Postsyntactic Reordering in the Mari Nominal Domain - Evidence from Suspended Affixation

Elina Guseva Philipp Weisser

December 19, 2017

Abstract

We argue that the unusual morphological template in the noun phrase of Meadow Mari should be derived on the basis of a simple, semantically transparent syntax. In accordance with the Mirror Principle, the analysis we propose derives the actual surface order of morphemes in Mari by means of two postsyntactic reordering operations: A lowering operation and a metathesis operation. Evidence for this account comes from a process called Suspended Affixation. This process is known to delete the right edges of non-final conjuncts under recoverability. We show however, that Suspended Affixation in Mari does not apply to the right edges of surface orders. Rather, the right edges of an intermediate postsyntactic representation are relevant. Suspended Affixation applies after some but not all postsyntactic operations have applied. Thus, the account we present makes a strong argument for a stepwise derivation of the actual surface forms and thus for a strongly derivational architecture of the postsyntactic module.

1 Introduction

One of the long-standing questions of morphological theory is what determines the order of morphemes within a complex word. Despite an increasing empirical basis and the ever growing body of relevant literature, there is no consensus among morphologists how this question should be answered. According to the traditional view, adopted in many descriptive grammars, the ordering of morphemes follows a fixed template where every morpheme is assigned a specific position within that template. It is argued that while these templates emerge from outdated syntactic rules of a previous stage of the language, they bear no significant syntactic relevance synchronically (see amongst many others Givon (1971); Bybee (1985); Stump (2001); Spencer (2003)).

Another view is that the order of morphemes within a complex inflectional word is determined by active morphosyntactic rules. Following Baker's (1985) Mirror Principle which states that the internal structure of words reflects the structure of syntactic heads,[1] it is assumed that syntax generates the structure of words and the structure of clauses with the same set of operations. However, since a number of cases have been

[1]While the Mirror Principle was originally conceived of as applying only to syntactic operations such as

attested where the morphological structure of complex words deviates from the assumed underlying syntactic structure, the system must provide for a set of purely morphological operations that can manipulate the syntactic structure (see e.g. Halle and Marantz (1997); Embick and Noyer (2001)).

In this paper, we will provide a novel kind of argument to distinguish between these two views. In order to do that, we will take a closer look at Meadow Mari, a Finno-Ugric language. In this language, the order of morphemes allows for free variation to a certain extent and, in addition, requires certain orderings of morphemes that are not expected against the background of the Mirror Principle. In this article, we provide a strong argument that all of the possible orders should nevertheless be derived on the basis of an underlying syntactic structure that is compatible with the Mirror Principle. The underlying syntax that we adopt reflects the semantic scope of affixes and the surface order of morphemes in Mari will be the result of two postsyntactic morphological reordering rules.

Evidence for the application of these rules comes from a process called Suspended Affixation. This process, frequently found in Turkic languages, deletes the right edges of conjoined noun phrases under recoverability. In Mari, however, we can observe that Suspended Affixation does not delete the right edges of the surface order but rather the right edges of an underlying representation at a certain point of the derivation. It is only because this underlying representation can be obscured by subsequent operations that Suspended Affixation in Mari and Turkish seem to behave differently. These data thus show the necessity for the existence of (i) underlying representations corresponding to the syntactic structure, (ii) postsyntactic rules of morpheme reordering and (iii) a derivational conception of the postsyntactic module.

We will proceed as follows: In Section 2, we will discuss some of the basic features of the Meadow Mari language and the possible and impossible morpheme orders we find in the nominal domain. In Section 3, the phenomenon of Suspended Affixation in Mari will be laid out. Section 4 will provide the analysis to capture the morpheme orders in Meadow Mari and their (in)ability to delete under Suspended Affixation. In Section 5, we show that the analysis presented in Section 4 is corroborated by facts about allomorphy and suppletion. Also, it will be shown that these facts allow for a refinement of the definition of Suspended Affixation. Section 6 will discuss the Duke-of-York derivation we argue for from a more abstract point of view and, on the basis of this discussion, illustrate the need for a derivational postsyntactic module. Also, we will briefly discuss alternative accounts and sketch what assumptions are necessary for the theory to cover Suspended Affixation in Turkish. Section 7 will conclude the discussion.

passivization, it has often been generalized to include all affixes to reflect the order of syntactic heads (see e.g. Brody (2000 et seq.)'s notion of what he calls the 'Mirror Generalization'). Given a modern Chomskyan architecture of syntax with MERGE as the only syntactic operation available, the original Mirror Principle and the generalized version are to be seen as equivalent.

2 The Meadow Mari Nominal Domain

Mari, also known as Cheremis, is an Eastern Uralic language spoken mainly in the Mari El Republic, Russia. Like most of the other members of the Volgaic and Permic language families, it is quite rigidly SOV. Word formation is highly agglutinating in these languages and the specific morpheme orders vary from language to language. Even within one language such as Mari, the various dialects exhibit a number of differences (see e.g. Alhoniemi 1993 and Luutonen 1997). In this paper, we focus on the dialect of Mari spoken in the capital of Mari El Republic, Yoshkar-Ola. We will follow Luutonen (1997), who calls this dialect Meadow Mari. The two other dialects which both have significantly less speakers are called Hill Mari, spoken further in the west of the republic, and Eastern Mari.

In the following, we illustrate the main characteristics of the Meadow Mari nominal morphology. Other properties of the language are discussed along the way. In the noun phrases of Meadow Mari, determiners are usually the first elements followed by numerals, adjectives and the head noun in that order. If a numeral precedes the head noun, the latter does usually not bear additional plural marking. An example is given in (1):

(1) Nine kok kugu olmna.
DEM two big apple
'These two big apples.'[2]

Possessors, which always bear genitive, occur in the same position as demonstratives:

(2) Petry-n kok ušan űdyr-že.
Peter-GEN two clever daughter-3SG.POSS
'Peter's two clever daughters.'

The head noun itself can be inflected for plural number, the person and number features of its possessor and for case. Like all of the members of the family, Mari has a wide range of different cases.[3] Interestingly, these cases do not show uniform behavior with respect to the order of morphemes. Some cases precede the possessive affix while other cases follow it. In the neighboring language Udmurt, which allows for case stacking to a certain extent,[4] we can see both case slots show up in the same example. In (3), conjunction is marked with instrumental case on all conjuncts and, on top, the verb *mözmi-* assigns the ablative. We can see that the instrumental in Udmurt precedes the possessive affix whereas the ablative follows the possessive affix.

(3) Mon Petr-en pinal-jos-ini-m-les' mözmi-s'ko.
1SG Peter-INST child-PL-INST-1SG-ABL miss-PRS.1SG

[2]All examples from Meadow Mari are, unless otherwise stated, provided by the second author, a native speaker of Meadow Mari from Yoshkar-Ola.

[3]We will, at this point however, not engage in the discussion about how many there really are and whether they can and should be analyzed as formally different from postpositions. See Alhoniemi (1993) on Mari and Moravcsik (2003), Trommer (2008), Spencer (2008) on the same issue in Hungarian.

[4]See however Weisser (submitted) for a discussion of these examples on case stacking in Udmurt. See Assmann et al. (2014) for an account of Udmurt case in terms of covert case stacking.

'I miss Peter and my children.' Udmurt[5]

In Mari, we can see the two different positions for case in the template in minimal pairs such as the one below. Local cases such as the inessive case precede the possessive affix whereas structural cases follow it.

(4) pasu-vlak-ešte-na
garden-PL-INESS-1PL.POSS
'in our gardens' (INESSIVE)

(5) pasu-vlak-na-m
garden-PL-1PL.POSS-ACC
'our gardens (ACCUSATIVE)'

Meadow Mari

It is to be noted though that this classification as structural vs local case is a strong oversimplification. What we find is that under this notion the genitive, the accusative, the comitative count as structural whereas the other cases are local cases. According to Alhoniemi (1993), there is variation as to whether the dative and comparative precede or follow the possessive affix. We treat them both as structural cases as they always follow the possessive affix in our examples.

This alternation is, however, not the only thing that is unusual about the order of morphemes in the nominal template of Meadow Mari. We also find that the order of the plural suffix /-vlak/ and the possessive affixes is not fixed. Usually, both orders are acceptable.

(6) pasu-vlak-na
garden-PL-1PL.POSS
'our gardens'

(7) pasu-na-vlak
garden-1PL.POSS-PL
'our gardens'

Meadow Mari

Given these two independent kinds of alternations in the Meadow Mari nominal template, we end up with quite a number of different possible orders. Crucially, however, not all possible orders are attested. The following table summarizes the possible orders of morphemes in the Meadow Mari nominal template. The ones not included in the table are ungrammatical. The first column gives the order of the affixes, the second column gives the corresponding order of the syntactic categories as assumed in the following sections of this paper and the third one gives a Mari example.[6]

(8) Possible orders of morphemes in the Meadow Mari nominal template:

[5]This example was provided by Svetlana Edygarova, University of Helsinki

[6]The abbreviations in the second column are: Num is the number morpheme, D is the location of the possessive affix, K_1 is the host of the local case features and K_2 is the host of the structural case features.

	Affixes	Categories	Example
(a)	PL ≻ POSS	Num ≻ D	'pasu-vlak-na'
(b)	POSS ≻ PL	D ≻ Num	'pasu-na-vlak'
(c)	PL ≻ LOCAL.CASE	Num ≻ K_1	'pasu-vlak-ešte'
(d)	PL ≻ STRUCTURAL.CASE	Num ≻ K_2	'pasu-vlak-em
(e)	LOCAL.CASE ≻ POSS	K_1 ≻ D	'pasu-šte-na'
(f)	POSS ≻ STRUCTURAL.CASE	D ≻ K_2	'pasu-na-m'
(g)	PL ≻ LOCAL.CASE ≻ POSS	Num ≻ K_1 ≻ D	'pasu-vlak-ešte-na'
(h)	POSS ≻ PL ≻ LOCAL.CASE	D ≻ Num ≻ K_1	? 'pasu-na-vlak-ešte'
(i)	PL ≻ POSS ≻ STRUCTURAL.CASE	Num ≻ D ≻ K_2	'pasu-vlak-na-m'
(j)	POSS ≻ PL ≻ STRUCTURAL.CASE	D ≻ Num ≻ K_2	'pasu-na-vlak-em'

With a number morpheme and a possessive morpheme and no case (which amounts to nominative marking), both orders are possible ((8-a) and (b)). With case and number marking and no possessor, only the order [Num ≻ K] is allowed, irrespective of the case morpheme involved ((8-c) and (d)). When there is a case morpheme and a possessive morpheme but no number morpheme (which amounts to singular marking), the order depends on the case marker involved. K_1-type cases must precede the possessive whereas K_2-type cases must follow it ((8-e) and (f)). When all morphemes are attested and the case marker in question is of type K_1, the standard order is [Num ≻ K_1 ≻ D] (8-g). However, according to Luutonen (1997), who did an extensive survey on the possible and impossible orders of morphemes in all Mari dialects, another possibility is [D ≻ Num ≻ K_1] (8-h). The first author accepts these forms but does not produce them herself and perceives them as less frequent. Finally, with K_2-cases, two orders are equally acceptable. [Num ≻ D ≻ K_2] and [D ≻ Num ≻ K_2] are both fully grammatical and, as far as we can tell, both frequently attested ((8-i) and (j)).

The facts about the nominal template in Meadow Mari raise two problems for accounts that assume that the order of affixes should reflect the order of syntactic heads. First, the order of affixes that we observe clearly does not parallel the assumptions for nominal syntax that are generally made by accounts that draw on the Mirror Principle. And, as far as we know, there is no reason (other than affix order) to believe that the syntactic structure of noun phrases in Eastern Uralic languages is fundamentally different from its counterparts in other language families. Second, the fact that we observe that the order of some affixes is not fixed but allows for certain variability (without feeding into semantic differences) is also per se problematic for a uniform syntactic account. The standard way to accommodate such facts within frameworks that build on the Mirror Principle is to assume postsyntactic operations that manipulate the syntactic structure. In our analysis in Section 4, we will follow this strategy as well. Note, however, that, if one simply assumes syntactic or postsyntactic operations that change any kind of underlying structure to match the observed surface structure, this leaves the Mirror Principle as no more than an irrefutable hypothesis that provides little if any insights on empirical data. That means that it is the researcher's duty to present independent evidence for either the existence of underlying structures or these syntactic or postsyntactic reordering processes. If this is done properly, the Mirror Principle remains a highly interesting and empirically relevant hypothesis and one of the core principles of the syntax-morphology

interface.

In the remainder of this paper, we will present what we believe to be a very strong argument in favor of the view that all the possible surface orders in (8) are to be derived on the basis of a uniform syntactic structure of the nominal domain in Meadow Mari. The evidence for this argument will come from a process called Suspended Affixation known from Turkic languages. Suspended Affixation deletes the right edges of non-final conjuncts in conjunction under identity. Crucially, we find that Suspended Affixation does not apply to the surface structure of the order of morphemes in Meadow Mari. Rather, it seems to apply systematically to an underlying structure that is more closely related to the syntactic structure of noun phrases that is frequently assumed by accounts drawing on the Mirror Principle.

