

VOCABULARY INSERTION AND THE GEOMETRY OF LOCAL CASES

ABSTRACT. The paper argues for a new approach to vocabulary insertion which allows insertion at non terminal nodes. This new Vocabulary Insertion Principle dispenses with the operation of Fusion in Distributed Morphology and allows more accurate predictions about possible portmanteau morphemes to be made. I test this new principle against data from local case morphology. I also propose a novel structure for local case affixes which is supported by evidence from implicational universals and attested/unattested portmanteau morphemes.

Keywords: Fusion, Vocabulary Insertion, local cases, PP

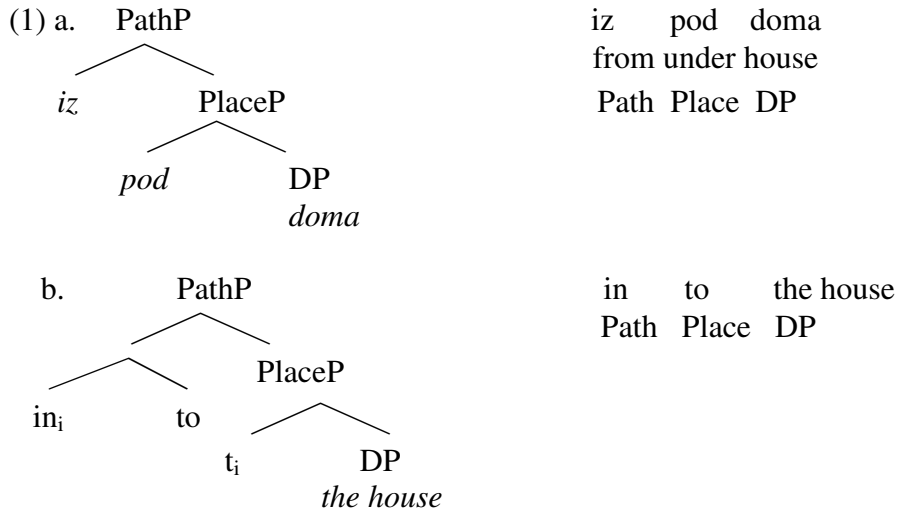
1. Introduction

This paper offers a novel proposal for vocabulary insertion which dispenses with the operation of fusion in Distributed Morphology (DM). I argue for a new approach to vocabulary insertion which permits vocabulary insertion at non-terminal nodes in very specific environments. The adoption of this new approach would eliminate the DM operation of fusion (Halle and Marantz 1993, Halle 1997, Bobaljik 1997, Embick and Noyer 2001, Chung 2007a, b). The current proposal is compared to other proposals involving vocabulary insertion at non-terminal nodes, namely Williams (2003) and Caha (2009); the theories under discussion will be tested against data from portmanteau local case morphology to show that the present approach makes more accurate and narrow predictions which are borne out by the portmanteau data. I also propose a new morphological structure for local case affixes which is based on the results of a survey of 62 languages which have complex systems of local cases.

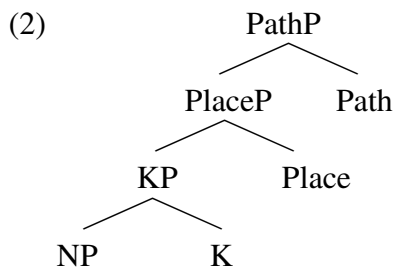
The syntactic structure of PPs has been at the center of research for at least the last three decades. It has been recognized that spatial PPs have a complex internal structure, beyond simply [_{PP} P [NP]]. Although many current proposals (see references below) differ in many respects, there is a consensus that at a minimum, there are at least two layers of functional structure within spatial PPs: an inner layer denoting location, and an outer layer denoting direction/motion, as in (1)¹. This complexity is transparent in

¹ The English example in (1b) involves an instance of head movement –Place undergoes movement to Path.

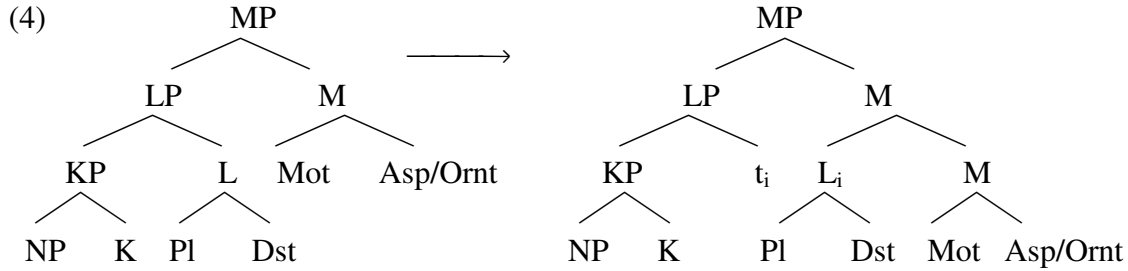
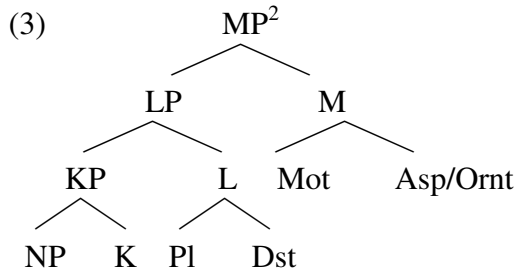
some constructions (e.g., Russian: *iz-pod doma* ‘from under the house’, English: *into the house*) but is generally posited even where Ps are not visibly complex, with authors disagreeing as to whether the outer layer is present for static/locational expressions, such as *on the table*. Ranging from the minimum structure in (1), many proposals (especially Bošković 2004, den Dikken 2006, Svenonius to appear) posit more articulated functional structure within PPs.



Unlike Indo-European languages, some languages express spatial relations with the help of local cases. In contrast to the syntactic structure of spatial PPs, the morphological structure of the corresponding local cases has received scant attention beyond the observation that the case affixes have an internal complexity roughly corresponding to (1). In this paper I discuss the results of a survey of 62 languages, based on which I make the following proposals. First, I argue that the basic structure for all spatial expressions is as in (1), or equivalently for postpositions as in (2), where KP reflects the fact that in many languages local cases are built on the top of some non-local cases (e.g., ergative, genitive).



Second, I show that both heads (Path and Place) are always present in the structure, which supports Kracht's (2002) proposal who, unlike Koopman (2000) and den Dikken (2006), argues that the Path head is present even in stative locative expressions. Third, I make a novel proposal that the two heads (Path and Place) can be further modified, but that the modifiers are affixes which do not introduce additional functional projections, as in (3). Similarly to English (1b), head movement in the structure in (3) is also possible, as shown in (4). Moreover, suffixation may also be a result of cliticization/merger (Trommer 2008).



The paper is organized as follows. Section 2 discusses how portmanteau morphemes are traditionally treated in DM and introduces a new approach to vocabulary insertion: the Vocabulary Insertion Principle (VIP). Then, the VIP is compared to competing approaches to portmanteaus, namely by Williams (2003) and Caha (2009). Section 3 sets the stage for comparing these approaches. First, I describe the results of the survey on the basis of which I propose a new structure for local case affixes. I provide two pieces of evidence in favor of this structure which come from implicational universals and attested/unattested portmanteau morphemes. In section 4 I compare predictions made by the VIP and the theories proposed by Williams and Caha against the

² Henceforth, for expository reasons, I will use Kracht's labels for the major projections: L(ocalizer) corresponds to Place, and M(odalizer) corresponds to Path. The structure in (3) is discussed in great detail later in section 5 of the paper.

data from local case portmanteaus. Finally, section 5 discusses how the morphological structure in (3) can be derived from syntax.

2. A new approach to vocabulary insertion

Currently there are several approaches to treating portmanteau morphemes in the literature. DM appeals to the operation of Fusion, whereas non-DM approaches suggest other ways of capturing the distribution of portmanteaus by using such principles as the Spanning Vocabulary Principle (Williams 2003) and the Universal Contiguity Principle (Caha 2009). These approaches are discussed in this section. A new approach to vocabulary insertion, the Vocabulary Insertion Principle, is introduced in this section and compared to the proposals by Williams and Caha.

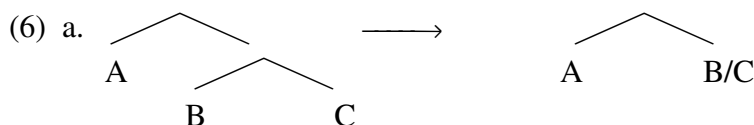
2.1. Portmanteaus in Distributed Morphology

DM (Halle and Marantz 1993, Halle 1997, Bobaljik 2000, Embick and Noyer 2001, among others) assumes that syntax deals only with syntactico-semantic features, whereas phonological information is inserted after syntax. The vocabulary insertion of lexical elements depends on syntactico-semantic features and on a morphological representation. Vocabulary insertion is governed by the Subset Principle:

(5) The Subset Principle

The phonological exponent of a Vocabulary Item is inserted into a morpheme of the terminal string if the item matches all or only a subset of the grammatical features specified in the terminal morpheme. Insertion does not take place if the Vocabulary Item contains features not present in the morpheme. Where several Vocabulary Items meet the conditions for insertion, the item matching the greatest number of features in the terminal morpheme must apply. (Halle 1997: 428).

DM also assumes that there are post-syntactic operations which manipulate features in morphology prior to vocabulary insertion, yielding certain syntax-morphology mismatches: morphological merger, impoverishment, fission, and fusion. The operation relevant to the present discussion is fusion. Fusion takes two sister nodes and fuses them into a single node which inherits features of the two original nodes, as in (6). Since fusion is, by hypothesis, restricted to sister nodes, portmanteau morphology in this theory provides evidence of morphological constituency.



Vocabulary insertion takes place after fusion. In DM, fusion has primarily been invoked to deal with cases of portmanteaus. However, as noted by Radkevich (2009), Caha (2009), fusion creates a conspiracy within the theory: the environments for the fusion rule must be stipulated to be the same as the environments for the insertion of the corresponding portmanteau morphemes, but nothing within the theory guarantees this connection. Recent work by Chung (2007 a, b) showed that fusion must be driven and interleaved with vocabulary insertion to account for the facts of Korean suppletive negation. In other words, the trigger for fusion is a lexical item itself but not a morpho-syntactic configuration.

