On Location: the Structure of Case and Adpositions

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M.A., University of Kansas, 2005
M.A., University of Connecticut, 2008

A Dissertation
Submitted in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Philosophy
at the
University of Connecticut

APPROVAL PAGE

Doctor of Philosophy Dissertation

On Location: the Structure of Case and Adpositions

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Хотели как лучше, а получилось как всегда.
В.С. Черномырдин

CHAPTER 1: INTRODUCTION

In this dissertation I investigate the morphological and syntactic structure of spatial expressions and their theoretical implications. Three main contributions are envisaged: (i) a universal geometry for the representation of local cases, (ii) a novel approach to vocabulary insertion at non-terminal nodes, including a new proposal for the generation of portmanteau affixes, which is formalized as the Vocabulary Insertion Principle, and (iii) a proposal regarding cross-linguistic variation in the functional structure of adpositional phrases (PPs).

Languages differ with respect to the linguistic means they use to express spatial relations: some languages use adpositions (1), whereas others use spatial cases (2).

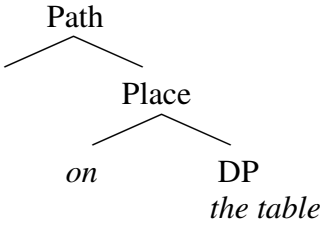
(1) iz doma (Russian)
from house
'from a house'

(2) talo- sta (Finnish)
house- inside.from elative case
'from (inside) a house'

The syntactic structure of PPs has been at the center of research for three decades. Since van Riemsdijk (1978) it has been recognized that spatial PPs have a complex internal structure, beyond simply [$_{PP}$ P [NP]]. Although many current proposals (see the references below) differ in many respects, there is a consensus that there are at least two layers of functional structure within spatial PPs: an inner layer denoting location, and an outer layer denoting direction/motion (with authors disagreeing as to whether the outer

layer is present in static/locational expressions such as 'on the table'), as in (3). This complexity is transparent in 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. Ranging from the minimum structure in (3), many proposals (especially Bošković 2004, Den Dikken 2006, Svenonius to appear) posit even more articulated functional structure within PPs.

(3)



In contrast to the syntactic structure of spatial PPs, the morphological structure of the corresponding local cases has received little attention, beyond the observation that case affixes have an internal complexity roughly corresponding to (3). In this dissertation, I will investigate in closer detail the morphology of local cases, investigating at the question of to what extent the morphology of languages that use complex case-marking instead of adpositions can be related to the proposals about the complex structure of PPs. I examine the morphology of approximately 111 languages which have several local cases. On the basis of this survey (see Radkevich 2008 and below) I propose a novel universal structure for local case affixes. The key argument for the geometrical organization I propose is based on evidence from the cross-linguistic distribution of portmanteau morphemes and implicational universals.

The discussion of portmanteau morphemes raises important theoretical questions about morphological operations. In particular, I propose a new approach to vocabulary insertion, which includes the Portmanteau Principle (see below) as an alternative to Fusion, a post-syntactic morphological operation which accounts for cases of cumulative exponence/portmanteaus in Distributed Morphology (DM). The difference between the Portmanteau Principle and Fusion is mainly two-fold: first, I argue for the possibility of vocabulary insertion at non-terminal nodes; second, the Portmanteau Principle eliminates a conspiracy effect involving structure changing operations driven by lexical items, which is invoked in approaches relying on Fusion.

I also explore the syntactic structure of PP and its relation to the structure of local case affixes. It has been previously suggested that PPs have a full clausal structure similar to CPs (Bošković 2004, Noonan 2006, Den Dikken 2006). In this dissertation I argue on the basis of a comparative study of Slavic and Romance languages that PP functional structure is not uniform across languages. More specifically, I propose that there may be cross-linguistic variation in the amount (but not the ordering of) functional projections in the PP, in line with similar proposals about variation in functional inventories in the inflectional domain (Bobaljik 1995, 2002, Bobaljik & Thráinsson 1998), in the size of infinitives (Wurmbrand 2001, etc.), and the DP/NP domain (Corver 1992, Bošković 2008). Below I will provide a brief overview of the three main chapters of the dissertation.

Chapter 2: Local cases and their structure

In chapter 2 I discuss the results of a survey of about 111 languages (drawn from 19 language families and four language isolates). It has been noted by Comrie and Polinsky (1998) and van Riemsdjik and Huybregts (2001), among others, that local case affixes are internally complex; however, there has been no systematic cross-linguistic study of patterns in the internal structure of these affixes. A clear example of such decomposition is provided by Akhvakh, a Nakh-Daghestanian language, spoken in the republic of Daghestan, Russia (Murkelinsky 1967). Akhvakh has a system of series markers (4), which basically corresponds to adpositions in languages which do not have local cases. Each series marker can combine with 4 different case markers: essive, allative, ablative, and translative.[1]

(4) Akhvakh local cases

Series marker	Essive	Allative	Ablative	Translative[2]
-g 'on'	-e	-a	-u	-ne
-xar 'at'	-e	-a	-u	-ne
-x' 'at'	-e	-a	-u	-ne
-q 'under'	-e	-a	-u	-ne
-l 'in'	-e	-a	-u	-ne

The Akhvakh data show that there are at least three components in the structure of local cases: locational (series markers) and directional (case markers), which is similar to the syntactic proposals about directional PPs being built on top of locational ones, i.e., an

[1] A list of definitions of various local cases is given in Appendix 1.
[2] The translative case marker in Akhvakh is attached to the combination of a series marker and the ablative marker.

allative case marker, which has a directional meaning (=to) attaches to the series marker, which corresponds to locational adpositions.

