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The Morphosyntax of Finno- Ugric Case-marking: a DM account

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The Morphosyntax of Finno-Ugric Case-marking: a DM account

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1. Theoretical Background

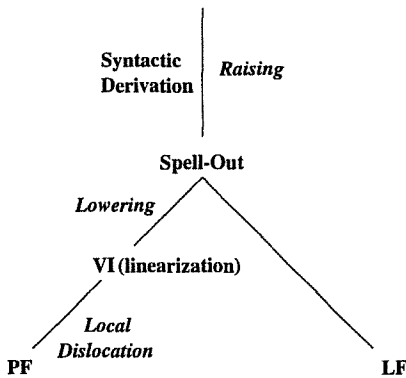
A recurrent theme of generative morphological theorizing is the attempt to relate morphological processes to syntactic ones, sometimes going so far as to deny the existence of an independent morphology. In the framework of Distributed Morphology (Halle and Marantz 1993, 1994), a single derivation is postulated, with both syntactic and morphological operations distributed across it. The crucial insight is that word formation is not a privileged process which can be properly distinguished from clause formation, rather the two occur simultaneously and according to the same basic (syntactic) principles.¹ Of course, this does not imply that the syntactic machinery previously proposed to account for clause formation will be sufficient to handle the full array of morphosyntactic processes. Rather, it is a matter for empirical investigation to what extent the familiar types of movement will have to be augmented to handle the larger load. Crucially, however, for the hypothesis of a unified derivation to remain interesting, there must be a set of central principles which all of the operations obey. In this paper, I discuss these issues in terms of the theory of movement types proposed by Embick and Noyer (2001) and derive a structural diagnostic that can be used to distinguish the effects of syntactic Raising from the those of the post-Syntactic movements they propose. I then present data on the behavior of case marking in two Finno-Ugric languages which satisfy this diagnostic. This lends support to the thesis that a theory with Raising alone, though simpler, is not adequate to power a unified morphosyntactic derivation.

I would like to thank Rolf Noyer, David Embick, Tony Kroch and the audiences at NELS 32 and the Penn In-House Session for comments and discussion on the material presented here.

¹ In other words, DM explicitly rejects the Lexicalist Hypothesis. See Marantz (1997) for a detailed exposition of the failings of Lexicalism.

Embick and Noyer (2001) consider an array of data on morphological readjustment (i.e. where an element appears to be displaced, due to requirements on affixation, clitic placement and the like, from what we would expect to be its base position) and argue for a model of the derivation that distinguishes two types of late movement in addition to normal syntactic Raising. The distinction between these types of movement is not ad hoc, but is derivable from the fact that each type occurs at a different stage of the derivation. In DM, the syntax manipulates nodes which consist solely of feature bundles. Phonological material is only inserted into these nodes late in the derivation, following Spell-Out, in an operation called Vocabulary Insertion (VI). Embick and Noyer propose further that it is at VI that the linearization of the hierarchical structure occurs. This effectively defines three distinct stages in the derivation, as shown in Figure 1 below (movement operations are indicated in italics):

Figure 1: A model of the grammar



Movement before Spell-Out is the familiar Raising. Since it feeds both PF and LF, it is fully syntactic in the familiar generative sense, deriving both the surface form and the interpretation of the sentence. After Spell-Out movement can occur on the PF branch, but it will be of an appropriately limited sort. It will occur solely for morphophonological reasons (i.e. this is where morphological readjustments occur), and can have no effect on the (LF) semantics. All PF movement is defined by Embick and Noyer as the adjunction of a head to the head of its complement,² but the linearization which occurs at VI alters the structure that this movement applies to, so that its effects can be quite different depending on when it occurs. PF movement that occurs before VI,

² This means that PF movement is downward, while syntactic Raising is, of course, upward. Why this should be is not entirely clear, but it seems to be related to the nature of morphological readjustment. Essentially, the effect of PF movement is to affix a given head that, for whatever reason, must be affixed to a head that it c-commands in the case that, for whatever reason, the lower head has failed to Raise. I.e. it prevents violations of what used to be called the stray affix filter. If we are right in suspecting that this is the only situation in which PF movement occurs, then we can say that it is downward because, for whatever reason, affixation tends to be of functional heads onto the lexical heads they c-command. The recurrent use of 'for whatever reason' should indicate that this explanation is, at this point, merely a conjecture.