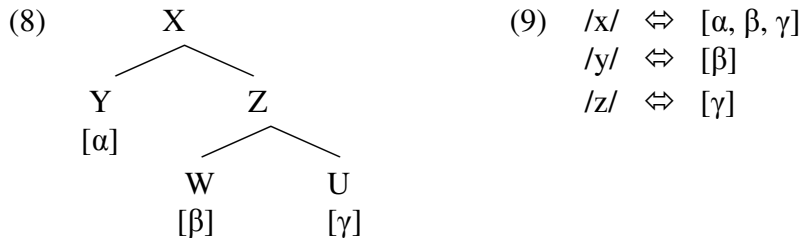
2.2. Vocabulary insertion principle

I propose a new approach to vocabulary insertion in DM, which allows vocabulary insertion at non-terminal nodes and which has strict restrictions on when insertion at non-terminal nodes is possible. I refer to the new approach as the Vocabulary Insertion Principle (VIP), which is given in (7) below.

(7) The Vocabulary Insertion Principle

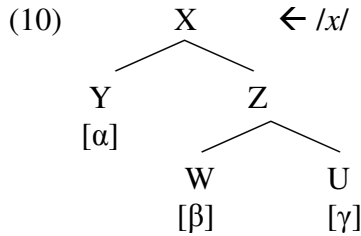
The phonological exponent of a vocabulary item is inserted at the minimal node dominating all the features for which the exponent is specified.

The VIP allows for vocabulary insertion at both terminal and non-terminal nodes, which I will illustrate below. Consider the structure in (8) and the list of vocabulary items (9) relevant for (8).



If we adopt the VIP, the three vocabulary items in (9) can be inserted at three different nodes. /y/ and /z/ are inserted at terminal nodes W and U, respectively, since these vocabulary items are inserted at the minimal node which dominates all the features for which they are specified. Let us now consider the last vocabulary item which is specified for three features each of which corresponds to the three terminal nodes, Y, W, and U. The VIP allows insertion at a node which minimally dominates all the features the

vocabulary item /x/ is specified for. Looking at the structure in (8), we see that the node which minimally dominates $[\alpha]$, $[\beta]$, and $[\gamma]$ features is X: hence, the vocabulary item /x/ gets inserted in X, which is not a terminal node, as shown in (10)³.



How would the fusion approach deal with the vocabulary item /x/? The vocabulary item /x/ specified for the three features could only be inserted after two instances of fusion: first, the two sister nodes W and U would be fused to create a terminal node W/U (Z) specified for features $[\alpha]$ and $[\beta]$. Next, the fused node W/U will undergo fusion with the node Y, which would result in a terminal node specified for $[\alpha]$, $[\beta]$, and $[\gamma]$ features. Then, it would be possible to insert the vocabulary item /x/ at the node created by fusion.

Comparing the Portmanteau Principle to Fusion, it is crucial to point out the following difference. Fusion of two terminal nodes is driven by particular vocabulary items. Fusion is supposed to be a post-syntactic operation, which precedes vocabulary insertion. However, fusion is triggered by some portmanteau vocabulary item, thus creating a paradox (Chung 2007b: 137). Adopting the Portmanteau Principle dispenses with this problem: vocabulary insertion takes place at a higher node which has features of the two nodes it dominates and there is no need to apply fusion.

2.3. Non-DM approaches to portmanteaus

In this part of the paper, I will discuss two non-DM approaches to portmanteaus which, like the VIP, permit vocabulary insertion at non-terminal nodes. The two proposals under discussion are the Spanning Vocabulary Principle by Williams (2003) and the Universal Contiguity Principle by Caha (2009). Both principles share the assumption that vocabulary insertion may realize any arbitrary span of contiguous terminal nodes, with no

³ One might argue that the vocabulary item /z/ can be inserted at the node Z which has two features $[\beta]$ and $[\gamma]$ by feature percolation. This option is ruled out by the VIP since it allows vocabulary insertion at non-terminal nodes only in the case when it is the minimal node which dominates all the features the vocabulary item is specified for. In the case of /z/, it cannot be inserted at Z because the item is specified only for the feature $[\gamma]$ and the minimal node that dominates the feature $[\gamma]$ is U, so the vocabulary item /z/ can be inserted only at U.

requirement that they form a constituent at any level of representation. Consider the structure in (8): Williams and Caha predict that three portmanteaus are possible: Y+W, Y+W, Y+W+U. These theories impose only weak restrictions on possible portmanteaus: terminal nodes must comply with the contiguity requirement (thus excluding a Y+U portmanteau) and thus give overt morphology only a rather weak probative value for diagnosing hierarchical structure.

How is the VIP different from the Spanning/Contiguity approach? In principle, the VIP and Spanning/Contiguity make different predictions about possible portmanteaus. For example, in (8) the VIP would exclude a Y+W portmanteau, which the Spanning/Contiguity approach would allow. However, testing predictions is not straightforward, inasmuch as the underlying structure itself is also a matter of investigation, with many competing proposals both in syntax and morphology. Nevertheless, the VIP makes a specific type of implicational prediction which the Spanning/Contiguity principle does not. Specifically, a given linear string A-B-C admits of only two binary constituent parses: [A [B C]] or [[A B] C]. Assuming constituency is fixed for a given language, if not universally, it follows from the VIP that if A+B can be a portmanteau, then B+C cannot be, and vice versa (though A+B+C can under either theory). Spanning, by contrast, will permit such overlapping portmanteaus. In section 4, I will compare predictions made by the VIP and the Spanning/Contiguity approach in the realm of local case affixes and then check these predictions against the actual data from the local case morphology.

In the next section I present the results of the survey of local case systems and propose a new structure for local case affixes, which will be used in section 4 to test predictions made by competing approaches to realization of portmanteau morphemes.

3. Local case morphology

There are several ways to encode spatial relations in language: some languages use adpositions (most Indo-European languages), some languages use verbal affixes, whereas others use local cases which attach to nouns. Language families that use the third strategy include Nakh-Daghestanian, Finno-Ugric, Samoyed, Manchu-Tungusic, Chukotko-Kamchatkan, Aleut, Australian, and several language isolates (e.g., Ket, Nivkh, Yukaghir).

The present survey does not aim to cover all language families which use local cases for expressing spatial relations, however, it intends to serve as a pilot study which involves a significant number of languages to draw generalizations. The survey presented in this paper includes six language families (Nakh-Daghestanian, Finno-Ugric, Samoyed, Manchu-Tungusic, Chukotko-Kamchatkan, Aleut) and five language isolates⁴. Mention should be made of the fact that there are not many languages with local cases; such languages are mostly found in Eurasia (the languages of the survey) and Australia (Iggesen 2008)⁵. All languages studied in the survey are characterized by having at least three cases (locative, allative, and ablative)⁶. The total number of languages surveyed for this paper is 62. Other languages which use local cases are to be investigated in subsequent work to see if generalizations proposed in the present work hold in those languages as well.

3.1. Results of the survey

It has been noted by, for example, Comrie and Polinsky (1998) and van Riemsdijk and Huybregts (2001) that local case affixes are internally complex, however, there has been no systematic cross-linguistic study of patterns in the internal structure of these affixes⁷. A clear example of such decomposition is provided by Lak, a Nakh-Daghestanian language, spoken in the republic of Daghestan, Russia (Murkelinsky 1967). Lak has a system of series markers (15), which basically correspond to prepositions in Indo-European languages. Each series marker can combine with 5 different case markers: essive, allative, ablative, translative, and versative. The Lak data show that there are at least two components in the structure of local cases: locational (series markers) and directional (case markers) and that the latter are structurally further from the nominal, as in the syntactic proposals about directional PPs being built on top of locational ones.

⁴A list of all languages covered in the survey is given in Appendix 1.

⁵A preliminary study of Australian languages based on Dixon (1976) shows that they behave similarly to the languages covered in this survey.

⁶A list of definitions of local cases can be found in Appendix 2.

⁷There is a typological study by Creissels (2006, 2009) who discusses typologically attested types of local case systems and types of syncretism between different local cases, however, he does not report any report any observations about the internal organization of local case affixes.

(15) Lak local cases

Series marker	Essive	Allative	Ablative	Translative	Versative
‘in’	-vu-Ø	-vu-n	-vu-a(tu)	-vu-x	-vu-n-maj
‘on’	-j-Ø	-j-n	-j-a(tu)	-j-x	-j-n-maj
‘under’	-lu-Ø	-lu-n	-lu-a(tu)	-lu-x	-lu-n-maj
‘behind’	-h-Ø	-h-n	-h-a(tu)	-h-x	-h-n-maj
‘near’	-ča -Ø	-ča-n	-ča-a(tu)	-ča-x	-ča-n-maj
‘next to’	-c’-Ø	-c’-n	-c’-a(tu)	-c’-x	-c’-n-maj

In Lak, the allative case consists of two parts: location (a series marker /vu/ ‘in’) and direction (an allative suffix denoting movement to a location). Moreover, Lak has a versative case that denotes the general direction of movement, when the final destination is not reached –the movement is simply proceeding in a particular direction. The versative case in Lak is formed by adding a morpheme /maj/ to the allative case form of the noun, as shown in (16).

- (16) N-vu-n- maj ‘in the general direction of something’
in-ALL-VERS

Examples like the one in (16), in which one case is built on top of another case by adding another spatial morpheme, are abundant in the languages surveyed. Below is an example from Estonian, a Balto-Finnic language. Estonian has fourteen cases, eight of which are local. Two of the local cases (essive and terminative) are portmanteaus (i.e., they cannot be further decomposed) and discussion of these will be postponed until section 4. The other six local cases can be divided into two groups: “inner” and “outer”. Each group is comprised of three cases: locative (i.e., stative), allative, and ablative, as in (17).

(17) Estonian local cases

	Essive	Allative	Ablative
s ‘in’	s-Ø	ss-e	s-t
l ‘at’	l-Ø	l-e	l-t

3.2. Types of spatial affixes

The results of the survey suggest that there are five types of local case affixes that occur cross-linguistically. Previous work on decomposition and analysis of local cases by Kracht (2002, 2005) proposes that all locational expressions consist of two components: localizers and modalizers which form a unit realized as either a PP or a local case. Kracht

analyzes NPs marked for local cases as consisting of three elements: the DP itself (landmark), L (localizer), and M (modalizer). The DP *a hid* ‘the bridge’ denotes an entity in (18), L *-al* takes this entity and returns a spatial region, M *-a* takes that region and returns an adverbial which denotes the fact that the entity that moves changes its location⁸.