The results of the survey suggest that there are 4 types of local case affixes. I follow Kracht (2002) in assuming that there are two main components: Localizer (L), which denotes meanings connected with location, and Modalizer (M), which denotes meanings connected with movement associated with L. There are two morphemes which denote location: Place morphemes express spatial relations {in, on, at, etc.}; Distal affixes encode proximity. There are three types of M morphemes: Motion affixes denote the presence of motion (ablative and allative cases) or absence of motion (essive case), Aspect morphemes specify whether the movement has a specific trajectory (towards a goal) or not and whether the movement reaches that goal or not.

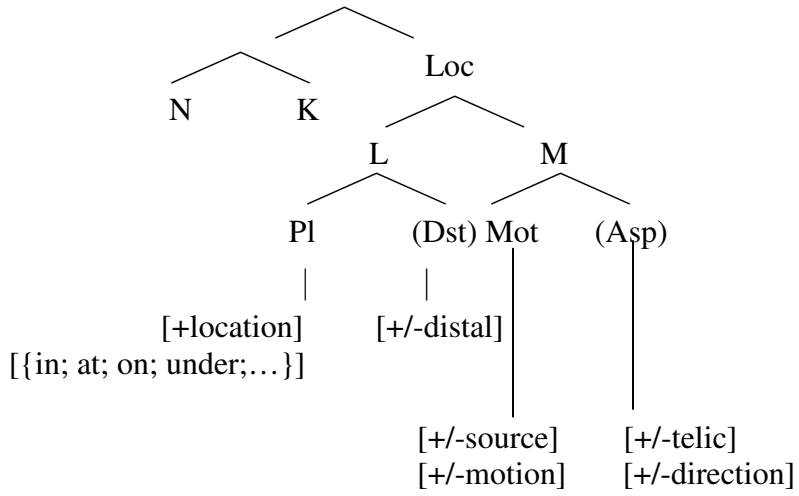
I propose that combining these 4 types of morphemes results in the linear order in (5), which represents the linear order of the spatial morphemes to which all 111 surveyed languages conform.

(5) N- K[3]- Place- Distal- Motion- Aspect

I also propose that local case affixes have a complex internal organization, as in (6).

[3] K stands for cases (ergative, genitive) on the basis of which local cases are formed, e.g. local case affixes in Nakh-Daghestanian languages are attached to the ergative case forms, whereas all local cases in Estonian, for example, are built on the top of the genitive case.

(6)



I argue that nodes in the structure in (6) have different status: there are head nodes (Place and Motion), which contribute the core meaning to the projection, and non-head nodes, which provide additional meanings, modifying what is expressed by the head nodes. The non-head nodes are similar to adverbs; they are modifiers that adjoin to what they modify. This investigation is carried out in the framework of DM, which postulates that lexical items (suffixes here) 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.

Evidence in favor of the structure in (6) comes from two sources: attested and unattested portmanteau morphemes and implicational universals.

There are languages in which spatial morphemes get inserted only into terminal nodes (Pl, Dst, Mot, and Asp), i.e. when it is possible to distinguish several smaller morphemes within a complex local case affix. On the other hand, there are a few cases of portmanteau morphemes, which correspond to multiple terminal nodes in (6) but cannot

be segmented ("cumulative exponence"),[4] 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 types of portmanteau morphemes found in the languages surveyed:

1) a morpheme lexicalizing Mot and Asp (M);
2) a morpheme lexicalizing L and M (Loc).

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 in the presence of Mot;

To account for the distribution of attested and unattested portmanteau morphemes, I propose the Vocabulary Insertion Principle (the VIP), which is discussed in more detail in chapter 4. The definition of the VIP is given below.

[4] Portmanteau local case morphemes are less common than affixes which can be decomposed into smaller units.

(7) *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.

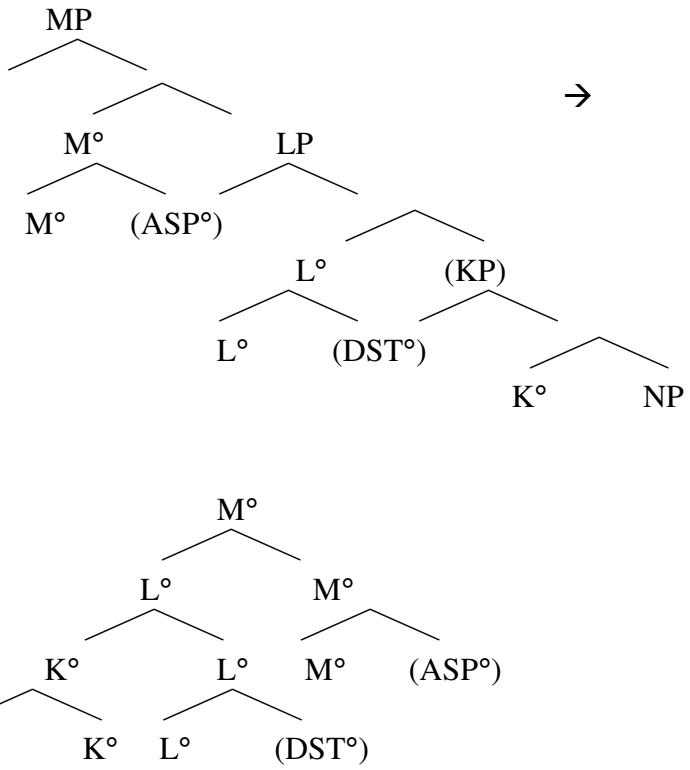
I show that the structure in (6) along with the VIP (7) correctly predicts the distribution of attested and unattested cases of portmanteau morphemes. In chapter 2 I also compare predictions regarding possible portmanteau morphemes made by the VIP and other non-Fusion approaches (Williams 2003, Caha 2009).