3 Suspended Affixation in Meadow Mari

3.1 SA in Meadow Mari

Unlike some languages it is immediately related to, Meadow Mari makes use of a process called Suspended Affixation (SA), typically known from Turkic languages (see Luutonen 1997). Possibly, this is not a coincidence as the Mari people had long been in strong contact with people speaking Turkic languages. Alhoniemi (1993), for example, notes that the Mari language has been under strong influence by the languages of the Tatar and the Chuvash.

As already mentioned in the preceding section, SA deletes the right edges of non-final conjunct in coordination if they are also found in the final conjunct. Meadow Mari has two different conjunctions to conjoin nominals, /da/ and /den/. Only the latter one triggers SA, which leaves us with nice minimal pairs such as the one in (9).[7]

(9) a. Pörjeng tej-em da tud-em už-eš.
Man.NOM 2.SG-ACC and 3.SG-ACC see-3.SG.PRES
'The man sees you and him'
b. Pörjeng tej den tud-**em** už-eš.
Man.NOM 2.SG and 3.SG-ACC see-3.SG.PRES
'The man sees you and him'

The examples differ only with respect to the conjunction and as to whether the first conjunct underwent SA or not. In (9-a), we see that the accusative case marker /-em/ is retained on the first conjunct, in (9-b), it has been deleted. The remnant is a form, which, in this case, resembles the corresponding nominative pronoun.

In (10), we see that the process applies to all non-final conjuncts and that SA is not specific to case. Number marking can be deleted as well. The non-final conjuncts can have a plural interpretation.

(10) Me peres, pij den kajek-**vlak-em** už-am.
1SG cat.NOM dog.NOM and birds-PL-ACC see-1SG.PRES

[7] Throughout this paper, affixes that take scope over both conjuncts are given in bold.

'I see cats, dogs and birds.'
'I see a cat, a dog and birds.'

Deletion of case markers in coordination with the conjunction /den/ is more or less obligatory (as shown in (11)). Number marking can be retained (see (12)) in order to avoid the ambiguity that arises.

(11) ??Me peres-vlak-em den pij-vlak-em už-am.
1SG cat-PL-ACC and dog.PL-ACC see-1SG.PRES
'I see cats and dogs.'

(12) Me peres-vlak den pij-vlak-**em** už-am.
1SG cat-PL and dog.PL-ACC see-1SG.PRES
'I see cats and dogs.'

Importantly, there is a condition that only right edges can be deleted. It is completely impossible to retain case marking but to delete number marking (cf. (11)).

(13) *Me peres-em den pij-**vlak**-em už-am.
1SG cat-ACC and dog.PL-ACC see-1SG.PRES
'I see cats and dogs.'[8]

As pointed out by Erschler (2012) for Ossetic and Armenian, the non-final conjuncts do not typically bear the nominative. Rather, they bear the oblique stem on the basis of which the deleted case marker is formed. In Mari, we can observe that non-final conjuncts need not bear any case.

(14) a. Pörjeng memnam da nunem už-eš
Man.NOM us.ACC and them.ACC sees-3SG.PRES
b. Pörjeng memna den nune**m** už-eš
Man.NOM us.??? and them.ACC sees-3SG.PRES
'The man sees us and them.'

As can be seen in the paradigms below, the form /memna/ in (14-b) is not attested in the pronominal paradigm of Mari at all. It is simply the remnant of the actual accusative case form /memnam/ minus the accusative marker /m/. In other words, the accusative pronoun is formed with a suppletive stem /memna/ plus the accusative marker /m/. Applying SA to this pronoun leaves the suppletive stem as a remnant.

(15) Paradigm of Plural Pronouns in Meadow Mari

	1PL	2PL	3PL (regular)
NOMINATIVE	me	te	nuno
GENITIVE	memna-n	tenda-n	nune-n
ACCUSATIVE	memna-m	tenda-m	nune-m
DATIVE	memna-lan	tenda-lan	nune-lan
COMITATIVE	me-ye	te-ye	nune-ye

[8] In line with the example (11) above, the example in (13) is degraded with a singular reading of the first conjunct.

Alhoniemi (1993:79)

If the nominative form /me/ is used in the same environment as in (16), the result is ungrammatical.

(16) *Pörjeng me den nun**em** už-eš
Man.NOM us.NOM and them.ACC sees-3SG.PRES
'The man sees us and them.'

We take this as a strong argument that Suspended Affixation is an ellipsis process that deletes inflectional material. If SA were simply cliticization of one inflectional marker to the coordination phrase, then these suppletion facts are completely unexpected. Clitics are not known to trigger stem suppletion, especially not in a position that is potentially quite distant from the position where they actually occur.[9] The example in (17) illustrates this more abstractly. If SA were simply cliticization to the conjunction phrase, then one would need to assume a very non-local rule of suppletion.[10]

(17) $[_{\&P}$ Conj_1 & $\text{Conj}_2]$-ACC

Finally, we can show that inflectional markers that seem to appear on the last conjunct only phonologically behave like all regular affixes and not like postpositions. In (18) and (19), we see that /e/ is reduced to schwa when followed by an affix but not when it is followed by a postposition. In (20), we see that it does trigger vowel reduction as well when it modifies both conjuncts.

(18) erge dene
son.NOM about

(19) ergə-žə-m
son-3SG.POSS-ACC
'his son' Johannessen (1998)

(20) Anna-n [yder-žö den ergəž-ə-m]
Anna-GEN daughter-3SG.POSS and son-3SG.POSS-ACC
'Anna's daughter and son' Johannessen (1998)

We take this as sufficient evidence to rule out an alternative account according to which inflectional markers can be realized as clitics attaching to the whole phrase.

[9]For definition and extensive discussion of clitics, see Zwicky (1985); Miller (1992); Halpern (1995). In all of these works, clitics are defined in such a way that the suppletion data in (14) rule out an analysis of SA as cliticization. Halpern (1995) for example explicitly states that elements he derives in terms of the Edge Feature Principle are predicted to show no signs of lexical interactions with the base they attach to. Only postlexical rules can affect clitics. In this system, however, triggering suppletion is clearly not a postlexical rule. See Erschler (2012); Weisser (2017b,a) for further arguments that support the claim that SA is a deletion operation.

[10]A similar argument for SA being an instance of actual deletion can be made on the basis of Turkish where Kornfilt (2012) has shown that phonological rules such as vowel harmony can bleed the application of SA as they change the form of the affix (see discussion of these facts in Section 6.3). It is implausible to assume that the possibility to cliticize to the conjunction phrase depends on the phonological properties of the first (i.e. the non-adjacent) conjunct.

3.2 The Right Edge Condition on Suspended Affixation

Before we proceed with more complex examples of SA in Meadow Mari, we want to take a quick detour and introduce what we call the Right-Edge condition on SA. This condition will be the key observation to understanding the significance of the data from Mari and to paving the way towards an analysis.

SA is found in a whole range of other Eurasian languages such as Turkish (see e.g. Kornfilt 1996,Kornfilt 2012, Kabak 2007, Broadwell 2008), Japanese and Korean (Yoon and Lee 2005), Armenian and Ossetic (Erschler 2012) and Nivkh (Gruzdeva 1998). And even though SA exhibits a number of different properties in all of these languages (which is not surprising given their diversity), one observation turns out to be cross-linguistically very robust, namely that suspended elements must be at the right edge of the non-final conjuncts. We have formulated this observation in (21).

(21) **The Right-Edge Condition on Suspended Affixation:**
Inflectional affixes can only be deleted by Suspended Affixation if they form a coherent string at the right edge of a non-final conjunct.

As a consequence, if only a subset of the affixes of the non-final conjunct is deleted, the deleted elements must be at the right edge. Consider the following examples. In (22), we see that speakers of Korean can either suspend all affixes of the conjoined constituents (cf (22-a)) or suspend only the two rightmost ones (cf (22-b)).

(22) a. Ku-nun [yongkamha-n kwunin-kwa] [cincengha-n
He-TOP courageous-REL soldier-AND genuine-REL
aykwhukca]-**taw-ass-ta**
patriot-BE.LIKE-PAST-DECL
'He really lived up to his reputation as a courageous solder and true patriot.'

b. Ku-nun [yongkamha-n kwunin-tap-ko] [cincengha-n
He-TOP courageous-REL soldier-BE.LIKE-AND genuine-REL
aykwhukca-taw]-**ass-ta**
patriot-BE.LIKE-PAST-DECL
'He really lived up to his reputation as a courageous solder and true patriot.'
Korean: (Yoon, 2012, p.3)

The same can be observed in the examples from Japanese below. In (23-a), both affixes have been deleted. However, if only one of the suffixes is deleted, it must be the one on the right, i.e. the past-marker *ta* (23-b). It is not possible to retain the past marker and delete the affix *hazime*, glossed as BEGIN (23-c).

(23) a. Taroo-ga utai Ziroo-ga odori-**hazime-ta**
Taroo-NOM sing Ziroo-NOM dance-BEGIN-PAST
'Taro began to sing and Ziro began to dance.'

b. Taroo-ga utai-hazime Ziroo-ga odori-hazime-**ta**
Taroo-NOM sing-BEGIN Ziroo-NOM dance-BEGIN-PAST
'Taro began to sing and Ziro began to dance.'

c. *Taroo-ga utai-ta Ziroo-ga odori-**hazime**-ta
Taroo-NOM sing-PAST Ziroo-NOM dance-BEGIN-PAST
'Taro began to sing and Ziro began to dance.' Japanese: Nishiyama (2012,p.3)

To a certain extent, we have already seen that the Right-Edge condition is also at work in Mari. The examples (11)-(13) in the previous section illustrated that plural can only be deleted if case marking is deleted as well. In other words, it is possible to delete the case marker and to retain the plural but not vice versa. In Turkish, the validity of the Right-Edge condition is even more evident. If one considers conjuncts with three affixes (i.e. a plural affix, a possessive affix and a case marker), the following SA patterns are possible.

(24) Acceptable Patterns of SA in Turkish:
a) Stem -PL -POSS ~~-CASE~~
b) Stem -PL ~~-POSS~~ ~~-CASE~~
c) Stem ~~-PL~~ ~~-POSS~~ ~~-CASE~~

Speakers of Turkish can either delete only the case marker as in (25-a) or they can delete the case marker and the possessive affix, leaving the plural as in (25-b).[11] Or they can delete the whole range of affixes as in (25-c).

(25) a. kedi-ler-im ve köpek-ler-im-**i**
cat-PL-1SG and dog-PL-1SG-ACC
'my cats and dogs (ACC)'
b. kasaba-lar ve köy-ler-**imiz-de**
town-PL and village-PL-1PL-LOC
'In our towns and villages (LOC)' Turkish: Kabak 2007, p.337
c. köy(...), kasaba(...) ve kent-**ler-imiz-den**
village town and city-PL-1PL.POSS-ABL
'from our villages, towns, cities.' Turkish: Göksel and Kerslake 2005, p.458

(26) shows that it is ungrammatical to delete morphemes that are not at the right edge. For example, it is not possible to retain the case marker but to delete the possessive affix (and the plural).

(26) *kasaba-dan ve kent-**ler-imiz**-den
town-ABL and city-PL-1PL.POSS-ABL
'from our towns and villages'

So, we can state that, as for now, SA in Turkish and Meadow Mari seem to behave similar

[11] With respect to the example in (25), it seems that there is a certain variation among speakers of Turkish. For some speakers, examples in which the possessive affix is deleted but the plural marker is not are degraded (see e.g. judgments in Orgun (1996) and Kornfilt (1996), Kornfilt (2012). Kabak (2007) claims that at least some of these examples are well-formed. This speaker variation does not affect our argument here. As we will see, there are affix-specific restrictions in Turkish on the availability of SA. Crucially, the Right-Edge condition still holds even if examples as (25)[b] are degraded for some speakers.

inasmuch as they both obey the Right-Edge condition on SA. In the next section, we will see however, that if one considers more complex examples in Mari, namely those including a possessive affix, the picture looks a little bit different. In Mari, it seems that the Right-Edge condition can be violated in certain conditions. Given the robust status of the Right-Edge condition crosslinguistically, this result is quite surprising.[12]

3.3 SA in Meadow Mari revisited

In the examples of SA in Meadow Mari in Section 2, we have only seen cooccurences of case and number marking. The generalizations were simple. Case is always deleted under identity and number can be deleted if case is too. Thus, the examples of SA seemed completely parallel to the Turkish ones.

If we look at examples containing a possessive affix in addition though, things become more complicated. Again, it is still possible to delete all the affixes if the possessors are identical as in (27).

(27) Nuno memnan pört den sad-**vlak-eške-na** tol-en-et.
3PL 1PL.GEN house and garden-PL-ILL-1PL came-PAST-3PL.
'They came to our houses and our gardens.'

However, when deleting only a subset of the affixes, we find that the right edge condition can be violated if a possessive affix is involved. In (28), we see that a local case (the inessive in (28-a) and the illative in (28-b)) can be deleted even though it is not at the right edge of its conjunct. It precedes the possessive affix which cannot be deleted as different possessors are chosen in each conjunct.