- (18) [[DP L] M] (Hungarian)
 a hid- al- a
 the bridge under to
 ‘(to) under the bridge’

In Kracht’s system, localizers denote a location, whereas modalizers denote modes. He suggests that there are 6 modes that correspond to various local cases in different languages: static (essive case), approximative (approximative case), cofinal (illative case), recessive (allative case), coinital (elative case), and transitive (transitive case). Below, I will argue that these modes are internally complex.

Kracht proposes exactly the same structure for NPs denoting two different types of spatial meanings: locational and directional. For example, in Lak there is no overt marker of essive. Kracht would analyze it as a \emptyset marker under Path. Other authors (Koopman 2000, den Dikken 2006) would suggest truncation in this case.

The results of the survey reported here bear out Kracht’s view that there are always two layers of structure in local case affixes, even for essive: locational and directional. It is not always the case that essive is \emptyset -marked as in Lak (see (5)); it is only a trend. Some languages have overt morphological realization of essive case. In the survey there are 12 languages which have essive case non- \emptyset -marked as, for example, in Akhvakh. This fact presents a challenge to Koopman and den Dikken, who suggest that locational PPs have just one layer of structure (locational) and lack the motion component.

⁸ The structure in (18) raises an important issue of what the case endings attach to –DP or NP. Kracht in his works suggests that case endings attach to DP. Following Bošković (2008), I assume that they attach to NP since none of the languages covered in the survey have overt determiners, unlike Hungarian.

(19) Akhvakh local cases⁹

- | | | |
|-------------|------------|--------------|
| a. g+ a | b. g + e | c. g +u |
| on+allative | on +essive | on +ablative |

The morphological evidence clearly establishes that Kracht's modes can be internally complex, as has been illustrated with the example of the Lak versative case in (16): the versative case is expressed by attaching the versative case marker itself to the relevant series marker and allative marker. I propose that there are 5 possible types of affixes available in language. There are two morphemes which denote location: Place morphemes express spatial relations {in, on, at, etc.}; Distal affixes encode proximity. Examples of Place morphemes have been given in (15) and (17): series markers in Lak and the two series of cases // and /s/ in Estonian. Distal morphemes are fairly rare among languages: there is only one instance of this type of morpheme in my sample. The distal marker is found in Tsez (Comrie and Polinsky 1998)¹⁰.

There are three types of M morphemes: Motion affixes denote the presence of motion (ablative and allative cases) or absence of motion (essive case), Orientation affixes have meanings 'towards/away' and 'upward/downward'. Orientation markers are found only in two languages in my sample: in Tabasaran and in one of the dialects of Dargwa, Khaidak. In both cases the orientation markers follow the ablative marker, as in (20).

- | | | |
|-------------------------------|-----------|--------------------------|
| (20) ħal- ʒi- r- qen | (Khaidak) | (Temurbulatova 1990: 84) |
| roof- on-ABL-upwards | | |
| 'upward from on the roof' | | |

Aspect morphemes specify what kind of movement is involved, i.e. whether the movement reaches its goal or not, and whether the movement has some direction or the direction is unspecified. Similarly to Lak, Tabasaran, another Nakh-Daghestanian

⁹ One can argue that /e/ in (19b) is not an essive marker which has the meaning 'the absence of movement' but a lexical realization of some functional projections proposed in works by den Dikken (2006) and Svenonius (to appear). I reject this option due to the lack of evidence for it: the only meaning that the marker /e/ has is 'the absence of movement'.

¹⁰ Yakov Testelec (p.c.) informed me that, according to his fieldwork, distal markers can be found in many Nakh-Daghestanian languages, which are, however, not mentioned in available descriptive grammars. Claudia Wegener (p.c.) pointed out that there is a distal affix similar to the one in Tsez in Savosavo, a Papuan language spoken on the Solomon Islands.

language, has a versative case marker, which always follows one of the Motion affixes, as in (21).

- (21) nir- i- q- na- ri (Tabasaran) (Magometov 1965:129)
 river- ERG-at-ALL-VERS
 ‘towards the bank of the river’

Tsez is another excellent example which illustrates the ordering of affixes: this language has four out of five possible affixes (it only lacks Orientation suffixes). (22) and (23) are examples from Tsez illustrating possible co-occurrence of local case affixes.

- (22) besuro-ǰ- āz- ar (Tsez) (Comrie and Polinsky 1998)
 fish- under-DIST-ALL
 ‘to under the fish over there’

- (23) besuro-ǰ- Ø- xor
 fish- under-DIST-VERS
 ‘towards under the fish (here)’

Combining these 5 types of morphemes yields the structure in (24) which represents the linear order of the spatial morphemes to which all 62 surveyed languages conform.

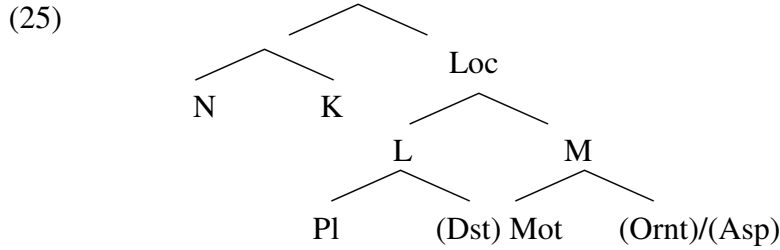
- (24) N- K¹¹- Place- Distal- Motion- Orientation-Aspect¹²

3.3. Non-linear structure of local case affixes

A closer look at the five types of morphemes attested in local case systems suggests that they can be divided into two main groups: one which deals with Location/ Place and another one which deals with any Motion (or its absence) to/ from/ along Location/ Place, which roughly correspond to Kracht’s L and M. I suggest the following geometrical structure for local case affixes. In section 5, I will return to the question of how this is related to the syntactic structure of PPs in (2).

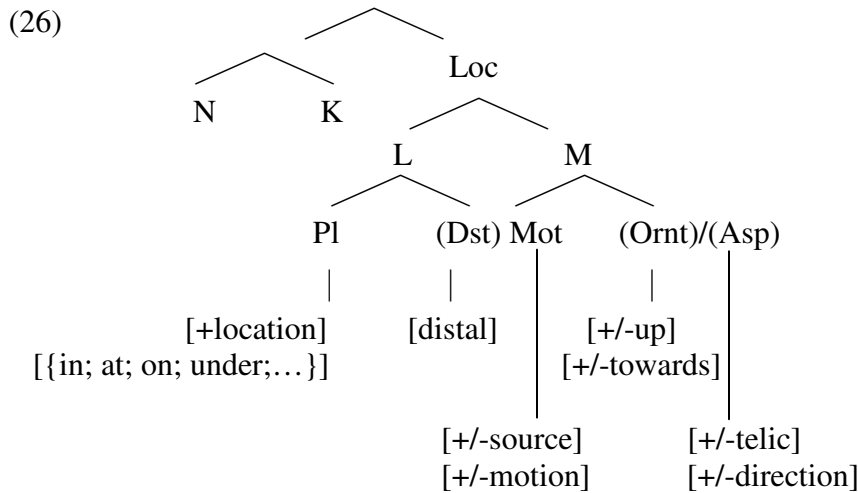
¹¹ K stands for cases (ergative, genitive) on the basis of which local cases are formed, e.g. all local cases in Estonian are built on the top of the genitive case.

¹² In (24) I place Orientation before Aspect, however, there is no evidence for this ordering as these two types of morphemes do not co-occur in the sample.



It is necessary to point out some assumptions underlying the structure in (25). First, not all nodes in (25) have equal status: there are two head nodes Place (Pl) and Mot (M), while other nodes are non-heads. What I understand by headedness is that these two nodes (Place and Motion) contribute the core of the meanings of both L and M, whereas Distal, Orientation, and Aspect simply modify Place and Motion, respectively¹³. The non-head nodes are modifiers of the head nodes, which contribute additional meaning, e.g., Asp contributes additional meaning to Mot by specifying what type of movement is involved, whether this movement reached its final point or not.

This work is done in the framework of DM which postulates that lexical items (suffixes) are listed in the Vocabulary. Each vocabulary item consists of two parts: a phonological exponent and a set of features that determine its insertion in terminal nodes. Each terminal node is characterized by a set of features, as shown below in (26).



I suggest that the node Place under L is specified for the feature [location] as it refers to some location. Besides this feature, Place has node specific features. I suggest that Place has several features such as [in], [on], [behind], [under], etc., which specify the

¹³ “Non-head” nodes are given in parenthesis.

position of the object in space. The second node of L is Dist which is specified for the feature [distal]¹⁴. DM argues for featural underspecification, i.e., using only those features that are crucial to distinguishing between different exponents. In this paper I will give full feature specifications of nodes¹⁵.

- (27) Place: [+location, {[in], [on], [under], [behind], [at],...}]
 Distal: [distal]

Consider the following example from Tabasaran, a Nakh-Daghestanian language, which has 8 series markers. The rules of insertion for this language are given in (28).

- (28) /k/ ⇔ [+location, on, vertical]
 /ʔ/ ⇔ [+location, in] **Place**
 /ʔin/ ⇔ [+location, on]
 /q/ ⇔ [+location, behind]
 /kk/ ⇔ [+location, under]
 /xʏ/ ⇔ [+location, at]
 /ɣʏ/ ⇔ [+location, among]
 /h/ ⇔ [+location, near]

The situation is similar in languages that do not have series markers. For example, Estonian, as well as other Balto-Finnic languages, has two series of local cases: interior and exterior, as was discussed earlier in (17). The rules for Estonian would be as follows:

- (29) /s/ ⇔ [+location, in] **Place**
 /l/ ⇔ [+location]

The next node in question is distal which is found only in Tsez. Only distal locations have a special morphological exponent. The distribution of distal/non-distal markers in Tsez is governed by the following rule.

- (30) /z/ ⇔ [distal] **Distal**

Besides the distal morphemes, Tsez, like other Daghestanian languages, has series markers whose insertion is determined by the following set of rules.

¹⁴ Since no language in the survey marks a [-distal] overtly, I will treat [distal] as a privative feature. The issue of whether features should be uniformly privative, all binary or a mixture, is left for future research as nothing in the paper appears to depend on these choices. It is important to point out that not all languages morphologically realize all terminal nodes in (26). In this case I will assume that such nodes are not available in those languages.