The second argument in favor of the proposed geometrical organization of local cases comes from implicational universals. Based on the evidence found in the data from languages in my survey, 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.[5] Thus, the presence of the node Distal (under L) implies the existence of the head node Place. Likewise, lexical realization of 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. It is important to point out 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. By proposing the structure in (6), I unify the three implicational universals discussed above: the presence of non-head nodes entails the presence of head-nodes.

[5] Only terminal nodes show a head/ non-head asymmetry for the purposes of implicational universals of this type: the presence/absence of one of the intermediate nodes (L or M) does not imply the presence/absence of the other node, both nodes are always present in the languages surveyed.

I also argue that the morphological structure in (6) can be derived from the syntactic structure in (3), where PlaceP correspond to LP and PathP to MP. First, the application of successive cyclic head movement yields the structure in (8).

(8)



The output of the head movements in (8) is still different from the morphological structure of local cases in (6). To make a bridge between these two structures, I apply a morphological operation of Rebracketing (cf. Sproat 1985, Embick and Noeyr 2001, Williams 2003), which applies to adjacent heads and affects their constituency without changing their order, as schematically illustrated below.

(9) A> B> C → [A B] > C

If we apply the operation of rebracketing to the output of (8), we get the structure in (10), which is identical to the morphological structure in (6).

(10) [[[N K] [L (DST)]] [M (ASP]] → [[N K] [[L (DST)] [M (ASP]]]

In chapter 2 also discusses the issue of case syncretism. The results of my survey indicate that there are several instances of case syncretism which can be broadly divided into two groups: case syncretism between local cases and case syncretism between local and non-local cases (Baerman & Brown 2005). I appeal to underspecification to capture the attested patterns of local case syncretism.

Chapter 3: On the functional structure of PP

In chapter 2, I propose that the structure of PP is the base from which the structure in (6) is derived and assume that local cases are actually adpositions, which form a phonological unit with the noun (Trommer 2008, Spencer 2009, Asbury 2008). Moreover, the structure of local cases is the result of the application of morphological rebracketing (cf. Williams 2003). This chapter addresses the following issues: 1) functional structure of PP; 2) cross-linguistic variation in this structure.

It has been proposed in the literature that PPs perhaps have a full clausal structure similar to CP (Bošković 2004, Noonan 2006, Den Dikken 2006). In chapter 3 I examine the structure of PPs with respect to their clausal characteristics. Empirical evidence for functional structure in PPs is presented in Bošković (2004a), who provides arguments in favor of CP/PP parallelism based on similarities between quantifier float in VP and PP. I

use three diagnostics for PP-internal functional structure across Slavic and Romance languages: quantifier float in PPs (Koopman 2000, Bošković 2004a), binding facts, and measure phrases in PPs (Koopman 2000, Den Diken 2006). The results of the study indicate that the languages vary in their behavior regarding these diagnostics, which I interpret as indicating that languages have different amounts of functional structure in PPs. Below I provide examples from three Slavic languages (Russian, Czech, and Serbo-Croatian) to briefly illustrate how languages differ with respect to the three diagnostics.

Bošković (2004) uses the possibility of quantifier float within PPs as an argument for additional functional structure in PPs. All the three languages discussed here allow quantifier float in the clausal domain, but differ with respect to the availability of quantifier float in PPs. Russian and Czech pattern together (11)-(12) in that they disallow quantifier float in PPs.

(11) *Ivan prošol vdol' rek vsex. (Russian)
Ivan walked along rivers all
'Ivan walked along all rivers'

(12) *Honza se podíval do barú všech. (Czech)
John refl looked into bars all
'John looked into all bars.'

However, Serbo-Croatian (13) permits quantifier float in PPs.

(13) Plovili smo niz reke sve. (Serbo-Croatian)
Swam are down rivers all
'We sailed down all rivers.'

I argue that Russian and Czech PPs do not have enough structure to allow quantifier float in PPs, in contrast to Serbo-Croatian. More precisely, I argue that PPs in Russian and Czech are smaller than CPs, unlike SC where PPs have a CP-like structure.

It is well-known that in many languages the complementarity between a pronoun and an anaphor breaks down in PPs (Reinhart and Reuland 1993). This can be taken as an indication of additional functional structure in PPs, such that the object of the preposition is not necessarily local to the clausemate subject (Hestvik 1990, Lee-Shoenfeld 2008). The Slavic languages under consideration vary with respect to this diagnostic. Russian (14) and Czech (15) disallow a bound reading of pronouns, while SC allows it, as in (16).

(14) Ivan$_i$ položil ružjo vozle sebja$_i$/*nego$_i$. (Russian)
Ivan put gun near self/ him

(15) Marie$_i$ položila ten revolver vedle sebe$_i$/*nii$_i$. (Czech)
Maria put this gun near self / her

(16) Jovan$_i$ je video psa blizu sebe$_i$/?njega$_i$. (Serbo-Croatian)
Jovan is saw dog near self/ him

Thus, Russian and Czech behave as if their PPs do not constitute a separate binding domain, whereas SC PPs constitute a separate binding domain, allowing pronouns to be bound in PPs. These facts are consistent with my hypothesis about the variation in the size of PPs: SC PPs have a full clausal structure, in contrast to Russian and Czech PPs, which have a smaller structure.

It was pointed out by Den Dikken (2006) for Dutch and English that measure phrases in PPs can refer either to location or direction, as in (17), which is ambiguous. (17) can mean either that the ball's path was at a height of 10 meters above the fence (Place) or that the end location of the ball was 10 meters on the far side of the fence (Path).

(17) John threw the ball ten meters over the fence.

Den Dikken proposes a structural account for this asymmetry, tying the readings to different structural positions (scopes) of the modifiers in an articulated PP structure. Interestingly, Serbo-Croatian (18) allows two types of NP measure phrases in PPs, similarly to Dutch and English, which were discussed by Den Dikken.