(28) a. Üder mej-en uše-m den tej-en süm-**ešte**-t.
girl 1SG-GEN mind-1SG and 2SG-GEN heart-INESS-2SG

[12] An anonymous reviewer also expresses her/his surprise about the fact that the Right-Edge condition can be violated in Mari (at least on the surface) and asks whether we know of other cases like the one at hand. In fact, we are aware of one other case where an affix can be deleted by SA even though it is not at the right edge. The crucial examples are found in the nominal domain in Japanese and Korean. These languages allow for DP-internal extraposition of the numeral-classifier complex to a position after the case marker. The case marker can however still undergo SA. In (i-a), which is also a possible option, no SA applies which allows us to see the position of the case marker. In (i-b), SA applies.

(i) a. Hon o issatsu to pen o nihon kau.
book ACC one and pen ACC two buy
'I will buy one book and two pens.' H. Saito (p.c.)
b. Hon issatsu to pen **o** nihon kau.
book one and pen ACC two buy
'I will buy one book and two pens.' (Johannessen, 1998, p.17f)

Without going too much into detail, it seems that for these data, a similar explanation can be provided as the one we will put forward for Mari. This kind of numeral-classifier extraposition has been identified as an instance of quantifier floating. As this kind of quantifier floating has been argued to be an adjunction operation (see e.g. Bobaljik (1998)) and adjuncts are often argued to be inserted late into the structure, we can entertain a possible analysis in which SA precedes this kind of adjunction. If this analysis is feasible, then the violation of the Right-Edge condition in Japanese (and Korean) is also only apparent.

'The girl is in my mind and in your heart.'

b. Pjötr kart-em mej-en perdež-em den omsa-**ške**-že pižekta
'Peter map-ACC 1SG.PRON-GEN door-1SG and wall-ILL-3SG pin.3SG.PRES
'Peter pins maps to my door and his wall.'

On an abstract level, the underlying forms of first conjuncts look like (29):

(29) a. uš- ~~ešte~~ -m
mind- INESS -1SG

b. perdež- ~~eške~~ -m
door- ILL -1SG

We can see that the local cases behave identical with the structural cases, which can be deleted just as well. This, however, is expected since they are adjacent to the right edge of the conjunct.

(30) Me iza-m den aka-m-**en** pört-ešt-em už-am.
1SG brother-1SG and sister-1SG-GEN house-3PL-ACC see-1SG.PRES
'I see my brother's and my sister's house.'

Another violation of the Right-Edge condition can be observed with the plural morpheme. It can just as well be deleted even though it is preceding a possessive affix. Importantly, the first conjunct in (31) can have a plural interpretation (as indicated by the translation). We can thus assume that the number morpheme is deleted too. The abstract representation in (32) illustrates the deletion pattern:

(31) A-vlak tud-en sad-še den memn-an pasu-**vlak-ešte**-na mod-et.
child-PL 3SG-GEN garden-3SG and 1PL-GEN field-PL-INESS-1PL play-3PL.PRES
'The children are playing in his gardens and in our fields'

(32) sad- ~~vlak-~~ ~~ešte-~~ še
garden- PL- INESS- 3SG.POSS

However, it is not the case that a D-head can simply be ignored for the determination of the right edge. When the possessive suffix follows the plural marker and there is no case marker (≡ nominative), then the plural suffix cannot be suspended. In (33), only the singular reading of the first conjunct is available. The plural reading with suspension of the plural morpheme is impossible.

(33) sad-še den pasu-**vlak**-na
garden-3SG and field-PL-1PL
'His garden and our fields'
ungrammatical reading: 'His gardens and our fields'

So, to sum up, what we find is that case markers can be deleted even though some of them are not at the right edge of the respective conjunct since they precede the possessive affix linearly. Also, we find that plural markers can be deleted even though they precede a possessive affix. Plural markers cannot be deleted if they precede a case marker that is

not deleted. The following table lists the relevant combinations. (34) gives the patterns for the local K_1-type cases and (35) shows the patterns for K_2-type structural cases.

(34) Patterns of deletion with K_1-type cases:

	1st conjunct	Judgment
(a)	stem - PL - LOC.CASE - POSS	✘
(b)	stem - PL - LOC.CASE - ~~POSS~~	✘
(c)	stem - PL - ~~LOC.CASE~~ - POSS	✔
(d)	stem - PL - ~~LOC.CASE~~ - ~~POSS~~	✔
(e)	stem - ~~PL~~ - LOC.CASE - POSS	✘
(f)	stem - ~~PL~~ - LOC.CASE - ~~POSS~~	✘
(g)	stem - ~~PL~~ - ~~LOC.CASE~~ - POSS	✔
(h)	stem - ~~PL~~ - ~~LOC.CASE~~ - ~~POSS~~	✔

Since it is only possible to conjoin noun phrases which bear the same case, the case markers in deletion contexts are always identical both in terms of morphosyntactic specification and phonological content.[13] Thus, case is always necessarily affected by SA. Patterns where case marking was retained are uniformly ungrammatical (as in (34-a),(b),(e) and (f)). Retaining the plural even though it could be deleted is possible when an appropriate context is given (as in (34-c) and (d)). Finally, we see that irrespective of whether the possessor is deleted or not (it is deleted when it is identical and it is not deleted when it is not), deletion of the plural and the case marker is grammatical even though they are not at the right edges of the non-final conjunct.

The following table summarizes the patterns of deletion with K_2 cases.

(35) Patterns of deletion with K_2-type cases:

	1st conjunct	Judgment
(a)	stem - PL - POSS - STRUC.CASE	✘
(b)	stem - PL - ~~POSS~~ - STRUC.CASE	✘
(c)	stem - PL - POSS - ~~STRUC.CASE~~	✔
(d)	stem - PL - ~~POSS~~ - ~~STRUC.CASE~~	✔
(e)	stem - ~~PL~~ - POSS - STRUC.CASE	✘
(f)	stem - ~~PL~~ - ~~POSS~~ - STRUC.CASE	✘
(g)	stem - ~~PL~~ - POSS - ~~STRUC.CASE~~	✔
(h)	stem - ~~PL~~ - ~~POSS~~ - ~~STRUC.CASE~~	✔

The results are completely identical. This shows that even though the different types of cases occupy different positions in the template, their deletion patterns are also completely identical. This is totally unexpected if one conceives of SA as a simple process deleting morphemes at the right edges of surface forms.

In addition, we see that in (35-g), it is even possible to delete the plural marker even though it is not at the right edge of its conjunct. While the case marker at the right edge has been deleted, the plural marker is still followed by the possessive affix. Hence, its

[13] Modulo vowel harmony. However, unlike in Turkish, vowel harmony does not have an effect on SA (see Section 6.2 for the Turkish examples).

deletion is unexpected.

So, to sum up, we see that in Meadow Mari, unlike in Turkish, non-final elements can be deleted even though final ones are retained. In one case, a local case is deleted even when it is followed by a possessive affix and in other cases, both a plural marker and a case marker followed by a possessive affix can be deleted. This raises the question whether SA can receive a unified analysis in Mari and in Turkish.

4 The Analysis

In the previous sections, two important questions were raised. First, can or should the unusual order of morphemes in the Meadow Mari nominal template be derived on the basis of a coherent underlying syntactic structure? And second, can the phenomenon of SA receive a unified account in Turkish and Meadow Mari even though its restrictions of application seem to be different?

Before we proceed, we want to emphasize though that even though we will propose an analysis that will solve both puzzles at once, they are, in principle, independent of each other. The question whether the nominal template can plausibly be derived on the basis of a uniform DP-internal syntax is raised only in frameworks that presuppose the existence of a uniform underlying structure and a uniform mapping algorithm such as the Mirror Principle. The second question, namely why SA in Mari systematically ignores the surface orders of morphemes, is raised in virtually all frameworks that try to say something about crosslinguistic comparison. What we will argue is that a straightforward solution for both problems is possible. If one does not adopt the Mirror Principle, more needs to be said about how the second problem can be solved. We will come back to the question in Section 6.

In the following, we will propose an analysis that allows for a unified analysis of Suspended Affixation in Mari and Turkish *and* allows for a uniform underlying DP-syntax in Mari and for the Mirror Principle to be maintained. We will show that assuming an underlying uniform representation of some sort will actually allow for an analysis of the deletion patterns in a completely straightforward way. From a different perspective, it can thus be argued that the existence of deletion patterns of SA such as the ones in Mari provides a very strong argument for a uniform underlying syntax and the Mirror Principle.

The idea of the analysis is that the underlying syntax of noun phrases in Meadow Mari is completely regular and that the output of the syntax is changed in the postsyntactic component by two rules: A lowering rule and a metathesis rule. We will show that if we set up a derivational theory of postsyntactic rule application in which the lowering rule feeds the application of SA whereas the metathesis rule counterfeeds (i.e. follows) the application of SA, then the deletion patterns as well as the order of morphemes is predicted correctly.

4.1 Assumptions

In this section, we will briefly outline our basic assumptions. We will start out with the assumptions about the syntax of noun phrases in Meadow Mari. Following McFadden (2004), we assume that the underlying syntactic hierarchy in Mari is the one in (36).[14]

(36) $[_{KP}\ [_{DP}\ [_{NumP}$ NP Num] D] K]

The elements in (36) are the ones relevant for the discussion in this article. However, there can, of course, be additional projections which are in between the categories in question. For the sake of this article the categories sketched in (36) will suffice as they represent all of the actual morphemes that are involved in the reordering processes we investigate in this article: The Num-head represents the number features which modify the NP immediately (Harley and Ritter 2002). A plural feature on Num will result in the morpheme /-vlak/ unless the Num-head's specifier is filled with an overt numeral. The D-head hosts what we called the possessive affix in the previous sections. These morphemes realize features which are the result of D agreeing with the possessor in its specifier. In cases where the possessive relation is indicated only by the agreement features on the head noun, we assume there to be an empty *pro* element in SpecD that is coreferent with a discourse salient NP and thus can contribute the relevant features on D. Finally, we assume that the whole structure is headed by a K-head which hosts the case marker. We believe this to be a plausible analysis because (i) the case marker modifies the whole DP and not just parts of it, (ii) it is the nature of the K-head which determines the distribution of the whole phrase in the clause and (iii) it puts case markers on the same level as postpositions. And especially in Finno-Ugric languages, it has long been noted that there is probably not a good reason to distinguish between case markers and (at least some kinds) of postpositions (see Moravcsik 2003, Trommer 2008, Spencer and Stump 2013).

Another assumption that we make for the sake of concreteness is that the nominal complex investigated throughout this paper is not formed by head-movement. Rather, all of the heads in question cliticize to the nominal stem postsyntactically. We do not want to delve too deeply into the discussion about the distinction between affixes and clitics in Finno-Ugric but, as far as we can see, already the mere number of different morpheme orders in many areas of Finno-Ugric suggests that many elements in the nominal (and possibly also the verbal domain) in these languages are syntactically relatively free. Also, the extreme degree of concatenation with hardly any cases of allomorphy point into direction of clitics rather than affixes. Hence, we assume all of the morphemes to be syntactic

[14] Apart from McFadden (2004), there are, of course, many predecessors to the underlying structure we assume. The general architecture of DPs with a D-head taking an NP as its complement goes back to Abney (1987) and was adopted by most accounts in the field. The intermediate number head was introduced by Ritter (1992) and argued for by a number of papers, i.a. Alexiadou and Wilder (1998); Harley and Ritter (2002). Introducing a K-head heading the whole structure was proposed i.a. by Travis (1986); Travis and Lamontagne (1992); Bittner and Hale (1996); Bayer et al. (2001). And, as for the position of K, it is very plausible to assume that K modifies the whole DP rather than just a constituent of it. This insight goes back to a whole number of accounts which stress the similarities of case and adpositions. (see e.g. Kayne 1984, Emonds 1985)

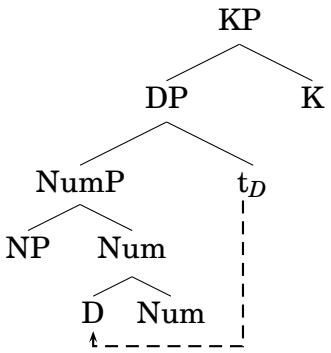
heads which concatenate postsyntactically – possibly as a result of phonological deficiency. Anyway, we want to emphasize that, for the sake of this paper, hardly anything hinges on this decision. If head movement creates ordered sets of features (as opposed to throwing all the features of the single heads into one unordered set), then the analysis that we propose in the following sections can proceed as it stands.

The next crucial assumption of our analysis is that there are several postsyntactic operations that manipulate the output of the syntax. Some of them apply on the basis of syntactic hierarchy, others apply on the basis of structures that have already been linearized. We discuss these operations in their order of application:

① Lowering of D (D-LOWER):[15]

D-LOWER is a postsyntactic process that lowers D to left-adjoin to Num (as in (37)). The same process has already been proposed in McFadden (2004) to account for the Eastern Uralic nominal template. In accordance with Embick & Noyer's (2001) *Late Lowering Hypothesis*, D-LOWER follows all kinds of syntactic movement. Still, however, it applies on the basis of hierarchical structure (i.e. prior to linearization).[16] Thus, it must precede the other postsyntactic operations that we assume.

(37) Lowering of D to Num:



D-LOWER is an optional process. Therefore it derives the free alternation between the examples in (38) and (39).