called Lowering, acts on a hierarchical structure, where the familiar notions of head, complement and adjunct are preserved. Thus Lowering ignores adjuncts and, coming before the insertion of specific vocabulary items, cannot be phonologically conditioned. On the other hand, movement after VI, called Local Dislocation (LD), acts on a linear structure with phonological content. Head and complement are defined in purely linear terms, eliminating the distinction between complement and adjunct. Therefore LD cannot skip adjuncts, but it can very well be conditioned by phonological factors. Two examples suffice here to demonstrate the distinction. We can tell that V does not raise overtly to T in English from the surface word order with adverbs, yet tense is marked (at least in the absence of an auxiliary) on the verb, so we can hypothesize that it gets there by PF movement (recall the traditional affix hopping analysis). This movement must be Lowering and not LD, because it is not blocked by adverbial adjuncts (*John often eats apples*) but is blocked by an intervening negative head, which triggers do-support (*John does not eat apples*). The English superlative suffix, on the other hand, must adjoin to the adjective head by LD. This can be seen because such adjunction is sensitive to the phonological properties of the adjective (**minusculest*), thus it must occur after VI. Furthermore, in distinction to T-to-V Lowering, it is blocked by adverbial adjuncts (**the amazingly smallest elephant*).³ If the movement fails for either reason, the stem *mo-* is inserted to host the affix left in situ (*most minuscule, the most amazingly small elephant*).

Of course, all things being equal, a grammar with a single type of movement would be simpler, so it must be shown that Raising, which is generally assumed, is not sufficient on its own to account for all of the displacement found in natural language. To do this we need criteria for distinguishing the effects of the various types of movement. Embick and Noyer present considerable data and argumentation on the distinction between Lowering and LD, so here I will concentrate on that between Raising and PF movement in general.⁴ An obvious distinction is that Raising feeds both PF and LF, whereas PF movement obviously feeds only PF. Thus we might hope to distinguish the two based on the presence or absence of effects on the semantics. However, a given instance of Raising is not actually required to affect the semantics (indeed for many examples of head Raising we would be hard pressed to find semantic correlates), so the lack of a semantic correlate is not enough to identify an instance of movement as occurring on the PF branch.⁵ Instead, we have to look at the structural properties of the two types of movement. The following trees represent head Raising and Lowering, respectively.⁶

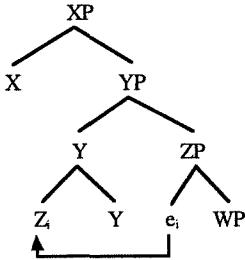
³ As Embick and Noyer point out, *the amazingly smallest elephant* is actually possible, but only on the reading where the adverb takes scope over the superlative, where we would in fact predict that there should be no blocking.

⁴ The details of the discussion will be in terms of Lowering for the sake of concreteness, but what is said about Lowering will apply in all crucial respects to LD as well.

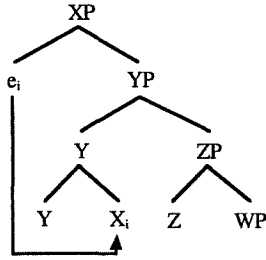
⁵ Of course if a given instance of movement can be shown to have a semantic correlate, then in principle it must be Raising in this system. In practice such a correlation would be very difficult to establish. In any case, we are primarily concerned here with positively identifying instances of PF movement, not Raising.

⁶ I will restrict my discussion of Raising here to head Raising, since there is no PF counterpart of XP movement.

(1) a. Raising



b. Lowering

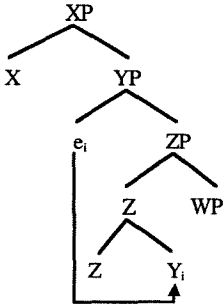


Our concern above, that all derivational processes should obey a set of basic principles, is satisfied in that the two movements are defined over the same structures and subject to the same minimality constraint. Namely, intervening heads cannot be skipped. In (1)a., Z could not Raise directly to X due to the intervention of Y. Likewise, in (1)b. X could not Lower directly to Z, again because Y intercedes. It is in the direction of their application that the two movements differ, and this has important consequences.⁷ According to the standard assumption that derivation is cyclic, at any stage of the derivation operations will apply first to nodes lower in the tree. So in the trees above, a given movement process must apply first to W, then Z, Y and X in turn as required by the relevant features (or whatever it is that drives movement). This means that a head will Raise before any movement process can apply to its target node,⁸ implying that nothing but minimality can block a Raising operation that would otherwise occur, not even another instance of Raising. The situation is different for PF movement because the target node is lower than the moving node. That is, Lowering can be blocked by earlier Lowering of the target node. This is demonstrated in (2):

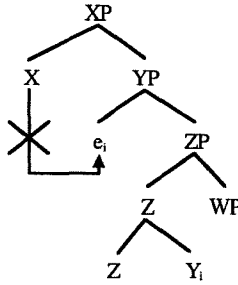
⁷ It is precisely because both types of PF movement are downward that Lowering can represent LD as well as itself in the argumentation here.

⁸ Note that this applies uniquely to Raising because it is the first type of movement to occur. In contrast, Lowering can in principle be blocked by Raising, and LD can be blocked by Raising and Lowering due to the ordering of the three operations.