(18) a. Jovan je bacio loptu **10m** iznad ograde. (Place) (SC)
Jovan is threw ball 10m over fence

b. Jovan je bacio loptu **10m** preko ograde. (Path)
Jovan is threw ball 10m over fence

Czech also allows MPs in both directional (19) and locational PPs (20).

(19) Honza hodil ten balón **10 metrů** za plot. (Path) (Cz)
Honza threw this ball 10 meters behind fence

(20) Honza hodil ten balón **10 metrů** přes plot. (Place)
Honza threw this ball 10 meters over fence

Russian does not allow MPs in either type of PP; MPs are always introduced with the help of another PP, as in (21)-(22).

(21) a. *Ivan brosil mjač **10 metrov** čerez zabor. (Path) (Ru)
Ivan threw ball 10 meters over fence

b. Ivan brosil mjač **na 10 metrov** čerez zabor.
Ivan threw ball on 10 meters over fence

(22) a. *Ivan podbrosil mjač **10 metrov** nad zaborom. (Place)
Ivan threw ball 10 meters over fence

b. Ivan podbrosil mjač **na 10 metrov** nad zaborom.
Ivan threw ball on 10 meters overfence

The difference regarding NP measure phrases in PPs can be also accounted for by appealing to the idea that PPs have different sizes in the three languages, given that Czech PPs are richer than Russian PPs, though 'poorer' than Serbo-Croatian PPs.

In chapter 3 I examine data from five Slavic languages (Russian, Polish, Czech, Slovak, and Serbo-Croatian) and four Romance languages (French, Romanian, Spanish, Galician) with respect to the tests noted above. The results of these tests indicate that languages can have different amount of functional structure: Russian and French have the smallest PPs, whereas Serbo-Croatian, Spanish, and Galician have the largest PPs, since they allow quantifier float within PPs which requires most functional structure. I also argue that the amount of functional structure can vary even in the same language, as in Serbo-Croatian.

In the second part of the chapter I discuss one component of Russian PP, namely measure phrase PPs. I investigate their interaction with such syntactic phenomena as left-branch extraction, approximative inversion, and preposition doubling.

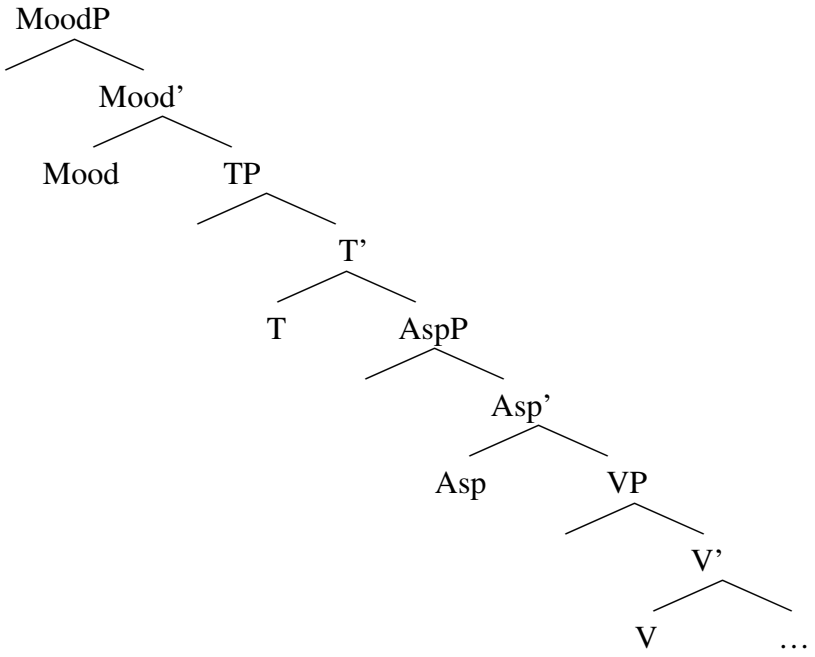
Chapter 4: the VIP in Tense-Aspect-Mood morphology

The main goal of this chapter is to test if the VIP can be extended to other domains outside local case morphology. Two areas that are well-known for an abundance of cumulative exponents are the Tense-Aspect-Mood (TAM) morphology and Subject and Object agreement morphology. Chapter 4 is devoted to testing the VIP in a different domain and to discussion of the TAM portmanteaus. I test predictions of the VIP against

data from a cross-linguistic survey of 200 languages conducted for this study. I show that a morphological operation of rebracketing along with the VIP correctly predicts possible and impossible portmanteaus in this domain.

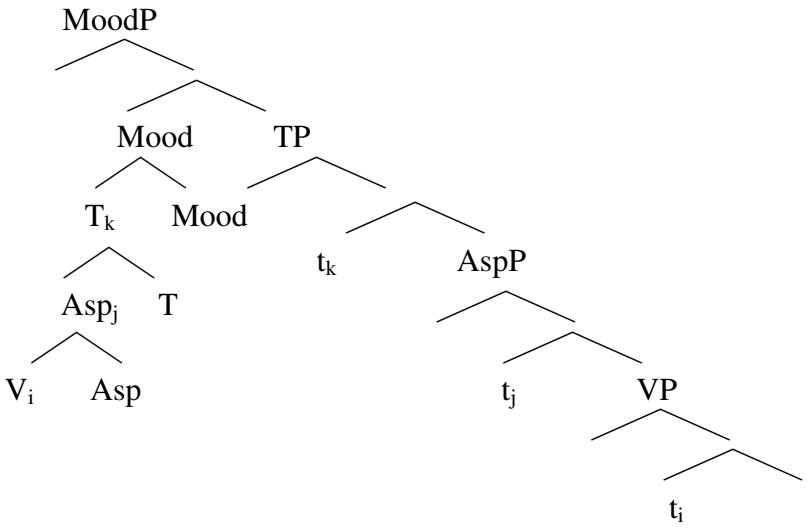
It is widely assumed that Tense, Aspect, Mood, and V heads are in a hierarchical relationship with each other (Cinque 1999, Julien 2002), as in (23).