(38) pasu-vlak-na
garden-PL-1PL.POSS
'our gardens'

(39) pasu-na-vlak
garden-1PL.POSS-PL
'our gardens'

② Suspended Affixation SA: (*preliminary*)

[15] On lowering, in general, see e.g. Embick and Noyer 2001, Myler 2013, Arregi and Nevins 2012, Salzmann 2013.

[16] I follow McFadden (2004) who gives an argument for this process applying on the basis of hierarchical structure. The argument itself is based on allomorphy patterns in Mordvin, another Eastern Uralic language. Thus, while this assumption may lack concrete support within Meadow Mari, it combines nicely with the rest of the analysis and the general order of operations discussed below.

SA deletes the features of a head at the right edge of a KP if the features are recoverable in the final conjunct (as in (40)).

(40)
$$\begin{array}{l} [\ \underset{|}{\alpha}\ \ \underset{|}{\beta}\ \ \underset{|}{\gamma}\ ]\ \&\ [\ \underset{|}{\alpha}\ \ \underset{|}{\beta}\ \ \underset{|}{\gamma}\ ] \\ \{F1\}\ \{F2\}\ \{F3\}\qquad \{F1\}\ \{F4\}\ \{F3\} \end{array}$$

$$\begin{array}{l} \overrightarrow{SA}\quad [\ \underset{|}{\alpha}\ \ \underset{|}{\beta}\ \ \underset{|}{\gamma}\ ]\ \&\ [\ \underset{|}{\alpha}\ \ \underset{|}{\beta}\ \ \underset{|}{\gamma}\ ] \\ \{F1\}\ \{F2\}\ \cancel{\{F3\}}\qquad \{F1\}\ \{F4\}\ \{F3\} \end{array}$$

SA applies in the presence of the conjunction /den/ and deletes all the features of a head at the right of the non-final conjunct. In (40), we see that {F3} has been deleted since it is recoverable. {F1}, however, has not been deleted even though it potentially is recoverable. The reason is that it is followed by a feature {F2} that cannot be deleted.[17]

The operation SA is obligatory.[18] As can be seen from the domain of application and the fact that it makes reference to linear order (i.e. the Right-Edge condition on SA), SA applies to linearized structures. Note that this notion of SA is preliminary and will be refined in Section 5.

③ D-Metathesis (D-METATH):

Changes the order of D and a K-head bearing a local case feature (and possibly an intervening Num). D-METATH is obligatory and applies to linearized structures.

(41) D-METATHesis[19]:

1.Structural description: $[_{KP}$ NP D X $\underset{|}{\text{K}}$
{case:LOC}

2.Structural change:

[17]Under this solution, deletion is carried out leaf-by-leaf rather than in terms of deletion of whole branches in the tree (as in Merchant (2001) et seq). See also Murphy (2017) for arguments that a solution along these lines might be favorable with purely syntactic phenomena like Gapping.

[18]As pointed out in Section 3, non-application of SA may actually not result in strong ungrammaticality but rather in degradedness of some sort.

[19]This metathesis operation is formulated in Harris and Halle's (2005) Generalized Reduplication formalism. This formalism derives metathesis as the result of reduplication plus subsequent deletion. In the formalism, double brackets ⟦⟧ indicate the reduplicated sequence (in this case D-Num-K) and the angle brackets ⟩⟨ indicate the juncture of deleted material. The material to the left of ⟦⟧ is deleted in the left copy and the material to the right of it is deleted in the right copy. In the sample derivation in (42), material to be deleted is illustrated on a shaded background. Note though that nothing about the analysis hinges on that formalism of metathesis. Any formalism that reorders morphemes on the basis of their linear structure (e.g. Local Dislocation) would work just as well.

i. Insert ⟦ to the immediate left of D and ⟧ to the immediate right of K.

ii. Insert ⟩⟨ to the immediate right of D.

Under this definition, X can be empty. In this case D and K simply change their order. Or X can be the Num-head. In this case, D is moved to the right edge of the KP leaving the order of Num and K as it is. The effects of (41) are abstractly shown in (42):

(42) NP D Num K ⇒
NP ⟦ D ⟩⟨ Num K ⟧ ⇒
NP - D Num K - D Num K ⇒
NP Num K D

The whole string D ≻ Num ≻ K is reduplicated and in the sense of Harris and Halle (2005), subsequently, parts of both copies are deleted. In doing so, D-METATH thus derives the alternation between local cases which precede the D-head and structural cases which follow it.

(43) pasu-vlak-ešte-na
garden-PL-INESS-1PL.POSS
'in our gardens' (INESSIVE)

(44) pasu-vlak-na-m
garden-PL-1PL.POSS-ACC
'our garden (ACCUSATIVE)'

In order to do that, the definition of D-METATH contains a reference to the local case feature on the K-head.[20] As a result, the order of local cases and D is inverted whereas the order of structural cases with respect to D is not affected.[21]

Given a derivational concept of the postsyntactic module, these operations can now be ordered with respect to each other. However, since they apply on the basis of different kinds of structure, two additional operations must be considered: Linearization (LIN) and Vocabulary Insertion (VI). The order that we propose for the derivations in Meadow Mari is the following:

(45) Order of Operations:
D-LOWER ≻ LIN ≻ SA ≻ D-METATH ≻ VI

[20] In case the reader might consider this reference to a certain feature as overly unrestricted, we want to propose an alternative account that introduces an additional postsyntactic operation called K-fission (K-F). K-F splits up the features on K into two distinct heads K_1 and K_2, the former containing all local case features and the latter containing structural case features. As a result, one could reformulate D-METATH to the extent that it merely refers to K_1. This may have the additional benefit of being able to explain cases as the Udmurt example (3) in Section 2, in which actual stacking of a local and a structural case occurs.

[21] A quick note is in order about the cases where metathesis seems to be optional, i.e. dative and comparative case. In order to derive the variable placement of these cases, we stipulate that, with these cases, the local case feature is optionally present on the K-head. As a consequence, metathesis is optional and the variable placement is derived. Depending on whether metathesis applies, the dative and the comparative either behave like a local or like a structural case.

To a certain extent, this ordering falls out from the assumptions about the architecture of the postsyntactic module as laid out in Arregi and Nevins (2012). Operations that apply on the basis hierarchical structure must apply early (i.e. prior to linearization) whereas those that apply on linear structures come late. The order in (45) can thus be seen as intrinsic, at least to a certain extent. We will discuss this issue in more detail in Section 6.1.

In the following sections, we will show that given this order of operations, it is possible to derive (a) the possible and impossible morpheme orders of Eastern Mari and (b) the (in)ability to delete under SA.

4.2 Deriving the possible orders of morphemes

In this section, we will illustrate all the relevant derivations step by step in order to show that they derive the correct orders of the morphemes and only the correct ones. In order to do that, we must consider the syntactic output as well as the effects of the two postsyntactic processes that manipulate the linear order: D-LOWER and D-METATH. The syntactic output is uniform. The hierarchical structure the syntax ships off to the PF-interface always has the following form:

(46) Syntactic Output Structure:
[$_{KP}$ [$_{DP}$ [$_{NumP}$ NP Num] D] K]

This hierarchical structure serves as an input to the postsyntactical operations. Based on this structure, we can now apply D-LOWER and D-METATH to see whether our analysis derives the facts. We start with simple examples with two overt morphemes:

(47) Number and Possessive:

	Input	D-LOWER	D-METATH	Output
a)	NP - Num - D	✗	✗	NP - Num - D
b)		✔	✗	NP - D - Num

The relevant hierarchical structure that serves as an input to the postsyntactical derivation is of the form [$_{DP}$ [$_{NumP}$ NP Num] D]. A covert K, which amounts to nominative, does not play a role in this derivation since nominative, of course, does not have a local case feature and thus cannot trigger D-METATH. Since D-LOWER is optional, we have to consider two derivations: The one in which D-LOWER applies and the one in which it does not. Since, as we said above, there is no local case feature in the structure, D-METATH cannot be triggered and hence, the optionality of D-LOWER leads to two different surface forms. If D-LOWER does not apply the input structure is maintained (47-a) and if D-LOWER does apply as in (47-b), it changes the order to [NP - D - Num].

Next, we consider combinations of possessive affixes and case markers. The conjuncts in this configuration are, by assumption, singular. Thus the Num-head has no overt marking and hence, D-LOWER has no effects (i.e. it is string-vacuous). However, depending on the actual case features involved, D-METATH can apply. If K has a local case feature as in (48-a), then D-METATH applies and changes the order to [NP - K - D]. If K is a structural case, neither operation applies, and the result is identical to the input

structure (48-b).

(48) Possessive and Case:

	Input	D-LOWER	D-METATH	Output
a)	NP - D - K_{local}	✗	✔	NP - K_{local} - D
b)	NP - D - $K_{structural}$	✗	✗	NP - D - $K_{structural}$

Next, we consider combinations of number and case. Since, by assumption the conjuncts do not have possessors, D, in this case, is covert. Thus, neither D-LOWER nor D-METATH change the order of morphemes since both make reference to D. Hence, the only possible order is the order already present in the input [NP - Num - K].

(49) Number and Case:

	Input	D-LOWER	D-METATH	Output
a)	NP - Num - K	✗	✗	NP - Num - K

Finally, we turn to the more interesting cases where all three morphemes are overt. In (50) and (51), an additional intermediate representation is given to illustrate the order of morphemes at the point of the derivation after D-LOWER and before D-METATH. In (50), the possible derivations with a local case are shown. The local case head is abbreviated as K_1 for ease of exposition.

(50) Number, Possessive and Local Case:

	Input	D-LOWER	Intermediate	D-METATH	Output
a)	NP - Num - D - K_1	✗	NP - Num - D - K_1	✔	NP - Num - K_1 - D
b)		✔	NP - D - Num - K_1	✔	NP - Num - K_1 - D

Since D-LOWER is optional, it can either leave the underlying order [NP - Num - D - K] unchanged as in (50-a) or it can change it to [NP - D - Num - K] as in (50-b). Subsequently, D-METATH will apply since its context is given (i.e. there is a local case feature on K). Irrespective of whether D-LOWER applied in the first place, D-METATH will change the order to [NP - Num - K - D]. In the case of (50-b), D-METATH undoes the effects of D-LOWER completely, leading to a Duke-of-York effect that will become important in the following section about the deletion patterns.

In (51), we see the respective combinations with a structural case feature on K (here abbreviated as K_2). Again, the optional operation D-LOWER gives two possible intermediate representation but this time, since the context for D-METATH is not given, these two orders are maintained in the actual output. With structural cases, you have both options [NP - Num - D - K] and [NP - D - Num - K].

(51) Number, Possessive and Structural Case:

	Input	D-LOWER	Intermediate	D-METATH	Output
c)	NP - Num - D - K_2	✗	NP - Num - D - K_2	✗	NP - Num - D - K_2
d)		✔	NP - D - Num - K_2	✗	NP - D - Num - K_2

So far, the interaction of D-LOWER and D-METATH could successfully derive the possible orders of morphemes. A final note is in order however about the order [NP - D - Num

- K_{local}]. In (8) back in Section 2, it was noted that the first author accepts this order but would not actively use it herself. Luutonen (1997) also notes this order as possible. Moreover, Luutonen notes that this is the only possible order in the neighboring dialects of Eastern Mari. These dialects do not allow for the option [NP - Num - K_{local} - D]. As the reader may confirm from the tables above, we have so far not been able to derive this order. What we want to propose however, is that the dialects in which this order is possible (or even obligatory), D-METATH has a slightly different definition. If, in these dialects, D-METATH is restricted metathesis of adjacent morphemes, then the right order is predicted. Take a look at the revised definition of D-METATH below:

(52) Local D-METATHesis:

1.Structural description: [$_{KP}$ NP DK
{case:LOC}

2.Structural change:

i. Insert ⟦ to the immediate left of D and ⟧ to the immediate right of K.

ii. Insert ⟩⟨ to the immediate right of D.

The only difference between the local and the non-local definition is that the local one in (52) does not allow for metathesis across an intervening X. The result is that local D-METATH can be bled by the prior application of D-LOWER because D-LOWER can lead to Num intervening between D and K.

(53) Local D-METATH bled by D-LOWER:

Input	D-LOWER	Intermediate	Local D-METATH	Output
NP - Num - D - K_1	✔	NP - D - Num - K_1	✗	NP - D - Num - K

In (53), the definition of D-METATH is not met because there is an intervening category. Hence, metathesis is bled and we can actually see the effects of D-LOWER on the surface.

We can thus see that the interaction of the two operations that change linear order of morphemes can derive all of the attested ordering patterns and exclude the non-attested ones. In the next section, we will see that it also makes the right prediction concerning deletability.

4.3 Deriving the deletion patterns

In this section, we will go through the derivations again, and see which structure is present at the point when the SA operation applies. Given the order of operations in (45) (repeated below), we make the following prediction. Since SA applies between D-LOWER and D-METATH, we expect that D-LOWER can actually feed or bleed SA whereas D-METATH cannot.

(54) Order of Operations:
D-LOWER > LIN > SA > D-METATH > VI

We make the prediction, that the ability to delete is determined at the point of the derivation when D-LOWER has already applied but D-METATH has not. This point of the derivation is exactly the one called *intermediate* in the tables in the preceding section. In the following, we will go through all of the combinations again and test which subsets of the morphemes can be deleted. Only deletion of a proper subset gives an indication of the underlying structure. It is always possible to delete all morphemes under identity and as shown above in Section 3, case must necessarily be deleted.

