhat to the Span Adjacency Condition (Merchant, 2015) and use the Vocabulary Item in (11), which would be well-formed because it refers to a contiguous span of adjacent heads, Num and Agr:

(11) *Vocabulary Item for Poss (Span Adjacency version)*

$\text{Poss} \leftrightarrow$ -Ø / ___] $\text{Num}_{[\text{SG}]}$] $\text{Agr}_{[+\text{participant}]}$

While this would allow us to capture the facts, it misses the generalization that Poss is null when directly adjacent to a [+participant] agreement marker. The fact that Num is, specifically, null when singular becomes merely coincidental. It also will not do to argue that morphologically

singular nouns have no Num projection at all in Hungarian: DPs with overt numerals are morphologically and syntactically singular, and É. Kiss (2002) and Dékány (2015) assume that numerals are hosted in the specifier of NumP, which would require the presence of Num for (at least some) nouns without plural marking.

Another possible solution is that Poss and Agr are adjacent at the point of Vocabulary Insertion, but Num reaches its surface position by switching with one of them through Local Dislocation (Embick and Noyer, 2001) after Vocabulary Insertion. If Num switches with Poss, we get an order of noun–Num–Poss–Agr at the point of Vocabulary Insertion. But this conflicts with (5): intervening plural Num would block the allomorphy of Poss between *-a* and *-ja*, which are selected by individual nouns. On the other hand, if Num switches with Agr, we must have an order of noun–Poss–Agr–Num at Vocabulary Insertion. In this case, intervening Agr would prevent Num from being adjacent to Poss, blocking the allomorphy of Num, which is spelled out as *-i* in possessive nouns but *-k* otherwise (see (7)). Thus, Local Dislocation is not an option; the surface linear order of the morphemes must correspond to their linear order at the point of Spell-Out.

The third solution, which will be pursued in Section 4, is that the Num head is transparent at the point at which Poss is spelled out, because Num has been previously spelled out as null. That is, the order of Spell-Out diverges from the hierarchical and linear order of the various heads. I extend the proposal in Myler (2017) to derive this.

4 The syntax of possession and plurality

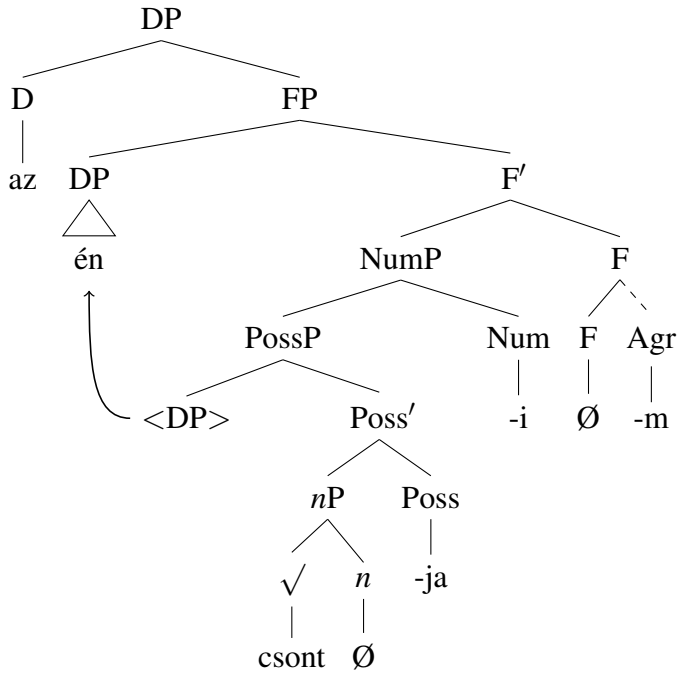
4.1 The standard account of the Hungarian DP

In the previous section, I argued that the hierarchy of heads in Hungarian possessive constructions at the point of Vocabulary Insertion must be Agr > Num > Poss; that is, the surface order cannot be achieved by post–Spell-Out processes like Local Dislocation. In this section, I consider

whether the hierarchy at Vocabulary Insertion must reflect merged order.