¹⁵ Morphological theories generally use full specification of features in lists of vocabulary items, for expository transparency. In general, one vocabulary item could be characterized as the 'elsewhere' item for any given node. For most of the cases here, the choice of an elsewhere item would be arbitrary, but it may be important in discussion of syncretism in section 4.4.

- | | | | | |
|------|------|---|---------------------------|--------------|
| (31) | /q/ | ⇔ | [+location, on, vertical] | Place |
| | /de/ | ⇔ | [+location, in front] | |
| | /ā/ | ⇔ | [+location, in] | |
| | /λ/ | ⇔ | [+location, among] | |
| | /ʁ/ | ⇔ | [+location, on] | |
| | /ʁ'/ | ⇔ | [+location, under] | |
| | /x/ | ⇔ | [+location, at] | |

Having established the rules for L nodes, I now turn to M nodes: Motion, and Orientation/Aspect. As I have mentioned above, there are three types of elements that can go under Motion: they may denote the absence of movement (essive cases), movement to the goal (allative cases), and movement away from the source (ablative cases). I propose that we need two features to account for the distribution of these morphemes. First, unlike allative and ablative cases, essive cases are devoid of movement. They are static; therefore, I suggest a feature [-motion] to distinguish static cases from the ones that involve movement. Consequently, the other two morphemes are characterized by a feature [+motion]. Now it is necessary to find a way to ensure insertion of the correct lexical item with the feature [+motion]. I suggest using a binary feature [source] whose positive value along with the feature [+motion] correlates with the meaning of ablative cases, whereas a combination of the negative value of [source] and [+motion] yields the meaning of allative cases. The rules of insertion for the node Motion will have the following form:

- | | | | |
|------|----------|---|--------------------|
| (32) | Ablative | ⇔ | [+motion, +source] |
| | Allative | ⇔ | [+motion, -source] |
| | Essive | ⇔ | [-motion] |

An example of implementation of the rules in (32) is given below (the example is from Estonian)¹⁶.

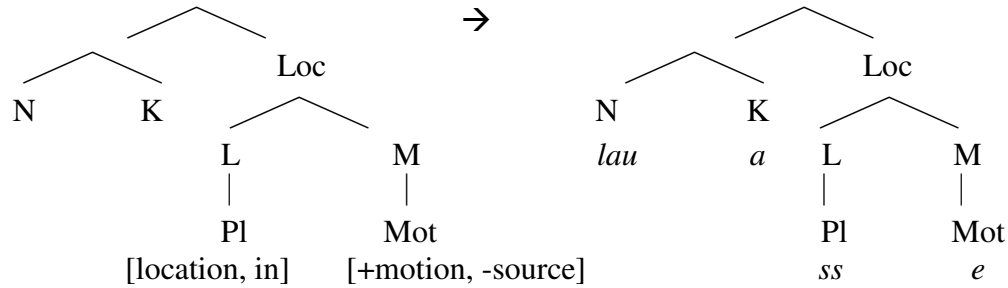
- | | | | | |
|------|-----|---|--------------------|---------------|
| (33) | /t/ | ⇔ | [+motion, +source] | |
| | /e/ | ⇔ | [+motion, -source] | Motion |
| | /Ø/ | ⇔ | [-motion] | |

To illustrate how the system discussed so far works, consider the following example from Estonian in (34). The example under consideration involves Place and

¹⁶ As in previous cases, essive can be specified as either having a feature [-motion] or as elsewhere which would not affect the result of vocabulary insertion in cases under discussion.

Motion components of the structure, the rules of vocabulary insertion for which are given in (29) and (33) respectively¹⁷.

(34) lau- a¹⁸- ss¹⁹-e (Kask 1966: 43)
 table-GEN-in- ALL
 ‘into the table’



There is one more M node that requires discussion. It is the Ornt/Asp node, which hosts two types of affixes. I will first discuss the Orientation suffixes and then move on to the Aspect suffixes. There are only four possible feature combinations that can have orientational meanings: there are two axes (vertical and horizontal) and the movement can be either towards or away on either of the two axes. I suggest using two binary features: [+/-towards] and [+/- up]. The feature combinations, shown in (35), yield a necessary result ensuring the insertion of a correct lexical item with the Orientation meaning.

(35) Towards ⇔ [+towards]
 Away ⇔ [-towards] **Orientation**
 Upward ⇔ [+up]
 Downward ⇔ [-up]

As I mentioned above, there are only two instances of Orientation morphemes that are found in Tabasaran and the Khaidak dialect of Dargwa. In (36) I demonstrate how the rules from (35) work in Khaidak, which was discussed in (20)²⁰.

¹⁷ In (34) I omit nodes not involved in the derivation.

¹⁸ In Estonian, similarly to Finnish, all local cases are formed on the basis of the genitive case form of nouns.

¹⁹ The Estonian marker of the inner cases has a phonological shape of a geminated consonant /ss/ which I treat as a phonological realization of a single consonant /s/ which underwent germination triggered by some language internal phonological processes.

- (36) /žen/ ⇔ [+towards]
 /ten/ ⇔ [-towards]
 /qen/ ⇔ [+up]
 /hen/ ⇔ [-up]

The last type of affixes is Aspect. There are only four case exponents under this node: prolative²¹, versative, terminative, and approximative. These four cases can be further divided into two groups. One will consist of prolative and versative, while the other one will comprise terminative and approximative.

Prolative and versative case both add new aspects of meaning to [+motion] cases: the first does not indicate the direction of movement, whereas the second one is used to convey a meaning of general direction without any specific point in space in mind. I suggest using a binary feature [+/-direction]: with a positive value for versative case and negative value for prolative case. There is only one language that has both cases-Lak, the rules for which are given in (37)²².

- (37) /x/ ⇔ [-direction, +motion] **Aspect**
 /maj/ ⇔ [+direction]

The last opposition of cases with aspectual meanings is terminative vs. approximative. The main difference in the meanings of these two cases is whether the movement reaches its goal, as it does in the case of the terminative case, or not, as in the case of the approximative. I suggest using a binary feature [telic], with [+telic] for terminative and [-telic] for approximative. Only the Permian languages of the Finno-Ugric language group have both cases in their arsenal. Consider how the rules would work for Udmurt.

- (38) /oz/ ⇔ [+telic] **Aspect**
 /ñ/ ⇔ [-telic]

²⁰ As mentioned in the previous section of the paper, there are only two languages which have orientational markers: the Khaidak dialect of Dargwa and Tabasaran. These two languages are genetically related but not very closely. Moreover, they are spoken in non-adjacent regions of Daghestan.

²¹ In this paper I do not consider translative case separately but jointly with prolative case. Both prolative and translative cases are characterized by [+motion] under Motion and [-direction] under Aspect, but they differ in feature specification of Place: prolative case requires [+location; +edge (at)], whereas translative case does not.

²² The translative marker in Lak is a portmanteau affix, which realizes two nodes Mot and Asp. The issue of portmanteau will be discussed in detail in section 3.

Putting all the features together, we have the following system of rules for different nodes in the structure in (25).

Place: [+location, {in, on, under, etc}]

Distal: [distal]

Motion: [+/-motion]
[+/-source]

Orientation: [+/-toward, +/-horizontal], [+/-up]

Aspect: [+/-telic]
[+/-direction]

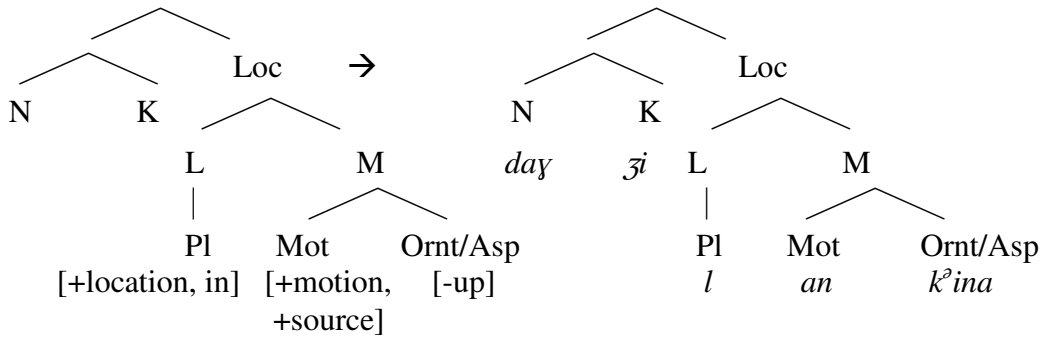
Consider the following examples which illustrate how the suggested system of features works in Tabasaran (39).

(39) *Tabasaran*

/k/	⇔	[+location, on, vertical]	Place
/ʔ/	⇔	[+location, in]	
/l/	⇔	[+location, on]	
/q/	⇔	[+location, behind]	
/kk/	⇔	[+location, under]	
/xʏ/	⇔	[+location, at]	
/ɣʏ/	⇔	[+location, among]	
/h/	⇔	[+location, near]	
/na/	⇔	[+motion, -source]	Motion
/an/	⇔	[+motion, +source]	
∅	⇔	[-motion]	
/mina/	⇔	[+horizontal, +towards]	Orientation
/tina/	⇔	[+horizontal, -towards]	
/ɣina/	⇔	[+up]	
/kʰina/	⇔	[-up]	
/di/	⇔	[+direction]	Aspect

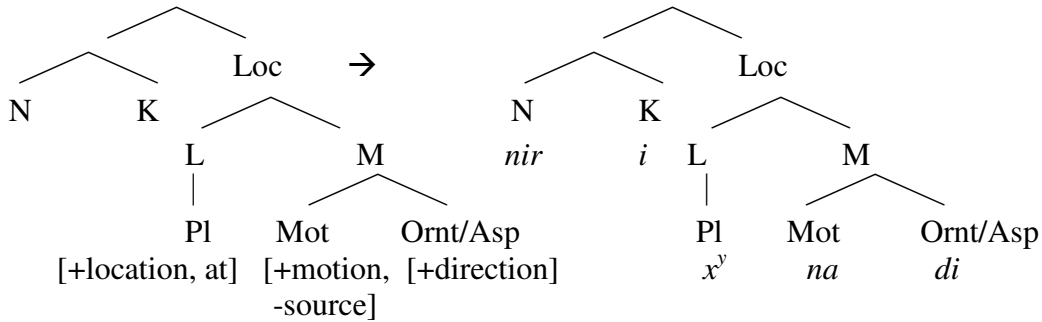
- a. day- ʒi- l- an- kʰina
 mountain-ERG-on-ABL- downward
 ‘down from the mountain’

(Magometov 1965: 119)



b. nir- i- x^y -an- di
 river-ERG-at- ALL-VERS
 ‘toward the bank of the river’

(Magometov 1965: 129)



3.4. Evidence for geometric organization

Having presented the results of the survey and provided the structure for local case affixes in (25), I would like to move to a discussion of evidence in favor of the structure argued for in this paper. The key arguments in favor of the hierarchical organization of local case affixes come from two sources: attested and unattested portmanteaus and implicational universals. The patterns of attested and unattested portmanteau morphemes will be discussed in detail in section 4, whereas the second argument is discussed below in this section.