(2) Y-to-Z



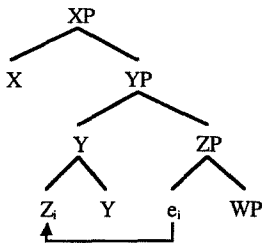
X-to-Y blocked



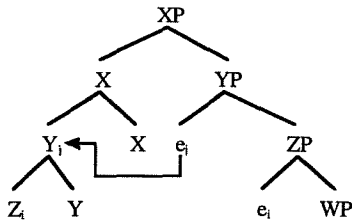
By cyclicity, Y will move before X, because it is lower in the tree than X. So if Y Lowers to Z, subsequent Lowering of X to Y will be blocked, because its target will no longer be there.⁹

Now consider what happens in an analogous situation with raising:

(3) Z-to-Y



Y-to-X



Again by cyclicity, Z will move before Y, but here Raising of Z to Y does not block subsequent raising of Y to X. Instead we get the familiar pattern found in, for example, the successive Raising of the verb through the functional heads of Infl in a number of

⁹ Alternatively, we could imagine that X actually does Lower and adjoins to the trace of Y in such a situation. Of course then X would still fail to invert with Y, and indeed the movement would be entirely string vacuous if no specifiers or adjuncts intervened. This may be preferable to assuming that Lowering is simply blocked in such an instance, since it avoids the question of how a derivation can still be convergent in which an instance of movement is blocked. Still, it is in principle an empirical question which of these alternatives is correct, on which I have no relevant data to present here one way or the other. The crucial point is that X cannot Lower all the way to the derived position of Y in (2), because to do so it would have to skip the intervening head Z. Thank are due to several members of the audience at NELS 32 for enlightening discussion of this question.

languages. That is, Raising is not blocked by the Raising of a lower node. This gives us a diagnostic for distinguishing PF movement from Raising:

- (4) Lowering or LD of X can be blocked by processes affecting nodes below X. Raising of X cannot.

Therefore, if we find instances in a language where the movement of a node is blocked by movement of a node lower in the structure, we must analyze that movement as Lowering or Local Dislocation. In the following two sections, I will argue that just such a pattern exists in the placement of Case markers in two Finno-Ugric languages, Mordvin and Mari.

2. Mordvin

Mordvin nouns can be marked for Case, number, definiteness and possession.¹⁰ Curiously enough, the Case markers fall into two positionally defined groups. The ablative, inessive, elative and illative markers (called K1) precede possessive and definiteness markers, while the genitive¹¹ and allative¹² markers (K2) follow them. This is shown in the following examples:¹³

- (5)a. alaša-do-n
horse-abl.-1sg.Px
'from my horse(s)'
b. alaša-nä-rīdi
horse-1sg.Px-all.
'to my horses' (ń =palatalized n, Px=possessive affix)

To understand this problem, we must consider the structure of the extended nominal projection, which I assume to be the following:

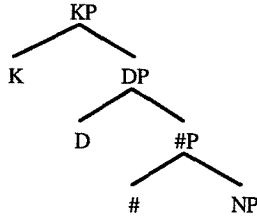
¹⁰ The analysis of Mordvin here is based on the one in Noyer (1998), but the presentation of data and arguments here is original, especially the arguments made against Raising. Thus, credit for the central insights of the section is due in large part to Noyer, while blame for any errors is due exclusively to me.

¹¹ The genitive also serves as an accusative. Apparently this is the result of the same sort of phonological merger that happened in Finnish, where Proto-Finno-Ugric gen. **-n* and acc. **-m* merged by regular sound change as *-n*.

¹² This Case also serves the function of the dative and is sometimes referred to as such.

¹³ The forms here are taken from Feoktistov (1966), which is in the Cyrillic-based standard orthography. I use Raun's (1988) transliteration. The allomorphy of the Px and indeterminacy of the number of the head noun in (5)a. are related and will be discussed below.

(6)



Following Bittner and Hale (1996) and Neeleman and Weerman (1999) among others, I assume that Case markers are inserted into the head labeled K, which takes DP as its complement. This base position for K is supported by the fact that Case takes semantic scope over everything in DP, including number, determiners and possessors.¹⁴ I assume further that the Pxs in Mordvin and Mari are located in the D head (possibly agreeing with possessors located in Spec DP or the like). In Mordvin they are in complementary distribution with, and occupy the same position as definiteness markers, and in Mari definiteness is actually expressed by default Pxs on non-possessed nouns.¹⁵

Under these assumptions, we need to explain how K1 affixes get inside the Pxs and definiteness markers in D. Data from the definite declension make it clear that it must be some sort of PF movement.¹⁶

Table 1: Mordvin Definite Declension (Erza dialect)

	'the house'	'the houses'
Nom.	kudo-ś	kudo-ńie
Gen.	kudo-ńit	kudo-ńie-ńi
All.	kudo-ńit-eń	kudo-ńie-ńień
Abl.	kudo-do-ńit	kudo-ńie-de
Iness.	kudo-so-ńit	kudo-ńie-se