In cases of number and possessive affix, as in (47), the intermediate representation is either [NP - Num - D] or [NP - D - Num]. Accordingly, we can delete both elements respectively if they are at the right edge:

(55) a. sad-še den pasu-na-**vlak**
garden-3SG and field-1PL-PL
'his gardens and our fields' Deletion of Num but not of D.
b. sad-vlak den pasu-vlak-**na**
garden-PL and field-PL-1PL
'our gardens and fields' Deletion of D but not of Num.

Crucially, what we cannot do, is delete Num and retain D, if D follows Num. Num can only undergo deletion if D-LOWER has applied before.[22]

(56) sad-še den pasu-**vlak**-na
garden-3SG and field-PL-1PL
ungrammatical reading: 'His gardens and our fields'

In cases of possessive affixes and case (48), the intermediate representation is always [NP - D - K], irrespective of the case involved. Accordingly, we can always delete cases.

(57) a. Üder mej-en uše-m den tej-en süm-**ešte**-t.
girl 1SG-GEN mind-1SG and 2SG-GEN heart-INESS-2SG
'The girl is in my mind and in your heart.' Deletion of K_{local} but not of D
b. Me iza-m den aka-m-**en** pört-ešt-em už-am.
1SG brother-1SG and sister-1SG-GEN house-3PL-ACC see-1SG.PRES
'I see my brother's and my sister's house.' Deletion of $K_{structural}$ but not of D

[22]For the sake of completeness, it should be noted that our theory also predicts the reverse pattern to hold. The possessive affixes should be able to undergo SA only when they are at the right edge. Here, the pattern is not that clear. Apparently, while the non-elliptical reading in examples like (i) is strongly favored, the elliptical reading seems to be marginally possible if it is pushed by the context. This is somewhat unexpected given our analysis and we cannot provide an explanation for these cases at this point. However, we want to note that the two readings are not that different and it may be the case that there are pragmatic processes at play that allow speakers to induce a a certain reading from context rather than from the underlying semantics.

(i) sad-vlak den pasu-na-vlak
garden-PL and field-1pl-pl
'Gardens and our fields'
? 'Our gardens and fields'

In cases of number and case, neither D-LOWER nor D-METATH applies. Thus, the deletion pattern observes the Right-Edge condition.

(58) Me peres-vlak den pij-vlak-**em** už-am.
1SG cat-PL and dog.PL-ACC see-1SG.PRES
'I see cats and dogs.' Deletion of K but not of Num

We now turn to cases with three affixes, where the deletion patterns are the most interesting ones. With local cases, the intermediate representation is either [NP - Num - D - K] or [NP - D - Num - K]. In both structures, the right elements can be deleted. That means, that even though we get identical surface structures, we find different deletion patterns.

(59) A-vlak tud-en sad-še den memn-an pasu-**vlak-ešte**-na mod-et.
child-PL 3SG-GEN garden-3SG and 1PL-GEN field-PL-INESS-1PL play-3PL.PRES
'The children are playing in his gardens and in our fields'
Deletion of K and Num but not of D

(60) Nuno memna-n pört-vlak den sad-vlak-**eške-na** tol-en-et.
3PL 1PL-GEN house-PL and garden-PL-ILL-1PL come-PAST-3PL
'They came to our houses and our gardens.'
Deletion of K and D but not of Num

With structural cases, we get the same two intermediate representations. Hence, we expect the same deletion patterns. This prediction is borne out.

(61) Tudo oksa-m šole-ž den šüžar-že-**vlak-lan** pu-en.
3SG money-ACC brothers-3SG and sister-3SG-PL-DAT give-3SG.PAST
'He gave money to his brothers and his sisters.'
Deletion of K and Num but not of D

(62) Me memna-n peres-vlak den pij-vlak-**na-m** už-am.
1SG 1PL-GEN cat-PL and dog-PL-1SG-ACC see-1SG.PRES
'I see our cats and dogs.'
Deletion of K and D but not of Num

4.4 Interim Summary

In the previous sections, we have shown in detail that the possible orders of morphemes can be derived by means of two distinct operations (D-LOWER and D-METATH). D-LOWER optionally lowers the D-head to Num, which leads to a change in the linear order of the two. D-METATH, however, obligatorily moves the D-head to the right edge of the template if its context is given. The effects of both operations can be observed independently. However, they can also interact in intricate ways.

In doing so, these two operations can also account for the complex deletion patterns. When interleaved with another postsyntactic process, namely SA, these operations account for opaque deletion patterns. With some of them, the Right-Edge condition is seemingly violated. These are accounted for by the assumption that SA is counterfed

by D-METATH thus creating the illusion that something other than a right edge has been deleted. In other cases, it even seems that non-continuous strings can be deleted. These data are accounted for by the Duke-of-York derivation in which both, D-LOWER and D-METATH apply derivationally. The difference is that D-LOWER crucially feeds SA whereas D-METATH counterfeeds it. In these cases, the representation which serves as a basis for deletion is neither identical with the input structure nor with the output structure. Thus, these data arguably provide a very strong argument for intermediate representations.

In the following section, we will briefly address some interesting cases of allomorphy and suppletion in order to test some predictions of the analysis and in order to refine the technical implementation of SA. Then, in Section 6, we will take a step back and discuss more general implications of the analysis.

5 Allomorphy and Suppletion

In this section, we will present some more data from Meadow Mari involving allomorphy and suppletion that support the present analysis and allow for a refinement of the technical implementation of Suspended Affixation.

Finno-Ugric languages are known to exhibit very few instances of allomorphy. Nominal and verbal affixes usually have only one form which does not change in different grammatical contexts. Often, these affixes are even syncretic across whole domains. The possessive affixes, for example, that we have have discussed throughout this article, carry over directly to the verbal domain where they encode the subject features. In Section 4, this has been taken as one argument that these affixes should in fact be treated as clitics. One instance of allomorphy however, that one finds in Meadow Mari concerns the illative case marker. The form of the illative case marker is sensitive as to whether it is followed by D or not (see examples in Alhoniemi 1993). Consider the following minimal pair.

(63) oms-aške / oms-aš
door-ILL
'to a door'

(64) oms-aške-m / *?oms-aš-em
door-ILL-1SG
'to my door'

If the illative marker is not followed by D, it can either be /eške/ or /eš/ (or, as in (63) and (64) above, the variants that have undergone vowel harmony). If it is followed by a possessive affix, the latter is not an alternative. The case form /eš/ (or /aš/) is not available. In more technical terms, the vocabulary insertion into K_1 is sensitive to whether D-METATH has applied or not. This is expected since D-METATH precedes vocabulary insertion (VI). We can thus formulate the insertion rules for the illative marker as follows:

(65) ILLATIVE → -eške /_ D[pers:α,Num:β]]

(66) ILLATIVE → -eške *or* -eš

If D has any person features (i.e. if there is a possessor which it has agreed with), then the illative marker must have the form -eške. In all other cases, free variation between both forms is possible.[23]

An interesting instance of suppletion is found with some plural pronouns in Meadow Mari. Most pronouns follow a simple pattern with a uniform stem and the respective case markers. The first and second person plural pronouns however follow a different pattern known from other languages of the family such as Hungarian (see Spencer and Stump 2013). With this pattern, some of the cases (i.e. the accusative, the genitive and the dative) undergo stem suppletion.[24] The table in (67) illustrates the irregular pronominal pattern for first and second person plural and the regular one for third person plural.

(67) Paradigm of Plural Pronouns in Meadow Mari[25]

	1PL	2PL	3PL (regular)
NOMINATIVE	me	te	nuno
GENITIVE	memna-n	tenda-n	nune-n
ACCUSATIVE	memna-m	tenda-m	nune-m
DATIVE	memna-lan	tenda-lan	nune-lan
COMITATIVE	me-ye	te-ye	nune-ye

Alhoniemi (1993:79)

Based on this observation, we may now create contexts in which the case marker that triggers suppletion is deleted under SA. We have seen the resulting examples already in Section 3. They served us as an argument for the deletion approach since the suppletion is triggered even though the case marker is deleted:

(68) Pörjeng memna den nune**m** už-eš
Man.NOM us.??? and them.ACC sees-3SG
'The man sees us and them.'

In (68) we see that if a first person pronoun is the first conjunct of a conjoined direct object (bearing the accusative), SA leaves just the suppletive stem as a remnant.
This shows that VI is sensitive to features that are deleted by SA. This is not expected under the present analysis. SA precedes VI and if SA really deletes the features in question

[23] As it does not affect our main point here, we leave aside the question whether this free variation can be derived more satisfyingly (e.g. by saying that, for some speakers, even unvalued (i.e. phonologically empty) D is enough to trigger the form -eške.) To substantiate such claims, more data from a variety of different speakers would be necessary.

[24] The suppletive form of the first person plural pronoun in these cases derives from a stem /mem/ plus the affix /na/ which is the possessive marking for first person plural. The fact that pronouns bear possessive marking is a widespread phenomenon in Finno-Ugric (see e.g. Spencer and Stump (2013) on Hungarian). Historically, it is due to the fact that case markers once were nouns which could themselves bear possessive affixes. In Hungarian, for example, this pattern seems to be productive but in Mari, these forms are lexicalized and simply treated as suppletive stems.

[25] Pronouns do normally not inflect for local cases. Instead either postpositional constructions or periphrastic constructions 'someone like me' are used.

as assumed in Section 4 above, then VI could not be sensitive to these features.
In order to solve this dilemma, we would like to refine the definition of SA saying that it rather marks certain heads for zero-insertion rather than actually deleting the features on these heads.

(69) Suspended Affixation SA: (*final*)
Marks heads at the right edge of a KP for zero-exponence if their features are recoverable in the final conjunct (as in (70)). Applies to linearized structures.

(70) $[\ \underset{\{F1\}}{\alpha}\ \ \underset{\{F2\}}{\beta}\ \ \underset{\{F3\}}{\gamma}\ ]\ \&\ [\ \underset{\{F1\}}{\alpha}\ \ \underset{\{F4\}}{\beta}\ \ \underset{\{F3\}}{\gamma}\ ]$

$\overrightarrow{\text{SA}}\quad [\ \underset{\{F1\}}{\alpha}\ \ \underset{\{F2\}}{\beta}\ \ \underset{\{F3\}}{\gamma_{\emptyset}}\ ]\ \&\ [\ \underset{\{F1\}}{\alpha}\ \ \underset{\{F4\}}{\beta}\ \ \underset{\{F3\}}{\gamma}\ ]$

In (70), SA does not delete the features in question. Rather, it marks certain heads (in this case γ) for zero-insertion. This is illustrated by a subscript $\emptyset$. Formulating SA this way solves the problem because the feature that triggers suppletion is not deleted at the point of VI. The head that bears the feature that triggers suppletion is marked for zero-insertion. Thus, at the point of VI, the feature can still trigger suppletion and its head is realized with a zero exponent.

6 General discussion

In this section, we will review some of the points raised in the previous sections and illustrate some of the greater implications of this analysis.

6.1 The importance of the sequential derivation

The present analysis makes use of an extremely derivational concept of the postsyntactic module as laid out in Arregi and Nevins (2008, 2012). The operations that apply in the Meadow Mari nominal domain must necessarily apply in a fixed order to obtain the correct results. It is crucial that they cannot apply at the same time or even be unordered with respect to each other. The order must be exactly as shown in (45), repeated below:

(71) Order of Operations:
$\boxed{\text{D-LOWER}} > \boxed{\text{LIN}} > \boxed{\text{SA}} > \boxed{\text{D-METATH}} > \boxed{\text{VI}}$

Given the derivational modular concept of the postsyntax in Arregi and Nevins (2008, 2012), the order of these operation is mostly intrinsic. In the system they argue for the hierarchical structure is transformed step by step into a linear string. In the course of this transformation the structure goes through several modules each of which has its own rules and operations. Rules that apply on the basis of hierarchical structure must precede rules that apply on the basis of linear order. In the case at hand, this means that D-LOWER must precede SA and D-METATH. Given the latter two both apply to linear

orders, their ordering is in principle free. However, as we see from the data, SA must precede D-METATH in order to derive the data correctly. These two operations must thus be ordered extrinsically.

The strongest point in favor of the order we assumed comes from the Duke-of-York derivation we discussed in Section 4. Both operations in this derivation are independently accounted for as their effects are different. However, only a derivational system with ordered operations makes the right predictions when it comes to the interaction of these operations. They can interact to the extent that D-METATH may completely undo all the effects of D-LOWER. This, as far as we see, is the only way to account for the complex deletion patterns where both a case and a number head are deleted.

(72) Duke-of-York derivation:[26]

Input:	NP -	Num -	D -	K_1	$\overrightarrow{\text{D-LOWER}}$
	NP -	D -	Num -	K_1	$\overrightarrow{\text{SA}}$
	NP -	D -	~~Num~~ -	~~K_1~~	$\overrightarrow{\text{D-METATH}}$
Output:	NP -	~~Num~~ -	~~K_1~~ -	D	

A subset of the affixes is deleted by SA. Importantly, this subset is neither at the right edge at the input structure nor at the right edge of the output structure of the derivation. Furthermore, it is not even a continuous string in the input. Nevertheless it can be deleted (as in (59)) above. The reason, that we have emphasized several times by now, is that it is an intermediate representation that serves as input for SA.