The second argument for the geometry in (25) comes from implicational universals. As I mentioned earlier, not all the nodes in the structure in (25) have equal status. L and M dominate nodes the status of which is different: Place is the head node under L, whereas Motion is the head node under M. Not all the nodes are available in languages. Most languages have at least two nodes Place (L) and Motion (M) which are the head nodes.

From the evidence examined here, I conclude that there is an implicational universal which states that if a language has exponents of one of the non-head nodes, then it has the corresponding head node. Thus, the presence of the node Distal (under L) implies the existence of the head node Place. Then, lexical realization of Orientation and Aspect nodes implies realization of the head node Motion. None of the languages surveyed has data contradicting these implicational universals: there are no languages which have an exponent for the node Distal without the Place node exponent or which have the Aspect node exponent without the Motion node exponent. Mention should be made of the fact that if a language lexicalizes Place, this does not imply that it lexicalizes Distal; likewise, if it lexicalizes Motion, this does not imply that it lexicalizes Aspect or Orientation. By proposing the structure in (25), I can unify three implicational universals discussed above: the presence of non-head nodes entails the presence of head-nodes.

On the other hand, lexical realization of any node dominated by L does not necessitate realization of some node dominated by M, i.e., the fact that a language realizes Place does not mean that this language is characterized by having Aspect morphemes. In other words, lexicalization of terminal non-head nodes implies lexical realization of head morphemes. This relation holds only between head and non-head nodes that are sisters.

The structure of the local case affixes advocated for in this paper correctly captures the facts about the implicational universals of the terminal nodes. In the next section of the paper I will discuss the patterns of attested and unattested portmanteau morphemes with respect to the predictions made by the competing approaches to portmanteaus: the VIP and the Spanning/ Contiguity approach.

4. Testing the theories

In section 1, I introduced a new principle of vocabulary insertion (the VIP) within the framework of DM. The VIP allows vocabulary insertion at non-terminal nodes, but its application is strictly limited to certain structural configurations: a vocabulary item can be inserted at a non-terminal node if this node dominates all the features that the exponent is specified for. Unlike the VIP, the Spanning/ Contiguity approach supported by Williams (2003) and Caha (2009) relies on the contiguity of functional projections: an element can lexicalize any contiguous sequence of functional projections. In this section I

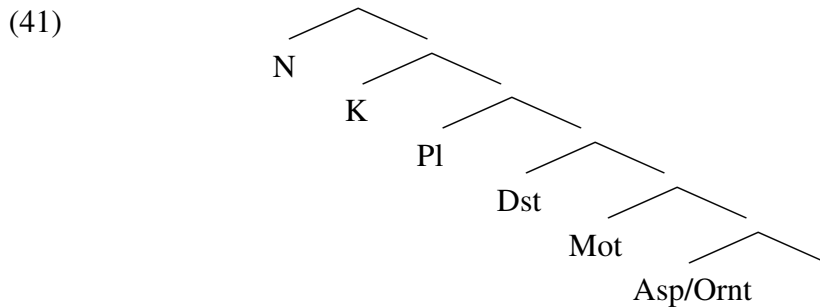
compare the predictions that these two competing approaches make with respect to possible/impossible portmanteaus in local case morphology. Then, I compare these two sets of predictions against the actual data from the survey.

4.1. Predicted local case portmanteau morphemes

Recall that all languages which have local cases conform to the linear order of morphemes, which is given in (40).

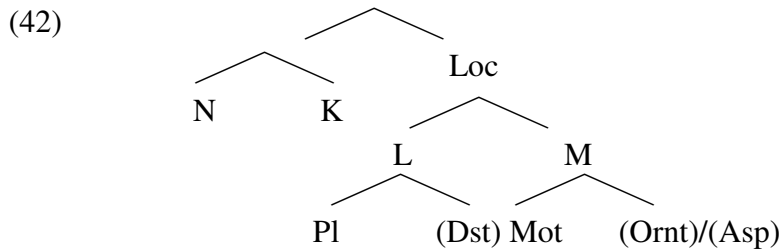
(40) N-K-Pl-Dst-Mot-Asp/Ornt

Both Caha, who works in the nano-syntax framework, and Williams deal with uniformly right-branching structures²³. Therefore, the predictions regarding possible portmanteau morphemes must be made with respect to the string of local case morphemes in (40), which is presented as a tree diagram in (41).



The Spanning/Contiguity approach argues that any contiguous string of projections can be lexicalized as a single vocabulary item. Based on the structure in (41), this approach predicts that the following portmanteau morphemes are possible: Pl+Dst, Dst+Mot, Pl+Mot (in the absence of distal and in the presence of Asp/Ornt), Mot+Asp/Ornt, etc.

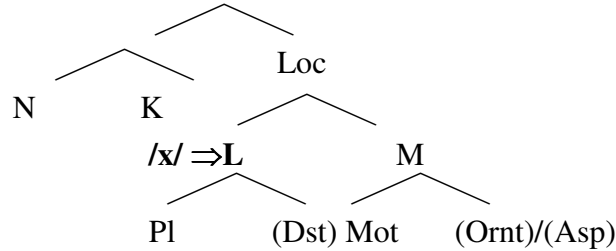
The VIP, however, can apply to the hierarchical structure of local case affixes proposed earlier in the paper, which I repeat below in (42).



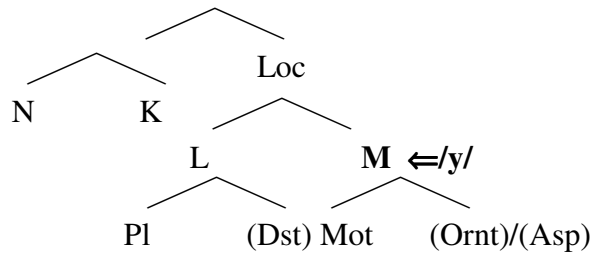
²³ Williams (2003) does not have only right-branching structures, his system is more complicated. However, I will leave intricacies of his system out of this paper for expository reasons.

The VIP predicts that only three portmanteaus are possible: Pl+Dst, Mot+Ornt/Asp, and L+M which constitutes a proper subset of predictions made by the Spanning/ Contiguity approach, as illustrated below in (43).

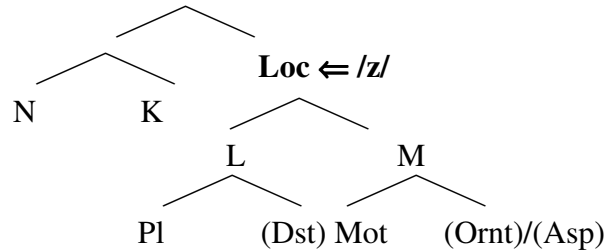
(43) a.



b.



c.



In the next part of the paper I will present the actual portmanteau data from the local case morphology in order to determine which approach makes more accurate predictions regarding possible portmanteaus.

4.2. Attested local case portmanteau morphemes

There are a number of cases of portmanteau morphemes among local case affixes, which correspond to multiple terminal nodes in (42) but cannot be segmented (“cumulative exponence”), e.g., in Estonian the terminative case is realized as a morpheme /ni/ which cannot be further divided into components and which represents Pl, Mot, and Asp.

There are only two classes of portmanteau morphemes found in the languages surveyed²⁴:

- 1) morphemes lexicalizing Mot and Asp (M) (43b);

²⁴ The fact that I did not find any portmanteau affixes realizing Pl and Dst terminal nodes (43a) may be due to the rarity of the distal marker.

- 2) morphemes lexicalizing L and M (Loc) (43c).

There are no cases of portmanteau morphemes which would lexicalize non-sister nodes, i.e., there are no portmanteaus expressing:

- 1) Dst and Mot;
- 2) Pl and Mot in the presence of Dst;
- 3) Pl and Asp/Ornt in the presence of Mot.

The data from local case morphology confirms the predictions made by the VIP and shows that the Spanning/Contiguity approach overgenerates possible portmanteau morphemes. Furthermore, the data from local case portmanteaus supports the hypothesis about the geometrical organization of the local case affixes. Now I would like to illustrate how the Portmanteau Principle works in the cases of local case portmanteau morphemes.

4.2.1. L(localizer) portmanteau morphemes

There are many languages that lack two nodes dominated by L: Place and Distal. The distal morphemes are particularly rare and are found only in one language: Tsez. In the majority of languages there is only one node available: Place. Consequently, there are no cases of portmanteau morphemes.

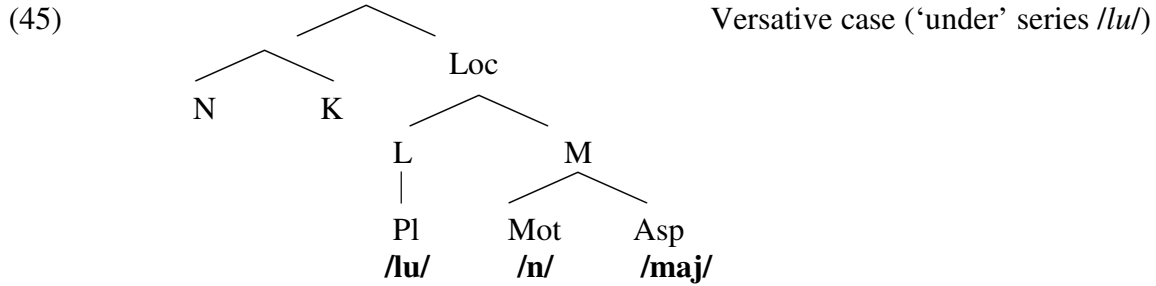
4.2.2. M(modalizer) portmanteau morphemes

Unlike the cases of L nodes, many languages from the survey have at least two distinct exponents of Motion and Aspect which get lexicalized as two distinct morphemes. Consider the following paradigm from Lak in (44).