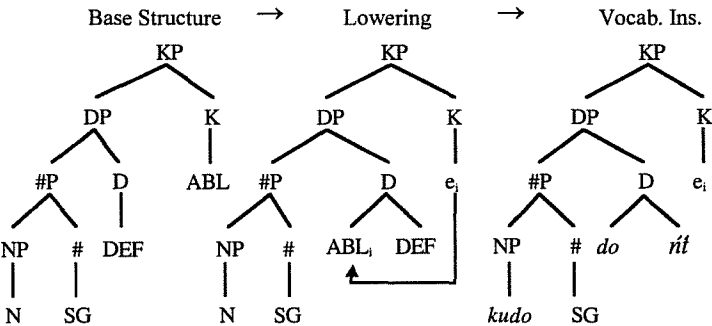
¹⁴ See McFadden (2001a) for more arguments supporting the location of K directly above D in the tree. Whether K is present as a syntactic (i.e. pre-Spell-Out) node when realizing structural Case, or only comes in for morphological reasons at Spell-Out is an interesting question (see Marantz 1991, McFadden 2001b), but would take us too far afield here.

¹⁵ See the papers in Alexiadou and Wilder (1998) for discussion of where possessive affixes belong within DP. While there may be reason to assume a Poss(essive) head in addition to D in languages like Hungarian, where determiners can co-occur with possessives, the languages being discussed here behave very differently in the relevant respects, and are more easily analyzed with D alone, as in Abney (1987) and Ritter (1991). Alternatively, we could say that Px does appear in PossP, but that in these languages D and Poss are in complementary distribution, and D is not projected when empty, since there is no evidence for an empty D head next to the Px heads.

¹⁶ The forms in this paradigm are taken from Raun (1988) and from Zaicz (1998) adapted to Raun's transliteration.

A few comments are necessary to help make sense of this paradigm: The definiteness marker has two allomorphs in the singular, one for the nominative, another for the remaining Cases, while in the plural it is fusional with the number marker.¹⁷ In the genitive and allative singular a phonological rule seems to be at work which deletes an *ń* following the cluster *ńń*.¹⁸ Finally, the *o/e* variation in the ablative and inessive endings is due to vowel harmony. Given all of this, we can recognize the expected variation in orders in the singular. K1 ablative and inessive precede D, and K2 allative follows it.¹⁹ However, in the plural, both K1 and K2 follow the fused definite plural marker. This implies that the movement that gets K1 inside D (or D outside K1) is blocked by the association of plural # with definite D. I.e. a process involving the # head blocks movement involving the D and K heads, which are higher in the tree. This is exactly the type of situation described in the diagnostic in (4), therefore it cannot be the case that D raises to K1. Instead, we are forced to say that K1 Lowers or LDs to D, as in derivation (7).²⁰

(7) Ablative singular definite, *kudodońń* 'from the house' (Erza dialect)²¹



¹⁷ The singular definiteness marker and the definite plural marker may both be segmentable diachronically. However, there is no segmentation for either that can be defended on synchronic grounds, and thus each is analyzed here as a single marker.

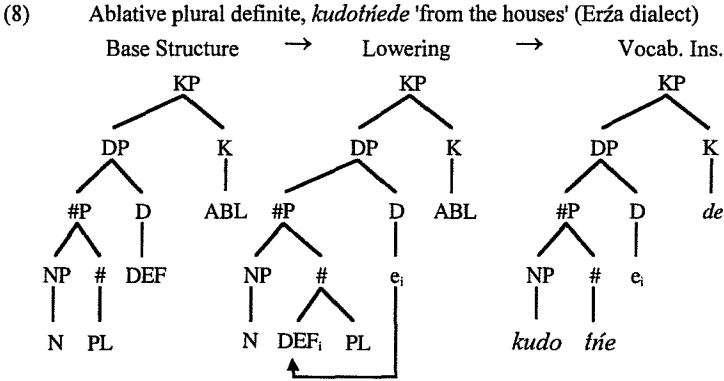
¹⁸ Since the *ń* of the definiteness marker may diachronically be a reflex of the genitive suffix, one could perhaps argue that the genitive has no additional Case ending here, obviating the need to posit deletion of *ń*. However, the proposed rule is clearly unavoidable for the allative.

¹⁹ I assume that the genitive follows as well, but since nothing overt is left of it after the application of the phonological deletion rule, I cannot rely on it as evidence.

²⁰ The trees in (7) and (8) and related discussion assume Lowering rather than LD. I present evidence that the movement must be Lowering directly.

²¹ I assume a right-headed structure for KP in Mordvin and Mari, which is justified by their generally head-final nature. Such an assumption greatly simplifies analysis. In fact it is not clear that a viable analysis would be possible on the assumption of a ban on right-headed configurations. In addition, it may be that the # head is not projected at all in the singular. This would have no effect on the derivations proposed here, but it would allow us to say that D simply lowers to # without having to specify plural. I include a phonological null singular # head here solely for the sake of parallelism.