The Duke of York derivation is, as far as we can see, the only way to account for this deletion pattern and to maintain the well-established Right-Edge condition on SA. Importantly, this derivation is facilitated by the derivational model of grammar and, in particular, the derivational fashion in which the postsyntactic module applies.[27]

For this reason, a representational account of the data in Mari is, as far as we can

[26]The term 'Duke-of-York derivation' goes back to Pullum (1976) and describes a derivation in which a process B undoes the effects of a previous process A completely. An anonymous reviewer asks whether Pullum's criticism of Duke-of-York derivations applies to our case at hand. It must be noted though that Pullum (1976) does not provide a general point of criticism against such derivations but merely criticizes quite a number of concrete analysis for their stipulative assumptions that give rise to the Duke-of-York pattern. One of his more frequently raised points of criticism concerns the question whether the processes A and B are independently well-motivated. In our case, both operations that create the Duke-of-York pattern (D-LOWER and D-METATH are independently observable (see ex. (4) vs. (5) and (6) vs. (7)) and thus we believe this point of criticism does not apply to the derivation we propose.

[27]Another fact that puts emphasis on the derivational model that underlies the analysis is the violation of the Obligatory Precedence Principle, which states that obligatory rules must precede optional rules (Ringen 1972; also cf. Perlmutter and Soames (1979); Georgi (2014)). As we have seen, D-LOWER is optional and precedes several obligatory operations such as D-METATH. However, as was made clear in the discussion above, the order of these operations must be the way we presented it.

But given that both rules apply on different kinds of structures (D-LOWER applies on the basis of hierarchical structures and D-METATH applies on the basis of linear order) it becomes clear that they cannot compete. In Arregi & Nevins' (2008, 2012) terminology, they apply in different components within the postsyntactic module. D-LOWER applies in what the call the *Exponence Conversion* component whereas D-METATH is part of the *Linear Operations* component. Thus, while it still may be the case that something like the *Obligatory Precedence Principle* applies within one component, it cannot be the case that it applies across components overall.

see, bound to fail. Ryan (2010) presents an optimality-theoretic approach to variable affix orders that can derive the affix order of Meadow Mari. In his account, the order of affixes is determined by means of constraints that evaluate the pairwise order of affixes. In the case at hand, the evaluation could look like the following:[28]

(73) Evaluation of Mari morpheme order by bigram constraints à la Ryan (2010)

		*K-Num	*K_2-D	*D-K_1	*Num-D	*D-Num	*K_1-D	*D-K_2	*Num-
	$\sqrt{}$-Num-D-K_1			*!	*				*
☞	$\sqrt{}$-Num-K_1-D				*		*		*
	$\sqrt{}$-D-Num-K_1			*!		*			*
	$\sqrt{}$-D-K_1-Num	*!		*		*			
	$\sqrt{}$-Num-K_2-D		*!						*
☞	$\sqrt{}$-Num-D-K_2				*			*	*
☞	$\sqrt{}$-D-Num-K_2					*		*	*
	$\sqrt{}$-D-K_2-Num	*!						*	

With K_1-cases (i.e. local cases), only one order of morphemes is acceptable whereas with K_2-cases, two orders are available due to the two constraints with equal ranking (i.e. Num>D and D>Num). Deriving the correct order of morphemes is not a problem in Ryan's account.

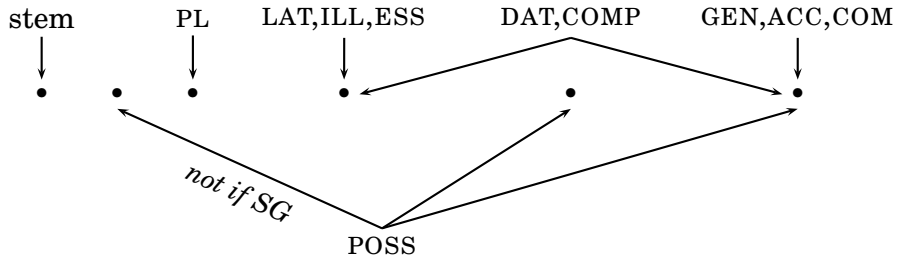
Crucially, however, as this table shows, the whole order is derived by parallel evaluation of all constraints at once. In other words, there is never an intermediate representation in between different operations. As was noticed by several people by now (see e.g. discussion in McCarthy 1999, 2007; Baković 2011), standard Optimality Theory cannot replicate stepwise derivations and therefore cases of opacity are inherently problematic. The Duke-of-York derivation we have seen is a textbook example of opacity in this sense. The Mari facts have shown that an intermediate representation is needed to account for the application of SA. Without intermediate representations we have no explanation why SA applies the way that it does. We think that this provides a strong argument in favor of a serial derivational account of postsyntax and against a parallel, representational account as the one by Ryan (2010).

The same argument can be put forward against the templatic account of morpheme ordering by Crysmann and Bonami (2016). This account is concerned with cases of variable affix orders in a whole range of different languages. The basic building block of their account are realization rules which pair off morphs with the feature content they express. These morphs come with designated position classes, which yield the correct ordering of morphs in every case. In their account, case markers in Mari come with the position class index (PC $4 \vee 5$) depending on whether it is a local or a structural case (the dative and the comparative can go in either position class). Possessive affixes come with the position

[28]The table in (73) is slightly simplified as it does not illustrate all possible candidates. Candidates with a non-initial root as well as a K-head immediately following the root are not shown for ease of exposition. These candidates do not play a role here as they can easily be excluded by high ranked constraints. Also, we have translated Ryan's somewhat unusual constraint system into one which makes use of more standard markedness constraints. Although there are cases in Ryan's paper where this difference is of importance, it does, as far as we can see, not make a substantial difference in the discussion here.

class index (PC 2 ∨ 4 ∨ 5). The plural affix comes with (PC 3) and the stem is of course (PC 1).

(74) Schematic representation of Mari partial ordering according to Bonami & Crysmann (2016):



While this information is sufficient to derive the surface forms of Mari, it does not suffice to make the correct predictions about the deletion patterns. In Crysmann and Bonami (2016), the position class features are immediately mapped onto the correct ordering of morphemes. So, there is no way to refer to an intermediate representation on which the Right-Edge condition holds. We thus conclude that these approaches, as they stand, are not suited to derive the Mari data in the same way we do here.

This finding is particularly interesting in the context of their earlier discussion where they refute the claim put forward by Rice (2000) that morphological ordering reflects semantic scope and thus synchronically active syntactic structure. Different morpheme orders in Mari do not entail different scopal relations for all we know. However, the case at hand shows that there may be processes in a language other than scope computation that may be fed by different affix orders. In Mari, there are cases where syntactically generated affix order and morphologically generated affix order differ from each other. The latter can simply be observed on the surface whereas the former can be detected on the basis of its relevance for order sensitive operations such as SA. We take this as an argument for the fact that morphology is not just the inactive, frozen syntax of an earlier state of the language (as e.g. in Givón 1971).

That said, we can briefly address the question whether the accounts discussed above can be made compatible with a solution along the lines of the one we present. As illustrated above, on an abstract level, the problem all of these representational accounts face, is simply the problem of opacity. We find cases where some rules, constructions or operations seem to feed or bleed others but there are also cases where expected bleeding and feeding does not apply. From that perspective, our analysis of the deletion patterns in Mari is not at all spectacular as it follows the standard way of how various frameworks throughout the history of generative grammar have dealt with opacity, namely by rule ordering (see e.g. Chomsky and Halle 1968; Kiparsky 1973; Anderson 1974; Pullum 1979; Perlmutter and Soames 1979; Kiparsky 2000). And at least for Optimality Theory, there have been various attempts to reconcile the theory with instances of opacity such as enriched representations McCarthy (1999); van Oostendorp (2007) or serial optimization as in McCarthy (2000, 2007); Heck and Müller (2007). Thus, it is probably possible to reformulate Ryan (2010)'s account in a serial OT framework to derive the

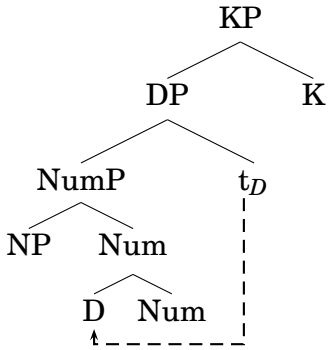
deletion patterns of Mari. Similarly, it is certainly possible to reformulate the templatic approach by Crysmann and Bonami (2016) in a derivational fashion. In such a system, one template is generated which is then transformed into a second template by means of rules or as part of the ordering algorithm. Then, SA can be assumed to apply to the first, underlying, template. The question that, of course, arises is if such abstract template transformations are desirable in this kind of system. It is our impression that they undermine the general *'what-you-see-is-what-you-get'*-idea behind these theories. If templatic approaches are forced to assume underlying representations to begin with, then the simplicity (and learnability) argument against Mirror Principle approaches becomes much weaker, we think. Furthermore, the Mirror Principle at least offers a principled explanation where these underlying representations come from. In a templatic approach that simply stipulates underlying representations to derive the SA patterns in Mari, no such explanation can be given.

6.2 Alternative accounts for the deletion patterns

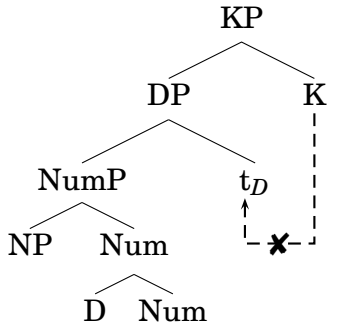
As mentioned in Section 4, the present analysis builds on and refines insights from McFadden (2004) where an account is provided for the nominal template of Eastern Mari, the neighboring dialect. McFadden (2004) assumes the same underlying syntactic structure and the existence of postsyntactic processes that manipulate these structures.

He assumes two lowering operations, the first of which is identical with what we call D-LOWER. The second one imitates the effects of D-METATH but in terms of a postsyntactic lowering process that applies on hierarchical structure. His main argument for these two processes is that, in Eastern Mari, the application of the first lowering process can bleed the application of the second:

(75) Lowering of D to Num:



(76) Lowering of K_{local} to D:



This analysis captures the observed facts in Eastern Mari, where the order [NP - D - Num - K_{local}] is in fact the only one possible with local cases. However, it does not carry over to Meadow Mari without further ado. One reason is that in this dialect, the order [NP - Num - K_{local} - D] is actually attested. In McFadden (2004), this is derived by saying that, in Meadow Mari, the first lowering process need not apply.[29] Since lowering

[29]He alludes to Kroch's (2000) 'Grammars in competition'-account and states that Western Hill Mari does not have lowering of D to Num. In this account, Meadow Mari speakers have access to both the Hill Mari

of D did not apply, subsequent lowering of K_{local} can. The result is the [NP - Num - K - D] surface structure. Crucially, it is never the case that both processes applied. However, the deletion pattern found with SA strongly suggests that there are derivations in which this must be the case. The Duke-of-York examples above cannot be derived without referring to the intermediate representation in between these two operations. We can therefore conclude that there are cases in which both operations must have applied. It is thus plausible to assume that the second operation is in fact a metathesis operation that may potentially be non-local. A second argument against McFadden's implementation is the order of operations. We have seen that it must be the case that SA must apply in between the other two postsyntactic operations. However, if both of them are lowering operations, we have no principled reason why this should be the case. We would need an unmotivated stipulation that ensures the extrinsic ordering of operation. In our account, it is the architecture of the postsyntactic module that predicts the order of the operations in question. This order can thus be seen as intrinsic.

Before we return to properties of SA in Turkish, we want to briefly discuss two hypothetical accounts of SA in Mari that do not make use of ordered operations and underlying representations.

As a first potential alternative, one might wonder whether it is possible to derive the deletion patterns by saying that D-heads simply do not count for the evaluation of the right edge in SA contexts. Given the observation that it is always the D-head that creates problems for a simpler account, this looks promising at first sight. And while this account has the disadvantage of an undesirable stipulation, it deals with the problem without the need for ordered operations or underlying representations. However, there are a number of reasons beside that undesirable stipulation why a solution along those lines should not be pursued. First, we see in a number of examples in Section 3 that the D-head can be subject to deletion as well. Thus it seems implausible to assume that it is invisible for the determination of the right edge but visible for Suspended Affixation. And secondly, we find that the D-head is only invisible for determining the right edge of the non-final conjunct when it follows the case marker, not when it follows the number marker. Compare the following minimal pair. In (77-a), case can be deleted despite it being followed by a possessive affix. In (77-b), we see that number can not be deleted even though it seems to be in the same position on the surface.