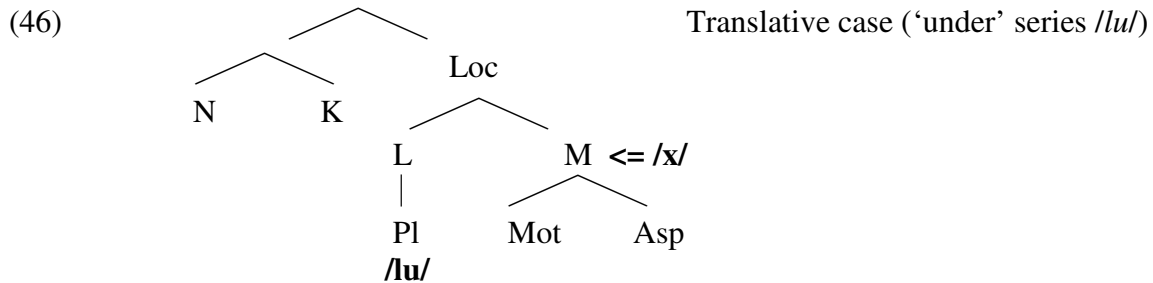
(44) *Lak*

/vu/	⇔	[+location, in]	Place
/j/	⇔	[+location, on]	
/lu/	⇔	[+location, behind]	
/ča/	⇔	[+location, near]	
/c/	⇔	[+location, at]	
/a/	⇔	[+motion, +source]	Motion
/n/	⇔	[+motion, -source]	
Ø	⇔	[-motion]	
/x/	⇔	[+motion, -direction]	
/maj/	⇔	[+direction]	Aspect

In Lak the versative case exponents are formed by lexicalizing three morphemes: Place (series markers), Motion ([+motion]), and Aspect ([+direction]), as shown in (45)²⁵.



However, the prolative case exponent in Lak consists of only two components, one of which is a relevant series marker (Place/ Axial), e.g., /lu/ (series marker 'under') + /x/. The second constituent conveys the meaning of both M nodes: Motion (there is movement) and Aspect (there is no direction of movement specified), in other words, the morpheme /x/ lexically realizes the features [+motion] and [-direction]. Recall that the VIP in (7) states that an exponent lexicalizes the minimal node dominating the features that the exponent expresses. In the case of prolative case in Lak, the minimal node that dominates the features [+motion] and [-direction] is M; hence, the portmanteau morpheme lexicalizes the whole node M, as shown schematically in (46).



Another piece of evidence in favor of the structure in (42) comes from Tsez. Recall that Tsez is the only language in the survey which encodes the notion of distality morphologically. Similarly to other languages with local cases, Tsez has seven series of cases with four cases in each series: essive, allative, ablative, and versative. Moreover, this language has an exponent for the node Distal. Interestingly, there are two allomorphs²⁶ of the versative case exponent, the choice of which depends on the presence/absence of the feature [distal]. The versative case is formed by combining three

²⁵ In (44) I leave out nodes which do not have morphological realization in Lak.

²⁶ Both allomorphs are portmanteau morphemes characterized by features [+motion, +direction].

elements: a series marker, a distality marker (*/(\bar{a})z/*), and a versative case suffix (*/a\gamma or/*), as in (47).

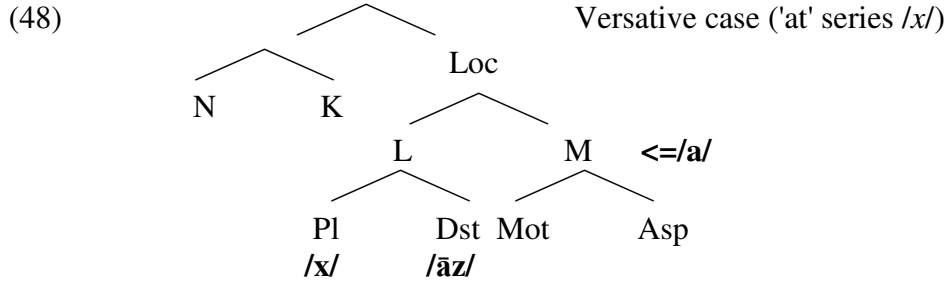
(47) besuro-x- Ø - γor vs. besuro-x- $\bar{a}z$ - a (Comrie and Polinsky 1998)
 fish- at-DIST-VERS fish- at-DIST-VERS

The VIP proposed in (7) states that the versative suffix is not a lexicalization of the Aspect node but of M, as in the Lak examples in (46). The versative morpheme lexicalizes the features [+motion] and [+direction], which are characteristic of nodes Motion and Aspects, respectively, both of which contribute their meanings to the M node. Hence, the versative suffix is an instance of lexicalization of the M node, as shown in (48).

The choice of the versative suffix depends on the distal marker, i.e., we are dealing with an instance of contextual allomorphy. Bobaljik (2001) distinguishes two types of contextual allomorphy: inwards-sensitive and outwards-sensitive. In the case of outwards-sensitive allomorphy, an affix is sensitive to the morpho-syntactic features of another more peripheral affix. This type of allomorphy is usually triggered by tense and agreement features. The second type of allomorphy (inwards-sensitive) is conditioned by morpho-phonological features such as class marking and other syntactically irrelevant diacritics.

In the case of Tsez, the versative suffix is sensitive to the features of the non-sister node Distal, i.e., it is a case of the inwards-sensitive allomorphy. Several proposals exist about the locality conditions under which such allomorphy can occur. There are two main lines of proposals. If we look at the structure in (48a), the data are compatible with either approaches relying on the notion of government and adjunctions (Halle and Marantz 1993, Chung 2007a) or approaches using adjacency (Embick 2009) to explain allomorphic relations. I suggest that the choice of an appropriate versative allomorph can be captured by the rule in (48b), which states that the context for allomorphy is the linear adjacency of the exponent of the feature [distal], which gets inserted earlier than the versative suffix²⁷.

²⁷ However, Chung's account can work for Tsez if we assume that Distal is adjoined to Place and, thus, it c-commands all nodes c-commanded by it sister, i.e. Distal c-commands M (cf. Halle and Marantz 1993: 146)



b. /a/ ⇔ [+direction, +motion]/ [āz] ____

4.2.3. Loc portmanteau morphemes

Besides cases of portmanteau morphemes lexicalizing the M node, there are also instances of portmanteaus of the Loc node. Consider the following example from Estonian. Estonian lexicalizes Place and Motion terminal nodes, expressing such cases as inessive, illative, elative and adessive, allative, and ablative, as in (49).

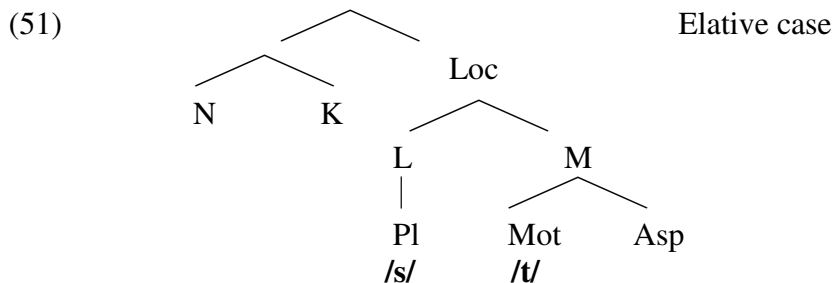
- (49) inessive –s adessive –l terminative –ni
 illative –sse allative –le
 elative –st ablative –lt

The rules of insertion for Estonian are given below.

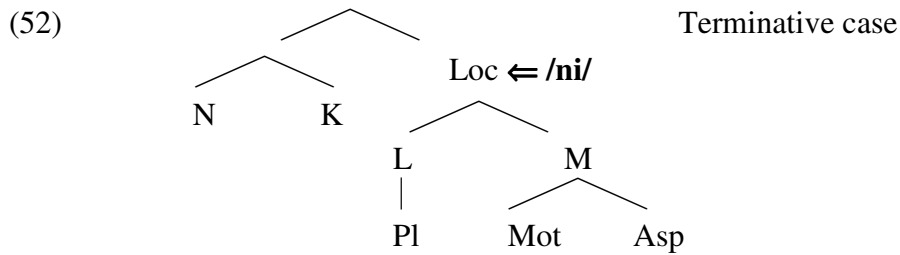
(50) Estonian

/ni/ ⇔ [+location, +motion, +telic]	Aspect
/s/ ⇔ [+location, +in]	Place
/l/ ⇔ [+location]	
/t/ ⇔ [+motion, +source]	Motion
/e/ ⇔ [+motion, -source]	
∅ ⇔ [-motion]	

The elative case exponent is /-st/ which consists of two parts. The first one is /s/ which lexicalizes the Place node specified with the feature [+location, +in], and the second one is /t/, which realizes the Motion node specified with the feature [+source], as illustrated in (51).



However, the Estonian language has a morpheme which is an exponent of terminative case (*/-ni/*). Unlike the elative case morphemes, the terminative case exponent cannot be further decomposed. It realizes features associated with several nodes: Place (L), Motion ([+motion]) and Aspect ([+telic]). The terminative morpheme */ni/* is another example of a portmanteau morpheme that lexicalizes the node Loc, which dominates the nodes L (Place [+location]) and M (Motion [+motion], Aspect [+telic]) and, which is characterized by three features (Loc= [+location, +motion, +telic]). In other words, the Estonian terminative suffix is a realization of the node Loc, as shown in (52).



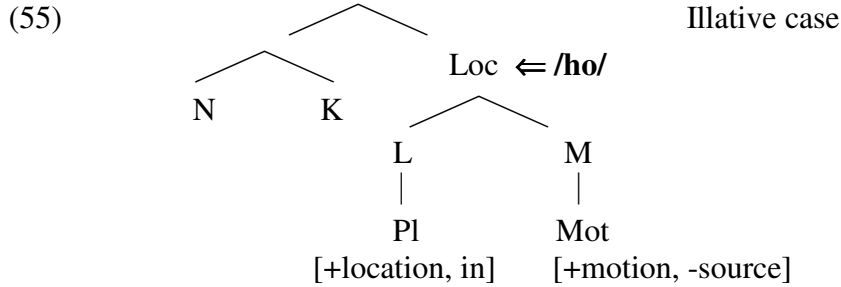
A similar case is found in Veps, a language related to Estonian. Unlike other Finno-Ugric languages, Veps has only four local cases which can be divided into two groups: “inner” and “outer” cases. Then, this language has two cases in each series: essive-ablative and allative. The Veps facts are summarized in the table in (53).