If we say that the environment for the insertion of the fusional definite plural marker is created by Lowering of D to plural #, we properly predict that Lowering of K1 to D is blocked in such an environment, as in derivation (8).



By cyclicity, D will Lower before K can, so when plural # is present to trigger such Lowering, K1 will have nowhere to Lower to.

Additional evidence from the possessive declension demonstrates that the PF movement operation in question here must be Lowering and not LD:

Table 2: Mordvin Possessive Declension (Mokša dialect)²²

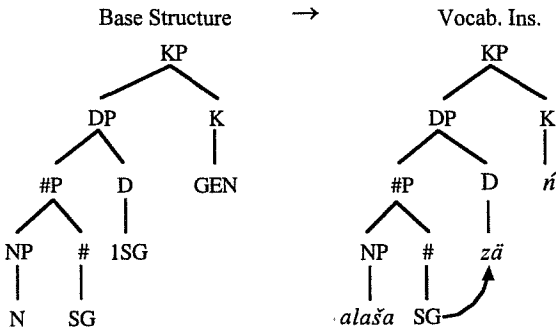
	'my horse'	'my horses'
Nom.	alaša-zä	alaša-nä
Gen.	alaša-zä-ń	alaša-nä-ń
All.	alaša-zä-ńđi	alaša-ńđi
Abl.		alaša-do-n
Iness.		alaša-so-n

In the nominative and K2 Cases, the number of the head noun is actually marked by allomorphy in the Px.²³ However, when a K1 marker (ablative and inessive in Table 3)

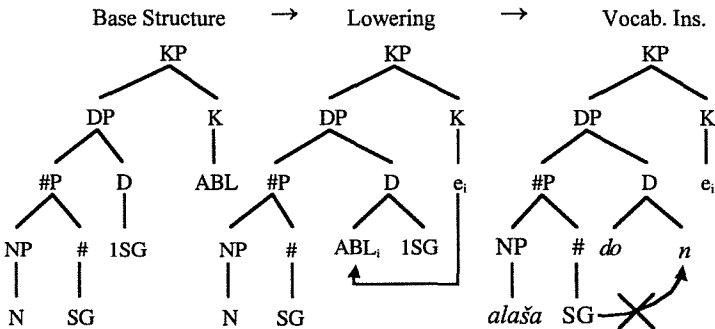
²² Data are given here from Mokša instead of Erza because the latter lacks K2 forms in the possessive declension and does not distinguish the number of the possessum in all persons, which thins out the paradigm and makes the pattern a bit less easy to recognize. Still, in the crucial respects, Erza does show the same behavior as Mokša. Allomorphy in Px is conditioned by the number of the head noun, but such allomorphy is blocked and a default form of the Px is inserted (in Erza it happens to be the marker used with a plural head noun) when a case marker comes to intervene between head noun and Px. It just so happens that in Erza there are no case markers that can follow Px, and thus the number of the head noun is only distinguished in the nominative. See Zaicz (1998:194 f.) for the relevant data.

intervenes between the stem and Px, the Px surfaces in a default form, and the number of the head noun is left ambiguous. This blocking of allomorphy is easily understood given the base order of heads assumed in (6). Since # and D are adjacent, # can condition allomorphy in a Px that is in D, but if K comes to intervene between the two, their adjacency is disrupted and the allomorphy blocked. Since allomorphy involves the insertion of phonological material, this intervention must happen before VI. This means that K1 cannot get inside D/Px by LD, because LD would come after the specific form of the Px was inserted, too late to have any effect on what form was chosen. This is demonstrated in structures (9) and (10), where angled arrows indicate movement and curved arrows indicate the conditioning of allomorphy:

(9) Genitive singular, 1st singular possessor, *alašazān̄* 'of my horse' (Mokša dialect)



(10) Ablative Singular, 1st singular possessor, *alašadon* 'from my horse' (Mokša dialect)



²³ That is, both *-zä-* and *-nä-* mean 'my', but the former indicates that the head noun it is affixed to is singular, while the latter indicates that the head noun is plural.

3. Mari

Mari (formerly called Cheremis) lacks the fusional markers of Mordvin, but shows more variation in affix orderings, both within and across dialects.²⁴ We will be concerned here with three of the dialects, the Hill (or Western) literary dialect and the Meadow and Eastern spoken dialects.²⁵ As in Mordvin, the Cases are divided into two groups based on their order relative to Px: The lative, illative, inessive and comitative (K1) precede Px, while the accusative and genitive (K2) follow it.²⁶ The dative varies, patterning sometimes with the K1 cases, sometimes with K2,²⁷ but the really interesting variation

²⁴ The data on affix ordering patterns in the various Mari dialects are taken from Luutonen (1997), a thorough investigation of the patterns based on both corpus studies and extensive native-speaker judgments. The actual forms cited are taken from Kangasmaa-Minn (1998).