(23)



As can be seen in (23), there is no context for generation of portmanteau morphemes, since none of the heads is in the sisterhood relation with another head. Then, the question arises regarding how it is possible to derive morpho-syntactic configurations eligible for generation of portmanteau morphemes. One option is to appeal to the successive cyclic head movement of V, which results in the configuration (24), which is eligible for several types of portmanteaus: V+Asp, V+Asp+T, V+Asp+T+Mood.

(24)



The structure in (24), however, is not sufficient to account for portmanteau affixes which do not involve V. I suggest appealing to an operation of morphological rebracketing (cf. Sproat 1985, Embick and Noyer 2001, Williams 2003). This is a post-syntactic morphological operation which applies to adjacent heads and which affects structural relationships between heads, but does not change their linear order, as shown in (25).

(25) X> Y> Z → [X Y]> Z

The application of morphological rebracketing achieves both goals: it creates configurations eligible for portmanteau morphemes and at the same time it does not generate unattested morpheme orders. In (26) I show how rebracketing can apply to TAM heads in the structure in (24).

(26) Morphological rebracketing and TAM morphemes

(a) Mood >T >Asp >V → Mood > [**T Asp**]> V

(b) Mood> T> Asp> V → [**Mood T**]> Asp> V

(c) Mood> T > Asp > V → [**Mood > [T Asp**]]> V

The data from the cross-linguistic survey of TAM morphology show that the only types of portmanteaus attested are the ones in (26), which involve adjacent heads.In other words, the combination of morphological rebracketing and the VIP makes correct predictions regarding possible and impossible portmanteau morphemes.

In chapter 4 I also consider other options for creating eligible configurations for TAM portmanteaus, such as head movement and morphological merger (Marantz 1988, Bobaljik 1995). Below I will briefly describe the main problem that arises if these two operations are applied.. Head movement can change morpheme orders, i.e., Asp to T and T to Mood movements can result in the V-T-Asp-Mood and T-Mood-Asp-V morpheme orders respectively, as in (27), which is unattested both in my survey and in Julien's (2002) survey of 500 languages.

(27) Head movement and TAM morphemes[6]

[$_{MoodP}$ [Mood [$_{TP}$ [T [$_{AspP}$ [Asp [$_{VP}$ [V → [$_{MoodP}$ [Mood [$_{TP}$ [Asp T [$_{AspP}$ [t [$_{VP}$ [V

(b) [$_{MoodP}$ [Mood [$_{TP}$ [T [$_{AspP}$ [Asp [$_{VP}$ [V → [$_{MoodP}$ [T Mood [$_{TP}$ [t [$_{AspP}$ [Asp [$_{VP}$ [V

[6] I give only a couple of the derivations involving head movement, morphological merger, and morphological rebracketing, which will be discussed in more detail in chapter 4.

Morphological merger shares one of the problems with head movement: the application of morphological merger can lead to unattested morpheme orders, since morphological merger can involve the change in morpheme order, as shown in (28).

(28) Morphological merger and TAM morphemes

(a) [Mood [T [Asp [V → [[T Mood [Asp [V

(b) [Mood [T [Asp [V → [Mood [[Asp T [V

In chapter 4, I also compare the VIP with the Spanning/Contiguity approach, which argues that any contiguous string of projections can be realized as a single vocabulary exponent. The Spanning/ Contiguity approach makes similar but less subtle predictions: it predicts that only adjacent functional heads can be expressed as portmanteaus, but this approach does not rule out overlapping portmanteaus,[7] which are unattested cross-linguistically and predicted to be impossible by rebracketing which results cannot be undone.

The last area of investigation of chapter 4 is the subject-object portmanteau morphemes. The most important part for generation of cumulative exponents is adjacency. It is impossible to test the VIP in languages which have only portmanteau morphemes for all possible combinations of arguments, since there is no evidence about the position of these morphemes before they turned into portmanteaus. Nevertheless, it is possible to test the VIP in languages which have both types of exponents. The VIP predicts that only in languages which have adjacent non-portmanteau subject and object

[7] By overlapping portmanteau morphemes I understand cases where two portmanteaus realize the same head, i.e., A+B and B+C are overlapping portmanteaus in the string A-B-C.

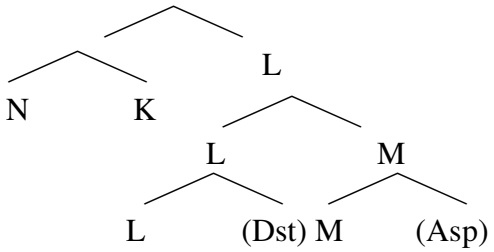
affixes, it is possible to find portmanteau agreement morphemes. According to the results of my survey, the prediction is borne out. The VIP and morphological rebracketing correctly predict the distribution of portmanteau morphemes in the verbal domain.