(53) Veps local cases

	essive-ablative	allative
/s/ ‘in’	s-Ø	ho
/l/ ‘at’	l-Ø	l-e

As can be seen in (53), Veps has a portmanteau morpheme for the illative case */ho/* which lexically realizes the nodes L and M. In other words it gets inserted at a non-terminal node, i.e., at the Loc node. The rules for vocabulary insertion in Veps are given in (54). The illative portmanteau is inserted at the Loc node, since this node dominates all the features the vocabulary item is specified for, as shown in (55).

- (54)
- /ho/ ⇔ [+location, in, +motion, -source]
 - /s/ ⇔ [+location, in]
 - /l/ ⇔ [+location]
 - /e/ ⇔ [+motion, -source]
 - Ø ⇔ elsewhere



In this section, I have discussed attested patterns of portmanteau morphemes which are predicted by the geometrical representation of the structure of local case morphemes and by the VIP.

4.3. Unattested portmanteau morphemes

The survey of 62 languages has shown the absence of the following patterns of portmanteau case exponents:

- (56)
- a) an exponent lexicalizing Distal and Motion²⁸;
 - b) an exponent lexicalizing Distal and Aspect;
 - c) an exponent lexicalizing Place and Aspect²⁹;
 - d) an exponent lexicalizing Place and Motion/Aspect/Orientation in the presence of Distal;
 - e) an exponent lexicalizing Place and Orientation/Aspect in the presence of Distal/Motion;
 - f) an exponent lexicalizing Place and Motion in the presence of Aspect/Orientation.

The fact that these patterns in portmanteau morphemes are not found in any language surveyed indicates that the structure in (42) correctly blocks unattested portmanteau morphemes that are impossible under the VIP in (7)³⁰. In comparing this aspect of the proposal here with competing approaches such as those incorporating

²⁸ As mentioned earlier, distal suffixes are found only in one language Tsez. However, the fact that I did not find the same morpheme in other language related to Tsez may be due to incompleteness of descriptive grammars. For example, Distal is not given even for Tsez in the sketch in Vinogradov (1967), but only in the article on Tabasaran and Tsez by Comrie and Polinsky (1998). I have not consulted more extensive descriptions for other Tsezic languages.

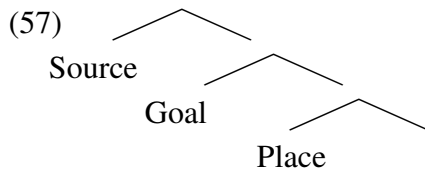
²⁹ 52% of the surveyed languages lexicalize Pl, Mot, and Asp. However, none of them have examples of portmanteau morphemes realizing Pl and Asp node.

³⁰ Recall that “non-head” nodes are given in parentheses.

Spanning/Contiguity, it is important to note that the theories do not differ in being able to describe the attested portmanteaus. Rather, the difference between the approaches lies in the types of portmanteaus that are excluded. The VIP is, in an important sense, more restrictive than the Spanning/Contiguity approaches, since only the VIP excludes overlapping portmanteau patterns (as discussed above), and excludes these patterns quite generally, where the the Spanning/Contiguity admits of them. In the domain considered in this paper, no overlapping portmanteaus arise—a striking generalization, which, if confirmed in other domains, provides support for the more restrictive VIP.

4.4. Local case syncretism

In addition to predictions about portmanteaus, Caha (2009) also makes predictions about possible syncretism patterns based on the Universal Contiguity Principle. One of the examples discussed by Caha is the case of spatial cases. The discussion of the syncretism patterns of local cases is built on work by Pantcheva (2008 a, b). Pantcheva (2008 a, b) suggests that the local cases have the following internal structure where Place (=locative) is the most embedded component with Goal (=allative) dominating it and Source (=ablative) dominating both Goal and Place.



The Universal Contiguity Principle predicts that there are three possible types of syncretism: Place can be syncretic with Goal, Place can be syncretic with both Goal and Source, or Source can be syncretic with Goal. Based on her survey of 53 languages and on surveys done by Blake (1977), Noonan (2008), and Rice and Kabata (2007), Pantcheva (2008b) claims that there are only two types of syncretism attested in local cases in the world’s languages: languages have either Source-Goal-Place or Goal-Place syncretism. Pantcheva’s results follow if one adopts the Universal Contiguity Principle: syncretism can target any contiguous string of projections. One of the types of syncretism predicted by the Universal Contiguity Principle (Goal-Source syncretism) is unattested. Pantcheva explains the missing type of syncretism by suggesting that “from a pragmatic point of view it is unacceptable to have such a contradictory lexical item” (Pantcheva 2008b: 27), which realizes two different directions of movement. The syncretism of

Source and Place is ruled out based on the structure in (32) and the Universal Contiguity Principle: it is not a contiguous string (Source-Place) since there is an intervening Goal. According to Pantcheva (2008b), the impossible type of syncretism is not attested.

The results of my study are somewhat different from Pantcheva's (2008b): one of the two types of syncretism not attested in her sample is actually attested in mine. Specifically, syncretism between locative and ablative (excluded by the Universal Contiguity Principle) is attested in Veps (a Balto-Finnic language) and Nivkh (a language isolate). For example, Nivkh has a locative-ablative case which combines functions of both locative (stative) and ablative cases. These two languages challenge the claims made by Pantcheva (2008b) and Caha (2009): the system they work in makes incorrect predictions about possible types of syncretism³¹. This particular type of syncretism is especially important since its existence is admitted by the theory proposed here. In the following paragraphs I will describe how these cases of syncretism may be explained by the framework proposed in the paper.

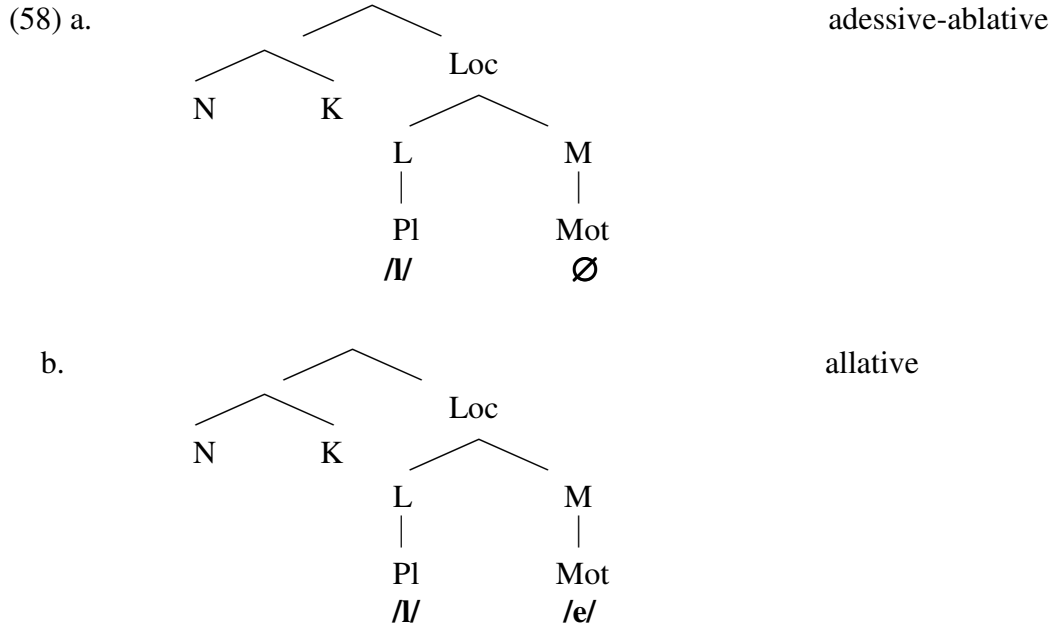
Veps data have been previously discussed in this section with respect to the illative portmanteau morpheme */ho/*. Recall that there are four cases, two of which are syncretic: the two essive cases are syncretic with the ablative cases, i.e., inessive is syncretic with elative and adessive is syncretic with allative.

The cases of syncretism under discussion can be easily explained by assuming that what is responsible for local case syncretism is the feature changing operation which involved features under one node (cf. Noyer 1997, Calabrese 2008). What undergoes change is the feature combination under Mot, while the features under Pl remain unchanged since both "inner" and "outer" [+source] cases are syncretic with stative cases. The original feature specification for the Mot part of ablative and elative cases is [+motion, +source]. I hypothesize that there is an active constraint against this feature combination: *[+motion, +source]. One of the ways to avoid this violation is to make changes in the feature combinations. If the feature [+motion] is deleted in the offending combination of features for the ablative cases, then the ablative is characterized by only

³¹ Caha (2009) points out that some instances of syncretism violate the Universal Contiguity Principle, but all these cases are instances of "accidental syncretism", which is caused by some language internal phonological processes. In the case of Veps, there is nothing in the phonology of Veps to suggest that the essive-ablative syncretism can be explained by some purely phonological reasons (Zaitseva 1981).

one feature [+source]³². As can be seen in (57), the only exponent that can be inserted in this case is the elsewhere candidate, i.e. essive. In (58) I show how the system works in Veps for the two cases of the // -series.