²⁵ Relevant data have also been reported for Northwestern Mari (Comrie (1988)) and Meadow-Eastern Literary Mari (a.k.a. Eastern Literary Mari, Alhoniemi (1988)), but these are not analyzed in this paper because of questions about their accuracy. As described in the preceding footnote, Luutonen (1997) presents secure data based on detailed corpus studies and native speaker intuition tests, all of which are described in detail. Such reliability cannot be claimed by all other sources, many of which are based on second-hand information. Comrie (1988) claims that in NW Mari (which Luutonen does not discuss) the Pl marker follows everything, including the case markers. If this is correct, we would be forced to suppose that this marker is actually not generated in the # head, but is an independent modifier (adjective?) on a head noun that is unspecified for number. In terms of the discussion of grammaticalization of the plural marker later in this section, this would be a very early stage, before the modifier has even been reanalyzed as a # head. The data given by Alhoniemi (1988) for MELit Mari would be hard to account for in any theory, but they seem in fact to be incorrect. The Pl-Px ordering he gives is plainly contradicted by Luutonen's corpus study, and the variation he reports in the three suffix orders is a bit more complicated than he lets on. MELit Mari is a written language based on a disparate group of spoken dialects. It has adopted two different plural markers from two different dialects, each with its own ordering pattern: *blak*, which follows Px, and *la*, which precedes Px. As Luutonen shows, *la* tends to occur with K1, *blak* with K2, meaning that we get the pattern *la* K1 Px, but Px *blak* K2. Rendering this as Pl-K1-Px versus Px-Pl-K2 is a misleading oversimplification. Thus the strange pattern we find here is attributable to an odd sort of variation resulting from the dialect's status an artificial literary language.

²⁶ Careful readers may have noted that in both Mordvin and Mari the distinction between K1 and K2 corresponds at least roughly to a local/semantic vs. grammatical distinction. One might suppose that this is what drives the distinction in affix orders with, for example, semantic and grammatical Case being located in different heads in the structure. However, if this were true, we would expect grammatical Case to be located inside semantic Case, i.e. closer to the nominal head. Since this is clearly contradicted, it seems more promising to assume that both types of Case are located in the same position (at least after Spell-Out), and then to attribute the surface difference to movement processes. Of course, it is then still possible that the features driving the movement have something to do with the distinction between semantic and grammatical Case. See McFadden (2001b) for discussion of the issues surrounding the semantic/grammatical distinction in case markers and a suggestion of how to reconcile the morphological affinities with the syntactico-semantic disparities. The situation found in the Finno-Ugric languages is the result of complex historical processes dependent on the relative times at which the various endings were suffixed to the head noun. The effects of this have been further obscured by subsequent analogical and other less well-understood processes, hence the wide array of theories on the development of these patterns from Proto-Finno-Ugric and Proto-Uralic. See e.g. Tauli (1953), Nichols (1973), Comrie (1980) and Korhonen (1991).

²⁷ This could be an instance of grammar competition characterizing a change in progress (see Kroch 2000). Alternatively, it could result from the fact that the K1 Cases are local, while the K2 Cases are grammatical. Since the dative serves both the grammatical dative function and the local allative function, it could belong to either category. Unfortunately, Luutonen does not examine the distribution of the dative marker according to its function.

comes when a plural marker is present.²⁸ The situation in the dialects being discussed here is essentially the following:

Table 3: Affix ordering in the Mari dialects

Hill Mari	Meadow Mari	Eastern Mari
	K1 Px	
	Px K2	
	Pl K1	
	Pl K2	
Pl Px	Pl Px ~ Px Pl	Px Pl
Pl K1 Px	Pl K1 Px ~ Px Pl K1	Px Pl K1
Pl Px K2	Pl Px K2 ~ Px Pl K2	Px Pl K2