CHAPTER 2: THE GEOMETRY OF LOCAL CASES

1. Introduction

Despite numerous proposals about the structure of adpositions, which range from a fairly simple structure which has one or two PP projections and a complement to a rather complex structure with a variety of PP projections (Koopman 2000, Den Dikken 2006, Svenonius to appear, among others), there are very few studies of local cases (Kracht 2002, Asbury 2008). On the premise that local cases, i.e., cases that have locational and directional meanings, and adpositions are different surface manifestations of a common underlying (i.e., syntactic) structure, morphological evidence regarding local cases has a potential to provide an important source of evidence about this structure, as well as the theory of the syntax-morphology interface more generally. In this chapter, I present a survey of local case morphology from 111 languages. All the morphological evidence is consistent with a universal structure for local cases, namely, that given in (21): the tree is an adjunction structure, as discussed below. However, in order to make it easy to refer to specific nodes, I will make use of the labeling convention in (1)b, distinguishing Loc from L from "M" from "Mot", although they are all technically segments/ projections of M. After presenting the morphological evidence, I consider the implications for the syntactic structure of local expressions, and make specific proposals about what theoretical operations are needed to relate underlying syntactic structure to surface morphological form.

(1)

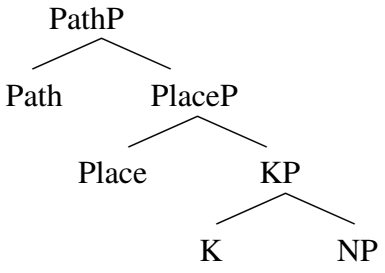


Evidence for the geometrical organization of local cases comes from two sources: possible/ impossible portmanteau morphemes and implicational universals.

The discussion of portmanteau local case morphology is directly related to the issue of the generation of cumulative exponents in Distributed Morphology (DM). In this chapter, 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 naturally lead to elimination of the DM operation of fusion (Halle and Marantz 1993, Halle 1997, Bobaljik 1997, Embick and Noyer 2001, Chung 2007a, b).

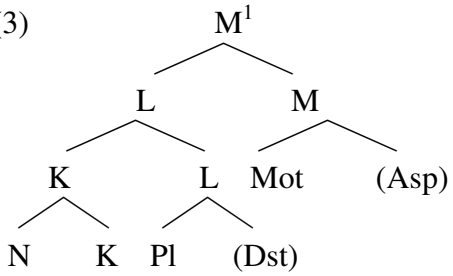
I argue that both local cases and adpositions have identical underlying (i.e., syntactic) structure and offer specific proposals as to how the complex morphological structure in (21) is derived. First, I argue that the basic structure for all spatial expressions is as in (22), where KP reflects the fact that in many languages local cases are built on the top of some non-local cases (e.g., ergative, genitive), PlaceP stands for locational adpositions ('in') and PathP for directional adpositions ('to'). Adpositions, in their turn, often assign cases to their complement NPs. KP will not play an important part in the analysis of the morphological structure of local cases, though it will become relevant in the discussion of case syncretism.

(2)



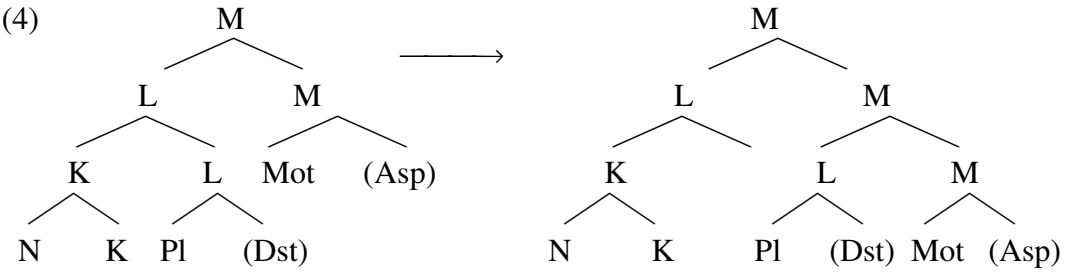
Second, I show that both heads (Path and Place) are always present in the structure. Third, I make a novel proposal that the two heads (Path (=M) and Place (=L)) can be further modified by Aspect and Distal respectively, but that the modifiers are affixes which do not introduce additional functional projections, as in (3). I also propose that the structure in (3) is derived via traditional roll-up head movement. Moreover, the structure in (3) serves an input for rebracketing (4), a morphological operation which only affects the structure but not the morpheme order. The output of rebracketing is the structure for local cases.

(3)



[1] 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 derivation of the structure in (4) is discussed in great detail later in sections 2 and 3 of this chapter.

(4)



The chapter is organized as follows. Section 2 discusses the structure in (1) and presents data from different languages to illustrate how the system works. Section 3 presents evidence for the geometry in (1) based on attested and unattested portmanteau morphemes. This section also introduces the Vocabulary Insertion Principle (VIP) and shows how it applies in the domain of local case morphology. I also compare the VIP with two non-DM approaches to vocabulary insertion to show that the VIP makes more subtle, and correct, predictions regarding possible and impossible portmanteau morphemes. Section 4 is devoted to the discussion of cases of syncretism between local cases and between local and non-local cases. Finally, section 5 discusses the structural relationship between local cases and adpositions. The issues raised in this chapter will be discussed further in chapters 3 and 4. Thus, chapter 3 discusses the syntactic structure and properties of adpositions cross-linguistically. Chapter 4, in its turn, investigates application of the VIP in another morphological domain, namely, Tense-Aspect-Mood morphology.

2. Morphological components of local cases

In this chapter I argue that there is a universal structure for local cases, as given in (1). It has been pointed out in the literature that local case exponents can be further decomposed into smaller segments (Comrie and Polinsky (1998), Kracht (2002, 2005, etc), Svenonius (to appear), van Riemsdijk and Huybregts (2001), and Asbury (2008)), which is indicative of their complex structure. The results of the cross-linguistic survey support this conclusion: local cases have complex structure, which has the hierarchical structure (1), which can be seen in the examples such as (5).

The present survey aims to cover a diverse (genetically and geographically) group of language families. 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), the Americas, and Australia (Iggesen 2008). All languages studied in the survey are characterized by having at least three cases (locative, allative, and ablative).[2] The total number of languages surveyed for this paper is 111 (19 language families, 4 language isolates). The table below shows what languages families are included in this study.