What É. Kiss (2002) calls “the ‘standard’ theory of the Hungarian possessive construction” (e.g. Szabolcsi, 1994) establishes an explicit analogy between nominal and verbal extended projections. In her account, the possessor is introduced in the projection of Poss, then raises to its surface position in the specifier of some FP (which she and others label AgrP; see Dékány (2018)). This FP has a null head but agrees with the ϕ-features of the possessor. As reflects the surface order, NumP is between PossP and FP. As described in Section 3.3, the ϕ-features on F agreeing with the possessor are expressed through a sprouted Agr node, indicated here by a dashed line. For the example in (8b), *csont-ja-i-m* ‘my bones’, we have the following structure:

(12) *Standard structure: FP > NumP > PossP*



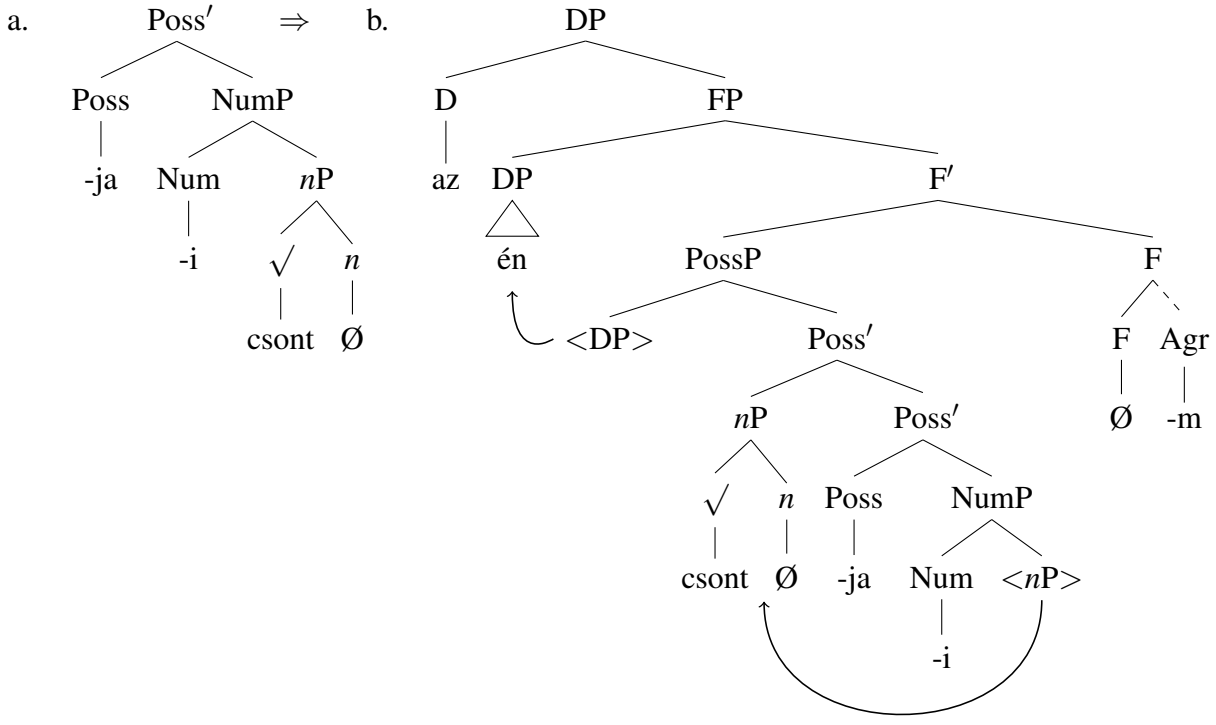
In Section 3.3, I showed that the structure in (12) reflects the correct hierarchy at the point of Vocabulary Insertion, but runs into issues of locality. Proponents of this structure (Bartos, 1999; É. Kiss, 2002; Dékány, 2015) have evoked the Mirror Principle (Baker, 1985), which states: “Morphological derivations must directly reflect syntactic derivations (and vice versa).” That is, the syntactic hierarchy should reflect the surface order of root–Poss–Num–Agr. Since

this assumption is incompatible with strict locality, I will now reject it and propose an alternative.