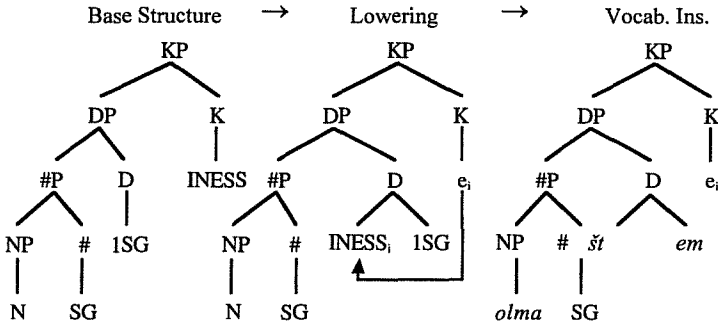
The dialects agree on the K1-K2 distinction relative to Px, and on the ordering of Pl before Case. Where they disagree is in the relative ordering of Pl and Px, and this has interesting consequences when all three suffixes are present. Hill Mari places Pl before Px, leaving Case free to pattern with Px in the three suffix forms as it would in the absence of Pl. In contrast, Eastern Mari places Px before Pl, which blocks K1 from getting inside Px when all three suffixes are present. Meadow Mari shows variation in this respect, with either ordering of Pl and Px admissible.²⁹ As we might expect, this is accompanied by variation in the three suffix forms, where both the Hill and the Eastern Mari patterns are possible. So there is a clear pattern across the dialects, whereby K1 appears inside Px if and only if Px does not appear inside Pl. If we interpret this again in terms of the structure for the extended nominal projection given in (6), we find that we have another situation where the diagnostic in (4) is satisfied. When we get Px-Pl order, this represents an inversion of # and D. Since this blocks the inversion of D/Px with K1, which is higher in the tree structure, such inversion cannot be the result of Raising D/Px to K1, but rather of PF movement of K1 to D/Px. In fact, Eastern Mari shows exactly the same pattern described above for Mordvin, minus the insertion of a fusional marker for Px+Pl. Thus the same analysis is required. K1 Lowers³⁰ to D/Px, but D/Px Lowers to Pl when Pl is present, in which case the Lowering of K1 is blocked. This is demonstrated in two derivations. (11) shows the unimpeded Lowering of K1 in the singular:

²⁸ Mari has lost the Finno-Ugric plural markers and is in the process of recruiting and grammaticalizing new ones from various sources. This is recent, and is proceeding independently in the different dialects. It is for this reason that the dialects show the variation described here.

²⁹ In fact both Hill and Eastern Mari show similar variation. The difference is that in Hill Pl Px is clearly preferred and in Eastern Px Pl is clearly preferred, while in Meadow neither is clearly preferred. See Luutonen (1997) for data and discussion.

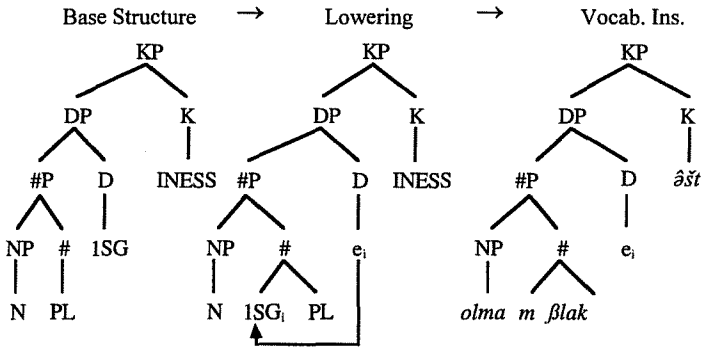
³⁰ I assume in the structures and discussion here that the movement is Lowering, although I have only demonstrated that it cannot be Raising. I will discuss below why we have reason to believe that an analysis with Lowering is more plausible than one with LD. In any case, a derivation with LD instead of Lowering for the examples considered here would differ only in that movement would follow VI. The same surface orders would still be derived.

(11) Eastern Mari, Inessive singular, 1st singular possessor, *olmaštem* 'in my apple'



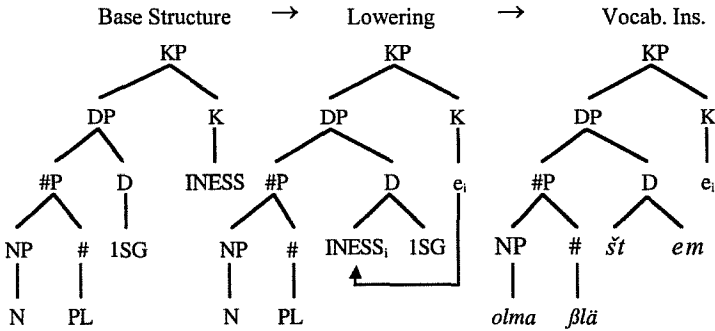
Derivation (12) shows the Lowering of Px to Pl, leaving K1 nowhere to lower to:

(12) Eastern Mari, Inessive plural, 1st singular possessor, *olmamβlakâšt* 'in my apples'



In Hill Mari we can see from surface order that, unlike in Mordvin and Eastern Mari, D/Px does not undergo PF movement to plural #. As expected, PF movement of K1 is thus never blocked. Derivation (13), which has the same gloss as (12), shows quite nicely the difference in orderings between the two dialects (as well as the difference in plural markers):

(13) Hill Mari, Inessive plural, 1st singular possessor, *olmaβläštem* 'in my apples'