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

Table 1: Language families of the survey

Language family	Number of languages	Languages
Finno-Ugric	17	Estonian, Karelian, Veps, Ingrian, Votic, Livonian, Finnish, Saami, Erzya, Mokša, Mari (eastern), Mari (mountain), Udmurt, Komi-Zyrian, Komi-Permyak, Khanty, Mansi.
Samoyed	4	Enets, Nenets, Nganasan, Selkup
Mongolic	2	Buryat, Kalmyk
Manchu-Tungusic	9	Even, Evenki, Neghidal, Nanay, Orok, Orochi, Udeghe, Ul'chi, Manchu
Chukotko-Kamchatkan	5	Chukchi, Koryak, Alyutor, Kerek, Itelmen
Aleut	3	Aleut, Siberian Eskimo, Central Alaskan Yupik
Nakh-Daghestanian	29	Chechen, Ingush, Batsbi, Avar, Andi, Botlikh, Godoberi, Karatin, Akhvakh, Bagvali, Tindin, Chamalin, Tsez, Khvarshi, Ginukh, Bezhta, Hunzib, Lak, Dargwa, Lezgian, Tabasaran, Agul, Budukh, Kryz, Khinalug, Udi, Rutul, Tsakhur, Archi
Australian	18	Mangarayi, Djinang, Arabana, Yanyuwa, Woimurrung, Danyjima, Djabugay, Ngiyambaa, , Pintupi-Luritja, Wamkumara, Maruwari, Nhanda, Martuthunira, Yindjiabarndi, Kayardild, Jingulu, Ungarinjin, Warndarang
Sino-Tibetan	4	Kham, Limbu, Dolokhā Newār, Dumi
Turkic	4	Karachay-Balkar, Tuvin, Khakas, Turkish
Uto-Aztecan	2	Chemehuevi, Shoshone
Hokan	2	Diegueño, Hualapai
Muskogean	1	Koasati
Penutian	2	Maidu, Mollala
Choco	1	Epena Pedee
Arawakan	1	Yanusha'
Barbacoan	1	Awa Pit
Afro-asiatic	1	Central Dizin
Yenisean	1	Ket
Isolates	4	Savosavo, Mosetén, Yukaghir, Nivkh

A clear example of the decomposition of local cases is provided by Lak, a Nakh-Daghestanian language, spoken in the republic of Daghestan, Russia (Murkelinsky 1967). Lak can be described as having 30 local cases. However, these 30 cases are transparently

decomposed (cf. similar cases of Tabasaran and Tsez discussed by Comrie and Polinsky (1998)). There are 6 'series' markers, denoting location, basically corresponding to adpositions. Each series marker combines with one of 5 cases, specifying whether or not there is motion, and if there is, the direction of motion. Moreover, of the cases, the versative is itself internally complex: it consists of the allative marker (/*n*/) and the versative marker (/*maj*/). The Lak data are given in (5).

(5) Lak local cases

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

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. This is consistent with the common syntactic proposal that directional PPs contain (are built on top of) locational expressions, as in (2). 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 (6).

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

Examples like (5) and (6), 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 2.4.5. The other six local cases can be divided into two groups: “inner” and “outer”. Each group is comprised of three cases: essive (i.e., stative), allative, and ablative, as in (7).

(7) Estonian local cases

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

Previous work on decomposition and analysis of local cases (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). Hungarian also shows internal complexity in its local cases, as discussed in Kracht (2002, 2005). In the Hungarian example in (8), the DP *a hid* ‘the bridge’ denotes an entity, 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 location.[3]

(8)[[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), coinitial (elative case), and transitive (transitive case). Below, I will argue that these modes are themselves 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 ∅ marker under M (=Path). Other authors (Koopman 2000, Den Dikken 2006) would suggest truncation in this case.

The structural relationship between location and mode/motion appears to be universal, and is exceptionless within the survey, wherever these can be clearly segmented. However, the morphology of the languages surveyed presents evidence of further structure beyond the two-part decomposition proposed by Kracht. Specifically, all six types of Modes proposed by Kracht can be morphologically decomposed. Although I will provide evidence for further decomposition of L and M in section 2.1, one interesting result of the survey is that no language provides morphological evidence for dividing L

[3] The structure in (8) raises an important issue regarding what the case endings attach to, –DP or NP. Kracht in his works suggests that case endings attach to DP. I remain agnostic regarding this issue, since nothing in the analysis of local cases proposed in this dissertation hinges on the choice between DP and NP.

into Place / AxPart, a proposal made for the structure of PP in Svenonius (to appear) (see section 2.1.1).

All morphemes found in the surveyed languages fit, by meaning, in one of the 4 types of local case morphemes: Place (Pl), Distal (Dst), Motion (Mot), and Aspect (Asp). Below I will discuss morphemes that I identify as components of local cases.

2.1. Types of local case morphemes

The results of the survey suggest that there are four types of local case affixes that occur cross-linguistically: Place, Distal, Motion, and Aspect. Below I describe these four types of morphemes and provide examples of each of the five local case morphemes in more detail.

2.1.1. Place morphemes

Place morphemes roughly correspond to what is usually called adpositions in languages without local cases. The Place morphemes are called 'series markers' in the Nakh-Daghestanian languages. Consider the data from Tabasaran (one of the languages of the Daghestanian branch of the Nakh-Daghestanian languages). This language has 8 series of cases, i.e. it has 8 series markers denoting different regions in space and which correspond to prepositions: /ʔ/ 'in' (hollow space), /ʔin/ 'on (horizontal), /q/ 'behind', /kk/ 'under', /x^y/ 'at', /h/ 'near, in front of', /γ^y/ 'among', /k/ 'on vertical'. The series markers in the Nakh-Daghestanian languages are a realization of Place which denotes a particular location in space.