- (57) /ho/ ⇔ [+location, in, +motion, -source]
 /s/ ⇔ [+location, in]
 // ⇔ [+location]
 /e/ ⇔ [+motion, -source]
 Ø ⇔ elsewhere



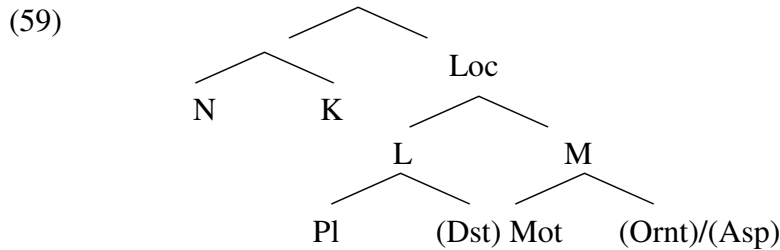
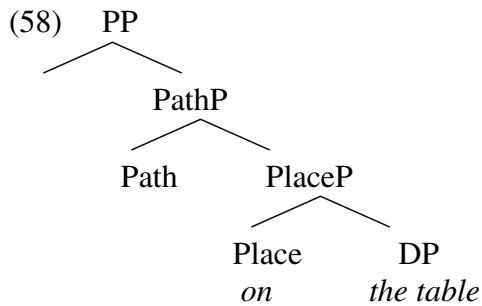
In this section I tested predictions made by two competing approaches to portmanteaus (the VIP and the Spanning/ Contiguity approach) against the data from local case portmanteaus. First, I presented the results of the cross-linguistic survey of local case morphology, on the basis of which I proposed the novel non-linear structure for local case affixes (25). Then, I compared the predictions made by the two approaches about local case portmanteau morphemes based in the structures in (24) and (25). The predictions made by the VIP (based on (25)) are more accurate than the predictions made by the competing approach: the Spanning/Contiguity approach overgenerates predicting portmanteaus unattested in the survey. More evidence in favor of the VIP and the

³² The Veps facts can also be captured by Calabrese's system. He suggests that a disallowed feature combination can be avoided by featural repairs: the relevant feature is first deleted and then the same feature is automatically inserted with an opposite value. In the case of Vep, first, the feature [+motion] is deleted and then the feature with the opposite value [-motion] is inserted.

geometric organization of local case affixes comes from attested patterns of syncretism between local cases. In the next section, I will discuss how the morphological structure in (25) is related to the syntactic structure in (2).

5. How similar are local cases and PPs?

In the beginning of the paper, I referred to a question about similarities between PP structure (59) and local case affixes structure (60), which will be addressed in this section. I will explain how the morphological structure in (60) is connected to the syntactic structure in (59).

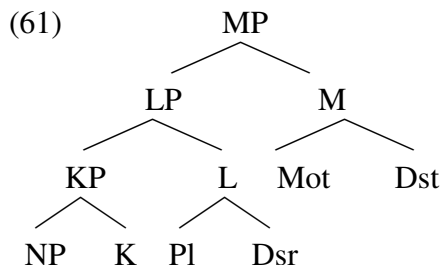


A comparison of (58) and (59) reveals that the structure of local case affixes converges with work on spatial PPs (Koopman 2000, den Dikken 2006, Svenonius to appear, among others), at least in one aspect: both approaches share the assumption that there are two components in the structure: locative (=L=PlaceP) and directional (=M=PathP). However, in the finer details, my proposal differs from the rigidly right-branching structures, as morphological evidence suggests that Distal and Aspect/Orientation are modifiers of Motion (=Path) and Place. This structure may be generated in the syntax either by allowing base-generation of complex heads and/or by allowing rather head movements.

Before going into the analysis of the connection between the syntax and morphology of PPs and local cases, it is necessary to spell out some of the assumptions. Recently it has been proposed by Asbury (2008), Spencer (2008), Trommer (2008) that a

language (Hungarian) with a local case system similar to the languages discussed earlier in this paper does not actually have cases. Asbury (2008) suggests that all cases are morphological realizations of some functional projections, e.g., she argues that local cases in Hungarian are realizations of relevant P heads, whereas other (core) cases are realization of D and ϕ heads. Spencer (2008) proposes a similar view on the case system in Hungarian. Spencer draws parallels between cases and adpositions in Hungarian to conclude that Hungarian nouns inflected for case are actually different forms of nouns which reflect a relevant grammatical function. Another proposal about the status of local cases in Hungarian is advocated by Trommer (2008) who suggests that Hungarian local cases and adpositions are the same phenomenon syntactically, i.e, they are PPs. The fact that they find different realizations at PF is due to the differences in their phonological form: phonologically smaller realizations of P get integrated into a preceding word, whereas phonologically bigger realizations of PP (adpositions) do not undergo this process. In this paper I adopt some ideas suggested by Asbury (2008), Spencer (2008), and Trommer (2008), i.e., local case affixes are realization of PPs (adpositions), I also assume that they behave case-like due to their phonological nature.

In the remainder of this section I will take the reader through the steps of deriving the hierarchical structure in morphology from more conventional syntactic structure. All languages in the survey are head-final, therefore, I will have syntactic trees which reflect this property of the languages. The tree in (61) is the syntactic tree which is based on the morphological structure in (60). In (61) MP corresponds to PathP and LP corresponds to PlaceP. However, the structure in (61) is notably different from (59): L (=Place) and M (=Path) heads are internally complex. I assume that the complex heads are base-generated. M has two heads: Mot, which contributes the core meaning, and Asp/Ornt, which can modify Mot contributing additional meanings. L has two heads as well: the core head is Pl which can be in its turn modified by another head Dst.

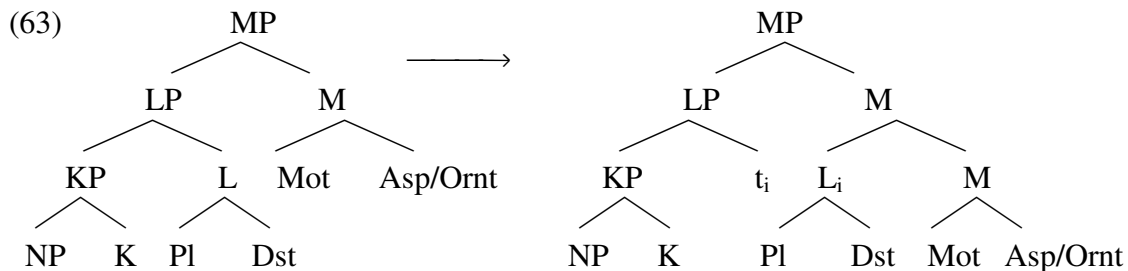


The next step in deriving the correct morphological structure is to have the head movement of the complex head L (=Place) to the complex head M (=Path). The head movement of L (=Place) to M (=Path) is not that uncommon in languages without local cases. Consider the following two examples from Russian and English.

(62) a. iz- pod doma (Russian)
 from underhouse
 Path Place

b. in- to the house
 Place Path

If the structures in (60) and (61) are correct, in English the Place (=L) head ('in') undergoes head movement to Path (=M), whereas in Russian it is not necessary. It is important to point out that the evidence for the L to M head movement in the realm of morphology comes from the existence of portmanteau morphemes lexicalizing both heads, which has been discussed in the previous section³³. The application of the head movement under discussion would result in the structure in (63), which is identical to the morphological structure in (60).



The correct morpho-phonological form when spatial expressions appear to be similar to case affixes is derived either by 'glomming', i.e. the complex head M is pronounced as a single word, suffixal (or enclitic) to the final element of the NP (Embick and Noyer 2001, Trommer 2008) or by subsequent head movement of N+K to M (Chomsky 1991, Bobaljik 1997).

Conclusion

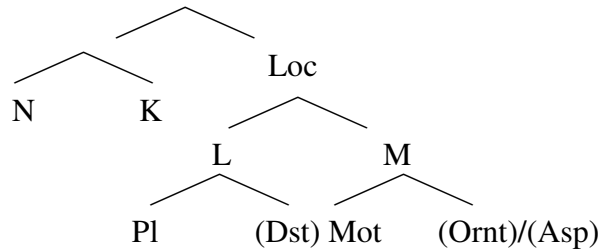
The present paper has addressed both descriptive and theoretical questions in the morphology of local cases. First, I have presented and discussed the result of the study of 62 languages with local cases. All 62 languages, without exception, conform to the linear

³³ It could be the case that the languages with local cases are not uniform with respect to the L to M head movement: the languages without L+M portmanteaus may not have this movement.

order in (64). Furthermore, I have suggested that local case affixes have a complex internal organization, as in (65).

(64) N-K-Pl-Dst-Mot-Asp/Ornt

(65)



I have provided evidence for the structure in (50) which comes from attested and unattested portmanteau morphemes and implicational universals.

The discussion of portmanteau affixes has raised an important issue about how to deal with this type of morphemes. I have discussed both DM and non-DM approaches and showed that the non-DM proposals run into a problem of overgeneration of local case portmanteaus. Furthermore, I have provided a new approach to vocabulary insertion (the Vocabulary Insertion Principle) which allows insertion at non-terminal nodes. I have also suggested that the adoption of the VIP would eliminate a necessity for the DM operation of fusion. Results of a preliminary survey of tense-aspect-mood morphology (Radkevich 2009) show only patterns of portmanteau morphemes predicted by the VIP.

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Appendix 1: Languages surveyed

- (1) **Daghestanian** (Agul, Akhvakh, Andi, Archi, Avar, Bagvali, Batsbi, Bezhta, Botlikh, Budukh, Chamalal, Chechen, Dargwa, Ginukh, Godoberi, Hinalug, Hunzib, Ingush, Karata, Lak, Lezgian, Rutul, Tabasaran, Tindin, Tsakhur, Tsez, Xvarshil).
- (2) **Finno-Ugric** (Erza, Estonian, Finnish, Ižor, Karelian, Khanty, Komi-Permian, Komi-Zyrian, Mansi, Mari (Eastern and Mountain), Mokša, Saam, Udmurt, Veps, Votic).
- (3) **Samoyed** (Enets, Nenets, Nganasan, Selkup).
- (4) **Manchu-Tungusic** (Even, Evenki, Nanai, Negidal, Oroch, Orok, Ulchi, Udeghe).
- (5) **Chukotko-Kamchatkan** (Alutor, Chukchi, Itelmen, Kerek, Koryak).
- (6) **Eskimo-Aleut** (Yupik).
- (7) **Language isolates** (Ket, Nivkh, Kolyma Yukaghir, Tundra Yukaghir).

Appendix 2: Case definitions by Blake (2004).

Ablative case expresses the role of the source, which is expressed by ‘from’ in English.

Adessive case expresses ‘at’ or ‘near’.

Allative case expresses ‘to’.

Approximative case

Elicative case expresses ‘out of’.

Essive case indicates location.

Illative case expresses ‘into’.

Inessive case expresses ‘inside’

Prolative case expresses ‘along’.

Terminative case expresses the endpoint.

Translative case expresses ‘through’.

Versative case expresses ‘towards’.