The question then is what to say about Meadow Mari, which seems to be the union of the other two dialects. It is reasonable to analyze it as an instance of grammar competition (in the sense of Kroch 2000). In other words, a grammar like that in Eastern Mari, with PF movement of D/Px to Pl is in competition with one like that in Hill Mari, without such movement. This fits in well with the fact that the Mari plural markers are in the process of grammaticalization, since grammar competition is usually a mark of change in progress. In other words, one of the grammars being discussed represents a later stage in the grammaticalization of the plural marker than the other.³¹ The geographical facts also support this account. Meadow Mari is spoken in an area between Hill and Eastern Mari, so it might be expected to have a grammar which is, in a sense, intermediate between them. Note crucially that the variation within and across dialects in the three suffix orderings is not free, but is constrained by the ordering of Pl and D/Px as described above. That is, K1 will move to D if and only if D does not move to Pl. This predicts that two orders should be impossible: Pl-Px-K1 with neither head moving, and K1-Px-Pl, with both heads moving. Luutonen (1997) finds neither of these orderings in his corpora. Furthermore, in his acceptability tests, Pl-Px-K1 is judged ungrammatical more than any other ordering.³²

³¹ For example, we might be tempted to suggest the following very speculative scenario. The plural markers were originally not instantiations of the # head, but rather independent modifiers on nouns that were unspecified for number, and as such they occurred as independent words (Is this what is going on in NW Mari as reported by Comrie (1988)?). The process of grammaticalization consists, at least in part, of their reanalysis as instantiations of the plural head. The grammar of Eastern Mari represents an early stage after this reanalysis, where the plural marker is generated in the # head, but still appears further out in the surface ordering in something more like its historical base position. The movement that inverts D/Px and Pl is then something that was posited as part of the reanalysis as a way to reconcile the surface position of the plural marker with its newly analyzed base position (Rolf Noyer, p.c., suggests that historical explanations of this sort for why morphological readjustment occurs may be possible in many instances). Hill Mari would then represent a further step in the grammaticalization process, whereby the plural marker has come to surface in its base position next to the head noun. Again, Meadow Mari would represent a stage where the change leading from the Eastern grammar to the Hill grammar had begun, but not yet gone to completion.

³² He does not test for K1-Px-Pl. This seems to be because the ordering is so odd that it does not even occur to him to ask about it. Of course, Luutonen is not a native speaker, so this cannot be taken as

Note that so far I have only shown that the inversion of K and D in Mari is due to some sort of PF movement, and not Raising. I have not presented evidence to show whether the movement in question is Lowering or LD, because the sort of data on the blocking of allomorphy which was probative in Mordvin is lacking in Mari. There is, however, some reason to think that we must be looking at Lowering. Specifically, there is no indication in the descriptions of the various Mari dialects that the movement of K1 markers is inhibited by adjuncts. If such movement were LD, we would expect adjuncts on or within the DP to block it, and while it is a matter of debate what sorts of things should be counted as adjuncts, adjectives are a pretty likely candidate. Indeed, whether adjectives are adjuncts or not, they should block LD of K1 to D or D to Pl. That they do not can be taken as evidence against LD and in favor of Lowering. Of course, even Lowering should be blocked if adjectives are, say DP complements, so this suggests that, at least in the languages discussed here, they are in fact NP adjuncts. However, since the status of adjectives is so poorly understood, these arguments cannot be considered totally convincing. We must be satisfied, at least for the time being, with the conclusion that K1 in Mari undergoes PF movement, and the suspicion that this movement is Lowering. The crucial point is that we have shown that a Raising analysis will not work.

4. Conclusions

So we have evidence from Mordvin and Mari of just the sort of situation argued to be diagnostic of PF movement. In the case of Mordvin we were even able to show that the PF movement in question must be Lowering. This implies, in agreement with Embick and Noyer (2001) among others, that a grammar with Raising alone, though simpler, is inadequate if we accept the DM arguments for a single morphosyntactic derivation. This may also have interesting implications for theories of Case marking. Mordvin and Mari Case markers are demonstrably not involved in Raising, and a non-Raising account is available for Finnish as well.³³ They are only demonstrably active on the PF branch. This leaves open the possibility, argued for in Marantz (1991),³⁴ that Case markers are not present in the syntax, being inserted only at Spell-Out for morphological reasons.

definitive evidence that the order is impossible, but it is a fairly safe assumption based on Luutonen's other findings and on its absence in his corpora.

³³ Finnish has the stable ordering of affixes: N-Pl-K-Px, where again we seem to have inversion of K and D. The data are consistent with Lowering of K to D, but I have not yet found data that can rule out Raising, because there is no monkey business between # and D blocking the movement as in Mordvin and Mari. On the other hand, I have also found no evidence to argue in favor of a Raising analysis. So Lowering must be regarded as more likely at this stage, since we have evidence from other languages that it is able to create this sort of ordering, while no such independent support exists for Raising. It is, however, possible to rule out LD. Kanerva (1987) details a number of instances of allomorphy, as well as co-occurrence restrictions, operating between markers in # and K, and between those in K and Px, but not between those in # and Px. This implies that K must be between # and D by VI, which excludes an LD analysis.

³⁴ See also McFadden (2001a,b) for discussion and further argumentation.

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