(77) a. Üder mej-en uše-m den tej-en süm-**ešte**-t.
girl 1SG-GEN mind-1SG and 2SG-GEN heart-INESS-2SG
'The girl is in my mind and in your heart.'

b. sad-še den pasu-**vlak**-na
garden-3SG and field-PL-1PL
ungrammatical reading: 'His gardens and our fields'

A second potential account could be built on the hypothesis that it is the grammatical category of an affix that determines whether the affix can be deleted and not its position in the linear string. That would explain why case markers can always be deleted regard-

and the Eastern Mari grammars.

less of whether they precede the possessive affix or follow it. First, we want to note that this solution would do away with the Right-Edge condition completely. And as a result, the obvious parallels between the numerous languages which obey the Right-Edge condition *and* the parallels between SA in the verbal and the nominal domains would remain a complete mystery. We think that this is an undesirable consequence. Secondly, again, there is an empirical inadequacy of this account since we find that number marking can sometimes be deleted (i.e. when it follows the possessive affix) and sometimes it cannot (i.e. when it precedes it):

(78) a. sad-še den pasu-na-**vlak**
garden-3SG and field-1PL-PL
'his gardens and our fields'
b. sad-še den pasu-**vlak**-na
garden-3SG and field-PL-1PL
ungrammatical reading: 'His gardens and our fields'

In other words, when looking at number and the possessive affix, we still find that the Right-Edge condition applies in Meadow Mari. Whatever is at the right edge can be deleted. It is only when case marking and possessive affixes are involved that the Right-Edge condition seems to be overwritten. So, it is clear that even if we did away with the Right-Edge Condition in Mari, we would need other principles that tell us which affixes can be deleted and which cannot. And for now, we see no real alternative to the Right-Edge Condition. And third, we finally want to mention that an analysis that does away with the Right Edge Condition in Mari leaves it as a mere coincidence that Meadow Mari is both highly unusual in terms of its nominal template *and* in terms of its inability to obey the Right-Edge Condition. In the approach at hand, the unusual deletion pattern arises as the result of the unusual template. We take this to be theoretically preferable.

6.3 Extending the theory of SA

In this section, we try to extend the present theory of SA to other languages. We mainly concentrate on Turkish since facts in Turkish are the well-documented.

First, we can state that, unlike Mari, Turkish also allows for SA in the verbal domain. However, we argue that this does not constitute a deep difference between the two languages. Rather, this difference should be attributed to the fact that the Mari conjunction *den* which enforces SA can only be used with noun phrases. The conjunction *da* which can conjoin both noun phrases and verb phrases does not allow for SA in general.[30]

Since the verbal domain allows for wider range of possible affixes, SA in Turkish can in principle apply to more affixes than in Mari. However, it has been observed that not all verbal affixes can undergo SA in Turkish. Consider the pair in (79). The aorist marker cannot undergo SA (79-a) whereas the past marker can (79-b).

[30]It should be noted though that, for now, we cannot provide an answer as to why certain conjunctions seem to prohibit SA whereas others allow it. We treat this fact as a more or less arbitrary lexical property that certain conjunctions in some languages have or do not have.

(79) a. *Çalış ve başar-**ır-∅-ız**
work and succeed-AOR-COP-1PL
Intended: 'We worked and succeed'
b. Çalış-ır ve başar-ır-**∅-dı-k**
work-AOR and succeed-AOR-COP-PAST-1PL
'We used to work and succeed' Kabak (2007:316)

The literature about SA in Turkish is characterized by a strong disagreement about how to characterize which affixes can undergo SA and which cannot. Kornfilt (1996) analyzes minimal pairs of the sort as in (79) as an indication that there are two different sets of suffixes of which only one set can undergo SA. Good and Yu (2005) argue that the correct characterization is one in terms of clitics versus affixes. They argue that only clitics can undergo SA, affixes cannot. Kabak (2007), however argues that the correct generalization about SA in Turkish concerns not the affixes that undergo SA but the possible remnants. According to his theory, the remnant of SA must be a possible morphological word in Turkish. However, as Kornfilt (2012) correctly points out, he gives no independent criteria for what constitutes a possible morphological word in Turkish and what does not. Thus, this theory is, to a certain extent, circular and not really testable. Finally, Kornfilt (2012) argues that the right characterization of the affixes is that inflectional affixes can undergo SA whereas derivational affixes cannot. Kornfilt provides minimal pairs such as the one in (80) where the same affix (-mA) is used either as a subjunctive-marker (80-a) or as a resultative participle marker (80-b). Only in the former case, it can be suspended.

(80) a. [Ali-nin ördeğ-i kızar-t]-ıp [krema-yı
[Ali-GEN duck-ACC roast-CAUS]-and [cream-ACC
don-dur]]-**ma-sın-ı** söyle-di-m
freeze-CAUS]]-SBJV-3SG-ACC tell-PAST-1SG
'I said for Ali to roast the duck and freeze the cream.'
b. don-dur-ma
freeze-CAUS-RESULT
'Ice cream'
c. kızar-t-ma
roast-CAUS-RESULT
'Roasted food'
d. *[don-dur-up kızar-t]-**ma**
[freeze-CAUS-AND roast-CAUS]-PTCP
'Ice cream and roast meat' Kornfilt (2012:188f)

Kornfilt argues that in (80-a) the affix is an inflectional marker whereas in (80-b) and (80-c), it is a derivational marker. Even though this account seems quite plausible given the minimal pair in (80) (and similar ones), it should be noted that it runs the same risk as Kabak's approach inasmuch as it posits a dichotomy that is hard to test independently.

Nevertheless, we have the impression that Kornfilt's account is on the right track since the same distinction carries over to SA facts in Mari. While we cannot test it for verbal affixes of course, nominal derivational affixes cannot undergo SA in Mari either.

31

(81) a. Kole*(-zo) den urge-zo tul-eš kol-en-et.
fish-NMLZ and sew-NMLZ fire-ILL die-PAST-3PL
'A fisher and a tailor died in the fire.'
b. Lud*(-maš) den šotle-maš vujdoreket-lan saj.
Read-GER and calculate-GER brain-DAT good
'Reading and Calculating is good for your brain.' Meadow Mari

The nominalizing affixes *zo* and *maš* cannot undergo SA even though, in principle, all preconditions are met: The *den*-conjunction is used and the Right-Edge condition is observed.

This suggests that Kornfilt's argumentation is on the right track and that an extension of the present theory to Turkish is desirable. Thus, we should try to find a way to model the dichotomy between inflectional affixes and derivational ones in the framework we use. The traditional intuition that gives rise to the derivation vs inflection dichotomy is that derivational affixes are more closely connected to the stem than inflectional ones. This intuition is usually represented in the linear order of affixes. Derivational affixes precede inflectional ones (in a typical European suffix language).

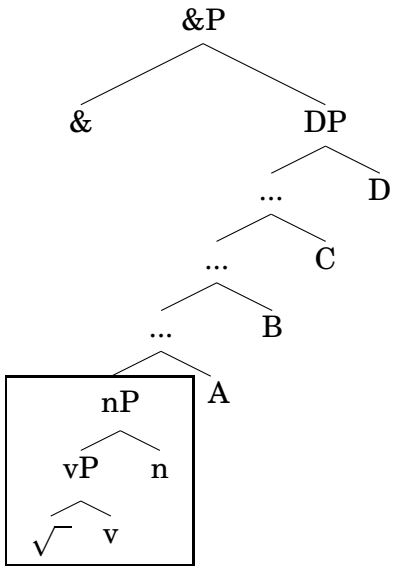
In the late insertion model of Distributed Morphology we used throughout this paper, this distinction between inflectional and derivational affixes is not granted a special status. However, since derivational affixes are closer to the stem and therefore lower in the structure, it can be modelled in terms of phases. The following tree illustrates the idea:

[31] Interestingly, we find the exact reverse situation in German or Dutch where inflectional affixes cannot be deleted whereas derivational affixes and parts of compounds can.

(i) a. [analysier und ableit]-**bar**
analyz- and deriv-able
'analyzable and derivable'
b. [Mathe und Physik]-**test**
[maths and physics]-test'
'maths test and physics test'
c. *Du [frag und sag]-**test** nichts.'
You ask and say-PAST.2SG nothing
Intended: 'You didn't ask and say anything'

It has been argued, however that this is a purely phonological process that does not make reference to anything else but phonological wordhood (see Booij 1985 and Wiese 1996). We leave the question open for now whether SA in Turkish and Mari is the same underlying process we see in German.

(82)



The derivational affixes (v,n), usually represented by the lower case symbols, are lower in the tree than the inflectional ones (A-D) and thus closer to the root $\sqrt{\ }$. In order to model the fact that the lower categories are opaque for SA, we assume that there is a phase that shields them from processes that apply higher up in the tree (indicated by the frame). Since SA applies after conjunction is merged, only the affixes (A-D) which are in the same phase can be targeted by SA. The lower ones, i.e. those which are in a different phase, cannot be.

Of course, this discussion cannot do justice to the complex patterns of SA in Turkish. However, we are positive that an analysis that incorporates the findings in Kornfilt (2012) and models them in the spirit of our analysis can prove to be successful to derive SA in Turkish.

Before we conclude, we must however, address another issue that, at first sight, seems to distinguish Turkish and Mari. Despite all of the similarities between the phenomenon in these languages, it has been noted that, unlike in Mari, very superficial phonological processes like vowel harmony or consonant deletion can affect the acceptability of SA for some speakers in Turkish. Consider the following examples in (83):

(83) a. *[hastalan-acak ve doktor-a gid-eceğ]-**im**
get.sick-FUT and doctor-DAT go-FUT-1SG
Intended reading: 'I will get sick and I will go to the doctor.' Kornfilt (2012:185)

b. *İlk önce sen/san ve ban-**a** bak-tı
first 2SG and 1SG-DAT look
Intended meaning: 'S/he first looked at you and me.' Kabak (2007:340)

The reason that SA cannot apply in (83-a), is according to Kornfilt (2012), there is a process that deletes intervocalic /k/ (which is then orthographically represented as *ğ*). If SA had not applied, the final /k/ would have been intervocalic and would be deleted. That means that if the /k/ is deleted, the k-deletion rule is violated on the surface. If /k/ is not deleted, then the /k/-deletion rule is violated on some underlying representation.

This violation of an underlying representation seems to be sufficient to result in ungrammaticality. A similar phenomenon can be observed with vowel harmony in (83-b). The dative case marker enforces backward vowel harmony on first and second singular pronouns (*sen* ⇒ *san-a*). If the *san*-form of the pronoun is chosen, the vowel harmony rule is violated on the surface because there is no adjacent dative marker to trigger vowel harmony. If the *sen*-form is chosen, the vowel harmony rule is violated on some underlying representation. Again, since both choices result in what seems to be a fatal violation, the dative marker cannot undergo SA with first or second person pronouns.[32]

At first, we want to point out that this is a very strong argument for a deletion approach like the one we pursue. Under a base-generation account that simply assumes that the affixes are merged higher than the &P-node, facts like (83) would be absolutely mysterious because the affixes are never in a local relation with the first conjunct. Similarly the examples are somewhat unexpected in an raising approach as the one put forward by Kornfilt. Kornfilt explicitly claims that the affixes move in the course of the syntax to a position above the conjunction phrase. However, it strikes us as implausible that the affix moves to a higher position but triggers vowel harmony or consonant deletion in its base position. Under an ellipsis approach, the data follow more or less without problems. Since ellipsis is also considered a superficial phonological operation, we can simply assume that for the speakers of Turkish who agree with the data in (83) vowel harmony and consonant deletion precede ellipsis under SA. In Mari however, SA precedes vowel harmony because affixes deleted under SA are not known to trigger phonological operations of this sort.

We thus would like to tentatively conclude that the cases of SA in Turkish can be captured with the same ellipsis operation we used in Meadow Mari. Drawing on insights from Kornfilt (2012), we can state that in Turkish, there are similarly good reasons to believe that SA is an ellipsis operation that can delete inflectional material at the right edges of non-final conjuncts. Of course, further refinements are necessary to derive the differences between SA in Mari and SA in Turkish. Since Turkish does not exhibit any kind of affix reordering operations (the order of affixes generally mirrors the semantic scope of the affixes and thus the syntactic structure), we do not see deletion of non-final material in Turkish. Further, we would need to assume that SA in Turkish applies at a later step during the PF derivation since it can be bled by phonological processes such as vowel harmony and consonant deletion.[33] Apart from that however, it seems promising to conceive of SA in Turkish and Mari as the same underlying process. Going one step

[32]As an anonymous reviewer points out that the ungrammaticality of (83-b) is not necessarily tied to the cases of vowel harmony. SA of pronouns seems to be problematic in many cases on independent grounds. (see also Erschler (2012))

[33]An anonymous reviewer asks the question what the parameter is that governs the application of SA at a certain point of the (PF-)derivation and whether we expect further variation along these lines. While we acknowledge that this is the right question to ask, at this point, we cannot provide an answer to it. For now, we confine ourselves to showing that the facts can be derived using our system. However, given that SA in languages like Turkish can, for some speakers be sensitive to phonological operations such as vowel harmony, it strikes us as plausible that there can be cross-linguistic variation as to which module SA applies in. It is of course a very interesting question for future research to see at which points of the derivation SA can apply and how it interacts with morphophonological processes.

further, we can and should also draw parallels between SA and Right Node Raising a similar process that applies to words as a whole (see Kornfilt (2012) for this observation). And since Right Node Raising has, in recent years, also been described in terms of ellipsis, it seems promising to further review parallels between these two constructions.