4.2 Mirror Principle violations

Let us consider the possibility that the surface order of Num and Poss does not reflect their merged order—that is, that Num merges with the root before Poss despite Poss being closer to the root on the surface. This mismatch constitutes a Mirror Principle violation as defined in Section 1. (Unlike many Mirror Principle violations of this sort, it is not obvious in this case whether Poss “naturally” scopes over Num syntactically or semantically.) Following Myler (2017), I assume that this order must be the result of phrasal movement of the noun. We can see this in (13): first Num attaches, followed by Poss, which introduces the possessor. Next, *n*P raises above Num into a second specifier of PossP, after which the possessor moves to the Spec of FP as before.

(13) *Alternate structure: FP > PossP > NumP*



The singular equivalent in (8a), *csont-om*, would have an identical structure, but both Num and Poss would be spelled out as null.

4.3 Mylerian Spell-Out

According to the algorithm proposed by Myler (2017), head X is spelled out before head Y (X } Y) if the maximal projection of Y dominates X. Thus, in (13), we have $\sqrt{}$ } *n* } Poss, Num } Poss, and Poss } F. Num and $\sqrt{}$ are unordered with respect to one another, so Num is spelled out in the same cycle as either the root or *n* (for the sake of illustration, I assume that it is spelled out with *n*). However, Num is crucially spelled out before Poss, even though Poss intervenes linearly between them. Poss is now available in the syntactic context of Num, ensuring that the plural suffix gets spelled out as *-i* instead of *-k*, which is its normal realization outside of possessive contexts.

Myler’s goal is to link Mirror Principle violations with morphophonological effects in which a morpheme intervening between the target and trigger of allomorphy seems to be transparent. In this case, the standard derivation in (12) yielding the problematic Vocabulary Item in (10): Num intervenes between Poss and F/Agr, on which it is conditioned. This issue does not arise with the derivation in (13).

Table 1 shows how Spell-Out of the configuration in (13) proceeds for *csont-ja-i-m* ‘my bones’, shown in the tree above, and *csont-om* ‘my bone’, which differs only in that the Num head is valued singular rather than plural. Following Embick (2010), linearization precedes Spell-Out in Stage 0. Stage 1 and 2 see the insertion of the noun stem (root and *n*) as well as Num. Here we see our first difference: singular Num in *csont-om* is spelled out as null, while plural Num is spelled out as *-i* due to adjacent Poss. Next, in Stage 3, Poss is spelled out. F/Agr is now adjacent to Poss, separated only by a transparent, null Num, so Poss can see the 1S features on F/Agr and spell out as null accordingly. In the plural *csont-ja-i-m*, however, the overt Num *-i* blocks Poss from adjacency with F/Agr; Poss thus gets spelled out as default *-ja*. Finally, the 1S feature on Agr is spelled out as *-m*, with the linking vowel *-o-* inserted in the phonological context *csont-* but not after *csont-ja-i-*. This yields the final forms.

4.4 Final Vocabulary Items

We can now recast the Vocabulary Items for $\text{Num}_{[\text{PL}]}$ and Poss in (5), (7), and (10). First, recall that the plural suffix is usually *-k*, but is *-i* in possessed nouns. This yields the following:

(14) *Vocabulary Items for* [PL]

a. $\text{Num}_{[\text{PL}]} \leftrightarrow$ -i / Poss] ___

b. $\text{Num}_{[\text{PL}]} \leftrightarrow$ -k$_{LV}$

Since Poss has not yet been spelled out at the point at which (14a) applies, it is in its *syntactic* context, despite being closer to the root than Num. This is an improvement over the earlier version in (7a), which smuggled the syntactic identity of the Poss head into its post–Spell-Out (i.e., *phonological*) form.