7 Conclusion

The goal of this article was twofold: First, we wanted to provide an argument for the fact that the complex nominal template of Meadow Mari, which features free order variation of certain morphemes as well as idiosyncratic ordering effects with others, should nevertheless be derived on the basis of an underlying uniform syntactic structure. As the actual underlying structure we take as a basis for our analysis reflects the semantically transparent structure of functional projections in the DP domain, this can be seen as a strong argument in favor of the Mirror Principle. In order to achieve this goal, it was shown that an analysis according to which the actual surface order of morphemes is actually derived by means of postsyntactic reordering rules is empirically more adequate than a competing one that allows for free base-generation of certain orders. The argument for the former account was based on a deletion operation called Suspended Affixation. It was shown that the ability to delete certain morphemes under Suspended Affixation can be predicted under this analysis if the postsyntactic operations in question can be ordered in a derivational fashion.

The second goal of this article was to argue for exactly this derivational architecture of the postsyntactic module. The crucial idea behind the analysis was that Suspended Affixation applies at a point of the derivation when some, but not all, postsyntactic operations have applied. The resulting prediction is that there is an intermediate representation which accounts for the sets of affixes that can be deleted. This prediction is borne out. Which affixes are deletable and which ones are not can neither be predicted on the basis of the input structure nor on the output structure. A competing account that denies the existence of intermediate representations of this sort would thus have to make additional, unmotivated assumptions about the properties of Suspended Affixation to account for the data.

Acknowledgements: We are thankful for numerous comments on various versions of this paper. We are particularly indebted to Jonathan Bobaljik, Doreen Georgi, Kadir Gökgöz, Laura Kalin, Gereon Müller, Andrew Murphy, Andrew Nevins, Susi Wurmbrand as well as the audiences of the UCONN Linglunch; PLC 40 at UPENN and GLOW 39 at Göttingen. We furthermore want to thank three anonymous reviewers who helped improve the paper significantly. This work was supported by the National Science Foundation (Research Grant Number BCS-1451098, PI: Bobaljik) as well as the Feodor-Lynen Program of the Alexander-von-Humboldt Foundation (Projects: 'Case and Coordination' and 'Consequences of the SOCIC Generalization').

References

Abney, Steven. 1987. The English noun phrase in its sentential aspect. PhD diss, MIT, Cambridge, MA..

Alexiadou, Artemis, and Chris Wilder. 1998. *Possessors, predicates and movement in the determiner phrase*. Philadelphia, John Benjamins.

Alhoniemi, Alho. 1993. *Grammatik des Tscheremissischen (Mari): mit Texten und Glossar*. Hamburg: Buske.

Anderson, Stephen. 1974. *The Organization of Phonology*. Academic Press: New York.

Arregi, Karlos, and Andre Nevins. 2008. A principled order to postsyntactic operations. available at lingbuzz/000646.

Arregi, Karlos, and Andrew Nevins. 2012. *Morphotactics: Basque auxiliaries and the structure of spellout*. Springer.

Assmann, Anke, Svetlana Edygarova, Doreen Georgi, Timo Klein, and Philipp Weisser. 2014. Case stacking below the surface: On the possessor case alternation in Udmurt. *The Linguistic Review* 31 (3-4): 447–485.

Baker, Mark. 1985. The mirror principle and morphosyntactic explanation. *Linguistic Inquiry* 16 (3): 373–415.

Baković, Eric. 2011. Opacity and ordering. In *The Handbook of Phonological Theory*, eds. J. A. Goldsmith, J. Riggle, and A. C. L. Yu, 40–67. Wiley.

Bayer, Josef, Markus Bader, and Michael Meng. 2001. Morphological underspecification meets oblique case: Syntactic and processing effects in german. *Lingua* 111: 465–514.

Bittner, Maria, and Ken Hale. 1996. The structural determination of case and agreement. *Linguistic Inquiry* 27 (1): 1–68.

Bobaljik, Jonathan. 1998. Floating quantifiers: Handle with care. *GLOT international (state-of-the-art article)* 3 (6): 3–10.

Booij, Gert. 1985. Coordination reduction in complex wword: A case for prosodic phonology. In *Advances in nonlinear phonology*, eds. Harry van der Hulst and Norval Smith. Dordrecht: Foris.

Broadwell, George Aaron. 2008. Turkish Suspended Affixation is Lexical Sharing. In *Proceedings of the LFG08 Conference*, eds. Miriam Butt and Tracy Holloway King.

Brody, Michael. 2000. Mirror theory: Syntactic representation in perfect syntax. *Linguistic Inquiry* 31 (1): 29–56.

Bybee, Joan. 1985. *Morphology: A study of relation between form and meaning*. Amsterdam: John Benjamins.

Chomsky, Noam, and Morris Halle. 1968. *The Sound Pattern of English*. MIT Press.

Crysmann, Berthold, and Olivier Bonami. 2016. Variable Morphotactics in Information-based Morphology. *Journal of Linguistics* 52.

Embick, David, and Rolf Noyer. 2001. Movement operations after syntax. *Linguistic Inquiry* 32: 555–595.

Emonds, John. 1985. *A unified theory of syntactic categories*. Dordrecht: Foris.

Erschler, David. 2012. Suspended Affixation and the Structure of Syntax-Morphology Interface. *Studia Linguistica Hungarica* 59: 153–175.

Georgi, Doreen. 2014. Opaque Interactions of Merge and Agree: On the Nature and Order

of Elementary Operations. PhD diss, Leipzig University.
Givon, Talmy. 1971. Historical syntax and synchronic morphology. An archeologist's field trip. In *Proceedings of the chicago linguistic society 7*, 394–415.
Göksel, Aslı, and Cecilia Kerslake. 2005. *Turkish: A comprehensive grammar*. *Routledge comprehensive grammars*. Routledge.
Good, Jeff, and Alan Yu. 2005. Morphosyntax of Two Turkish Subject Pronominal Paradigms. In *Clitic and affix combinations: Theoretical perspectives*, eds. Lorie Heggie and Francisco Ordonez, 315–341. Benjamins.
Gruzdeva, Ekaterina. 1998. *Nivkh*. Lincom Europa.
Halle, Morris, and Alec Marantz. 1997. Distributed Morphology: Impoverishment and Fission. In *Mitwpl 30: Papers at the interfaces*, eds. Yoonjung Kang Benjamin Bruening and Martha McGinnis, 425–449. MITWPL.
Halpern, Aaron. 1995. *On the morphology and the placement of clitics*. Stanford, CSLI.
Harley, Heidi, and Elizabeth Ritter. 2002. Person and number in pronouns: A feature-geometric analysis. *Language* 78: 482–526.
Harris, James, and Morris Halle. 2005. Unexpected plural inflections in spanish: Reduplication and metathesis. *Linguistic Inquiry* 36: 196–222.
Heck, Fabian, and Gereon Müller. 2007. Extremely local optimization. In *Proceedings of WECOL 26*, eds. E. Brainbridge and B. Agbayani, 170–183. California State University, Fresno.
Johannessen, Janne Bondi. 1998. *Coordination*. Oxford University Press, USA.
Kabak, Barış. 2007. Turkish Suspended Affixation. *Linguistics* 45 (2): 311–347.
Kayne, Richard. 1984. *Connectedness and binary branching*. Dordrecht: Foris.
Kiparsky, Paul. 1973. Abstractness, Opacity and Global Rules. In *Three Dimensions in Linguistic Theory*, ed. O. Fujimura, 57–86. TEC, Tokyo.
Kiparsky, Paul. 2000. Opacity and Cyclicity. *The Linguistic Review* 17: 351–365.
Kornfilt, Jaklin. 1996. On some copular clitics in Turkish. *ZAS Papers in Linguistics* 6: 96–114.
Kornfilt, Jaklin. 2012. Revisiting "Suspended Affixation" and other Coordinate Mysteries. In *Functional heads: The cartography of syntactic structures vol.7*. Oxford University Press.
Kroch, Anthony. 2000. Syntactic change. In *The handbook of contemporary syntactic theory*, eds. M. Baltin and C. Collins. Blackwell.
Luutonen, Jorna. 1997. *The variation of morpheme order in Mari declesion*. Suomalais-Ugrilainen Seuran Toimituksia [Memoires de la Societas Finno-Ougrienne] 226.
McCarthy, John. 1999. Sympathy and phonological opacity. *Phonology* 16: 331–399.
McCarthy, John. 2000. Harmonic serialism and parallelism. In *Proceedings of nels 30*, eds. M. Hirotani, A. Coetzee, N. Hall, and J. Y. Kim. GLSA Amherst Mass..
McCarthy, John. 2007. *Hidden Generalizations: Phonological Opacity in Optimality Theory*. Equinox, London.
McFadden, Thomas. 2004. The position of morphological case in the derivation: A study on the syntax-morphology interface. PhD diss, University of Pennsylvania.
Merchant, Jason. 2001. *The syntax of silence: Sluicing, islands and the theory of ellipsis*. Oxford University Press.

Miller, Philip. 1992. Clitics and Constituents In Phrase Structure Grammar. PhD diss, University of Utrecht.
Moravcsik, Edith. 2003. Inflectional morphology in the Hungarian noun phrase: A typological assessment. In *Noun phrase structure in the languages of Europe*, ed. Frans Plank. Berlin: Mouton de Gruyter.
Murphy, Andrew. 2017. Subset relations in ellipsis licensing. *Glossa: a journal of general linguistics* 1 (1): 1–34. submitted.
Myler, Neil. 2013. Linearization and Post-Syntactic Operations in the Quechua DP. In *Challenges to linearization*, eds. Theresa Biberauer and Ian Roberts, 171–210. Mouton de Gruyter.
Nishiyama, Kunio. 2012. *Japanese Verbal Morphology in Coordination*. Handout for the Workshop on Suspended Affixation. Cornell University 2012.
Orgun, Orhan. 1996. Suspended Affixation: A new look at the phonology-morphology Interface. In *Interfaces in Phonology. Studia Grammatica 41*, ed. Ursula Kleinhenz, 251–261. Berlin: Akademie Verlag.
Perlmutter, David, and Scott Soames. 1979. *Syntactic argumentation and the structure of english*. The University of California Press.
Pullum, Geoffrey. 1976. The Duke of York Gambit. *Journal of Linguistics* 12 (1): 83–102.
Pullum, Geoffrey. 1979. *Rule Organization and the Interaction of a Grammar*. Garland, New York.
Rice, Keren. 2000. *Morpheme order and semantic scope*. Cambridge University Press.
Ringen, Catherine. 1972. On arguments for rule ordering. *Foundations of Language* 8: 266–273.
Ritter, Elizabeth. 1992. Cross-linguistic evidence for number phrase. *Canadian Journal of Linguistics* 37: 197–218.
Ryan, Kevin. 2010. Variable affix order: Grammar and learning. *Language* 86 (4): 758–791.
Salzmann, Martin. 2013. Rule ordering in verb cluster formation. On the extraposition paradox and the placement of the infinitival particle te/zu. In *Rule interaction in grammar*, eds. Anke Assmann and Fabian Heck. Vol. 90 of *Linguistische arbeitsberichte*. Universität Leipzig.
Spencer, Andrew. 2003. Putting some order into morphology: reflections on Rice (2000) and Stump (2001). *Journal of Linguistics*.
Spencer, Andrew. 2008. Does Hungarian have a case system? In *Case and grammatical relations*, ed. Greville Corbett Micheal Noonan, 35–56. Amsterdam: John Benjamins.
Spencer, Andrew, and Gregory Stump. 2013. Hungarian pronominal case and the ordering of content and form in inflectional morphology. *Natural Language and Linguistic Theory* 31: 1207–1248.
Stump, Gregory. 2001. *Inflectional morphology*. Cambridge University Press.
Travis, Lisa. 1986. The case filter and the ecp. *McGill Working Papers in Linguistics* 3 (2): 51–75.
Travis, Lisa, and Gregory Lamontagne. 1992. The Case Filter and the licensing of empty K. *Canadian Journal of Linguistics* 37: 157–174.
Trommer, Jochen. 2008. "Case suffixes", postpositions and the phonological word in Hun-

garian. *Linguistics* 46: 403–437.
van Oostendorp, Marc. 2007. Derived environment effects and consistency of exponence. In *Freedom of analysis?*, eds. S. Blah, P. Bye, and M. Krämer, 123–148. Mouton de Gruyter.
Weisser, Philipp. 2017a. On the Symmetry of Case in Conjunction. *submitted*.
Weisser, Philipp. 2017b. Why there is no such thing a Closest Conjunct Case. In *Proceedings of NELS 47*, eds. A. Lamont and K. Tetzloff, 219–232.
Weisser, Philipp. submitted. Three types of Coordination in Udmurt.
Wiese, Richard. 1996. The Phonology of German.
Yoon, James Hye Suk. 2012. Lexical Integrity and Suspended Affixation in Two Types of Denominal Predicates in Korean. Talk given at Workshop on Suspended Affixation, Cornell University, October 26-27, 2012.
Yoon, James Hye Suk, and Wooseung Lee. 2005. Conjunction Reduction and Its Consequences for Noun Phrase Morphosyntax in Korean. In *Proceedings of the 24th West Coast Conference on Formal Linguistics*, eds. John Alderete, Chung hye Han, and Alexei Kochetov, 379–387.
Zwicky, Arnold. 1985. Clitics and Particles. *Language* 61 (2): 283–305.