For Poss allomorphy, we can now adopt the Vocabulary Item in (10), shown again in (15a) below (with ϕ-features now on F instead of Agr). This rule is now unproblematic—it applies when Num is null (singular) and when the possessor is first or second person, but when Num is spelled out as plural *-i*, Num intervenes, blocking application of (15a). Otherwise Poss is spelled out as *-a* or *-ja*, depending on the noun—as before, I assume that *-ja* is the basic form and nouns that take *-a* are marked as class *POSS_A*. Thus, we have the following Vocabulary Items for Poss:

(15) *Vocabulary Items for Poss*

a. Poss $\leftrightarrow$ -Ø / ___] $\text{F}_{[+\text{participant}]}$

b. Poss $\leftrightarrow$ -a /]$_{POSS\_A}$ ___

c. Poss $\leftrightarrow$ -ja

To summarize, if we assume that the surface order of root–Poss–Num is a Mirror Principle Violation and follow the Spell-Out algorithm of Myler (2017), we can account for the interaction of Hungarian possessive and number morphology while preserving the assumptions of cyclic, root-outward Vocabulary Insertion and strict locality for conditioning allomorphy. More-

over, this analysis resolves some of the conceptual issues that arise from adopting a looser locality condition: plural allomorphy can be conditioned on Poss as a syntactic head, rather than smuggling the syntactic identity of Poss into the phonology, and Num can act as a true intervener for contextually conditioned allomorphy of the possessive suffix.

5 Conclusion

In this paper, I showed that the standard syntactic account of Hungarian plural and possessive nominal suffixes, with the syntactic structure reflecting the surface order of noun–Poss–Num–Agr, is incompatible with the assumptions of root-outward Spell-Out (Bobaljik, 2000) and strict locality conditioning for contextual allomorphy (Embick, 2010).[4] If we instead follow Myler (2017) and assume that the surface order of Poss–Num represents a Mirror Principle violation, we can resolve both technical and conceptual issues of the original analysis. Myler's original proposal addressed cases where certain morphemes behaved transparently with respect to morphophonological behavior; I have shown that the framework can also be profitably applied to cases of contextual allomorphy. Finally, my analysis makes a prediction about possessive morphology cross-linguistically: if we assume a fixed universal hierarchy of functional heads, then we should see the claimed hierarchy for Hungarian, PossP > NumP > *n*P, in other languages as well. That is, if a language has a number affix and an affix that marks a noun as possessed (distinct from agreement with the ϕ-features of the possessor), the former should generally be closer to the root. Given that Num and Poss do not obviously interact in terms of semantic scope, this is not trivial and would serve as additional support for my analysis of the Hungarian DP.

References

Baker, M. (1985). The Mirror Principle and morphosyntactic explanation. *Linguistic Inquiry*, 16(3):373–415.

Bartos, H. (1999). *Morfoszintaxis és interpretáció. A magyar inflexiós jelenségek szintaktikai háttere*. PhD thesis, Eötvös Loránd University, Budapest.

Bobaljik, J. D. (2000). The ins and outs of contextual allomorphy. In Grohmann, K. and Struijke, C., editors, *University of Maryland Working Papers in Linguistics*, volume 10, pages 35–71, College Park. University of Maryland.

Bobaljik, J. D. (2008). Where’s phi? agreement as a post-syntactic operation. In Harbour, D., Adger, D., and Béjar, S., editors, *Phi Theory: Phi-Features Across Modules and Interfaces*, volume 16 of *Oxford Studies in Theoretical Linguistics*, pages 295–328. Oxford University Press, Oxford.

Carstairs, A. (1987). *Allomorphy in inflexion*. Croom Helm, London.

Choi, J. and Harley, H. (2019). Locality domains and morphological rules: Phases, heads, node-sprouting and suppletion in Korean honorification. *Natural Language & Linguistic Theory*, 37(4):1319–1365.

Dékány, E. (2015). The syntax of anaphoric possessives in Hungarian. *Natural Language & Linguistic Theory*, 33(4):1121–1168.

Dékány, E. (2018). The position of case markers relative to possessive agreement: Variation within Hungarian. *Natural Language & Linguistic Theory*, 36:365–400.

É. Kiss, K. (2002). *The Syntax of Hungarian*. Cambridge Syntax Guides. Cambridge University Press, Cambridge.

Embick, D. (2010). *Localism versus Globalism in Morphology and Phonology*, volume 60 of *Linguistic Inquiry Monographs*. MIT Press, Cambridge.

Embick, D. and Noyer, R. (2001). Movement operations after syntax. *Linguistic Inquiry*, 32(4):555–595.

Gouskova, M. and Bobaljik, J. D. (2019). Allomorphy and vocabulary insertion. Ms.

Halle, M. and Marantz, A. (1993). Distributed morphology and the pieces of inflection. In Hale, K. and Keyser, S. J., editors, *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, volume 24 of *Current Studies in Linguistics*, chapter 3, pages 111–176. MIT Press, Cambridge.

Harley, H. and Ritter, E. (2002). Person and number in pronouns: A feature-geometric analysis. *Language*, 78(3):482–526.

Merchant, J. (2015). How much context is enough?: Two cases of span-conditioned stem allomorphy. *Linguistic Inquiry*, 46:273–303.

Myler, N. (2017). Exceptions to the Mirror Principle and morphophonological ‘action at a distance’: The role of ‘word’-internal phrasal movement and spell-out. In Newell, H., Noonan, M., Piggott, G., and Travis, L. d., editors, *The Structure of Words at the Interfaces*, volume 68 of *Oxford Studies in Theoretical Linguistics*, chapter 5, pages 100–125. Oxford University Press, Oxford.

Siptár, P. and Törkenczy, M. (2000). *The Phonology of Hungarian*. The Phonology of the World’s Languages. Oxford University Press, Oxford, New York.

Szabolcsi, A. (1994). The noun phrase. In Kiefer, F. and É. Kiss, K., editors, *The Syntactic Structure of Hungarian*, volume 27 of *Syntax and Semantics*, pages 179–274. Academic Press, San Diego / New York.

Notes

[1]These suffixes are subject to allomorphy according to vowel harmony; for the sake of simplicity, in this work I only consider roots and affixes exhibiting back harmony.

[2]This, too, is somewhat of a simplification: some nouns exhibit variation in their choice of possessive allomorph.

[3]If we instead wish to say that suffixes like *-om* in (8a) are the result of Fusion of Poss and Agr into a single node, we run into a similar issue: Fusion would have to precede Spell-Out of Poss, at which point Poss and Agr are not adjacent nodes, and thus cannot be fused. I thank Ruth Kramer for suggesting this possibility.

[4]Embick (2010) himself, citing Carstairs (1987), addresses the case of Hungarian possessive plurals and considers them a straightforward case of outwardly conditioned allomorphy: the plural is spelled out as *-((j)a)i* when adjacent to the possessive agreement markers. However, as I have shown, this string is comprised of Poss *-(j)a* and plural *-i*; a single-morpheme analysis is not tenable.

Table 1: Spell-Out of *csont-om* ‘my bone’ and *csont-ja-i-m* ‘my bones’, following Myler (2017)

stage	‘my bone’	‘my bones’
Stage 0: Linearization	$\sqrt{}$–*n*–Poss–$\text{Num}_{[\text{SG}]}$–$\text{F/Agr}_{[1\text{S}]}$	$\sqrt{}$–*n*–Poss–$\text{Num}_{[\text{PL}]}$–$\text{F/Agr}_{[1\text{S}]}$
Stage 1: Insertion of root	**csont**–*n*–Poss–$\text{Num}_{[\text{SG}]}$–$\text{F/Agr}_{[1\text{S}]}$	**csont**–*n*–Poss–$\text{Num}_{[\text{PL}]}$–$\text{F/Agr}_{[1\text{S}]}$
Stage 2: Insertion of *n* and Num	**csont**–**Ø**–Poss–**Ø**–$\text{F/Agr}_{[1\text{S}]}$	**csont**–**Ø**–Poss–**i**–$\text{F/Agr}_{[1\text{S}]}$
Stage 3: Insertion of Poss	**csont**–**Ø**–**Ø**–**Ø**–$\text{F/Agr}_{[1\text{S}]}$	**csont**–**Ø**–**ja**–**i**–$\text{F/Agr}_{[1\text{S}]}$
Stage 4: Insertion of Agr	**csont**–**Ø**–**Ø**–**Ø**–**om**	**csont**–**Ø**–**ja**–**i**–**m**