Another example of Place morphemes comes from Evenki, a Manchu-Tungusic language. Evenki has 8 local and 6 non-local cases. Local case morphemes are characterized by consisting of two components: the first component (*/du/*) is a Place morpheme, whereas the second one has a meaning of presence/absence of movement, as shown in (9).

(9) du -∅ essive[4]
du – la allative
du – k ablative

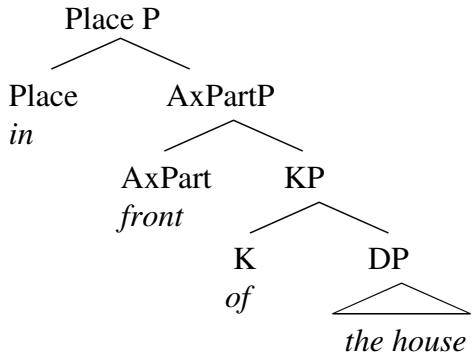
Svenonius (to appear) proposes a structure of spatial expressions which involves decomposition of both locational and directional components, as in (10). He distinguishes two types of the locational component: Place and Axial. Furthermore, he has two types of the directional components in the structure: Goal and Source.

(10) Source/Goal—*p*—Deg—Deix—Place—AxPart—K—DP

For Svenonius, Place in his system denotes a region picked out by a preposition which can be measured by a Degree element, whereas AxPart denotes parts of the regions denoted by Place. Svenonius suggests that Place and Axial can co-occur, i.e. he argues for two separate nodes in the structure of PP illustrating it with the following example from English.

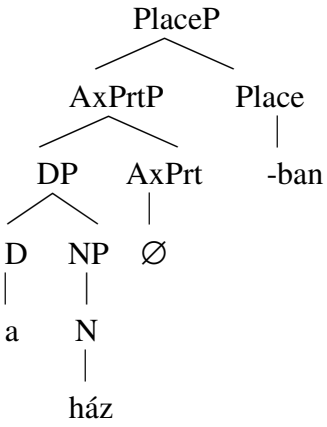
[4] I give only three local cases of the Evenki case system as other local case affixes involve some complications not pertinent to the present discussion.

(11) in front of the house



A similar proposal based on the data from Hungarian local cases has been made in Asbury (2008). She argues that there is always AxPartP below PlaceP, as shown in (12).

(12) a ház- ban
the house-INESS
'in the house'



If Svenonius is correct, and Place/L is universally decomposable into Place and AxPart, then we would expect to find evidence for such decomposition in the morphology of some language. However, no language in the survey has two separate morphemes Place and AxPart. Importantly, there are languages that have separate

morphemes corresponding to the meanings that Svenonius assigns to Axial, rather than 'Place', as in Lak (5). However, these never cooccur with a Place morpheme (as in Svenonius's English example) and are always in competition with other Place morhemes. For example, the Evenki prolative case affix is /*kli*/, which can be decomposed into two elements: /*k*/ and /*li*/. The first component /*k*/ has a meaning edge which corresponds to Svenonius's AxPart.[5] However, this affix never co-occurs with the Place affix /*du*/ discussed above. Therefore, I suggest that there is only one slot for morphemes meaning Place and Axial, which I will call Place, and which will host morphemes with these two meaning types.

2.1.2. Distal morphemes

Although there is no morphological evidence for decomposing L into AxPart and Place, there is evidence for morphological structure between L and M. Specifically, some languages have a "Distal" marker occupying this position. The distal marker encodes distality/ proximity of a location (Comrie and Polinsky 1998). There are only three languages in the survey for which this morpheme is described in the available grammars. However, Yakov Testelec (p.c.) informs me that, according to his fieldwork, distal markers can be found in many Nakh-Daghestanian languages, which are, however, not mentioned in the available descriptive grammars. So far, I have found only three instances of distal morphemes in the following genetically and geographically unrelated

[5] The second component of the prolative case marker /*li*/ is a cumulative exponent of M, which realizes feature of Mot and Asp simultaneously. Portmanteau morphemes are discussed in section 2.4.5.

languages: Tsez, a Nakh-Daghestanian language, Savosavo, a language isolate spoken in the Solomon Islands, and Central Dizin, an Omotic language of Ethiopia.

Tsez is one of the languages with the Distal morpheme. It has 7 series of local cases. This morpheme does not describe properties or characteristics of movement but just refers to the position of an object in space in terms of distality/ proximity. The distal morpheme /*z*/ follows the series marker and precedes the M marker (allative, ablative, or essive). Consider the following paradigm from Tsez.

(13) Tsez Place and Distal morphemes

	Allative-non-distal	Allative-distal
'in'	ā-r	ā-z-ar
'among'	ƛ-er	ƛ-āz-ar
'on (horizontal)	ƛ'o-r	ƛ'- āz-ar
'under'	ƛ-er	ƛ- āz-ar
'at'	x-ar	x- āz-ar
'near'	de-r	d- āz-ar
'on (vertical)	qo-r	q- āz-ar

Another example comes from Dizin, an Omotic language, spoken in Ethiopia. Unlike Tsez, Dizin has overt markers for both distal and approximate meanings. Interestingly, the Distal morphemes always follow the Place morphemes, as can be seen in the following example of illative case, which can be decomposed into three elements: Place (/*g*/), Distal (/*e*/ and /*a*/), and Motion (/*t*/).

(14) Dizin (Beachy 2005)

a. illative distal /g-e-t/
b. illative proximate /g-a-t/

Having discussed the two types of morphemes denoting locations (Localizers), I move now to the two morphemes which have meanings related to Motion. Kracht (2002) calls such morphemes 'modalizers'. In the next section I will show that there is more than one type of modalizer morphemes: there are three types of local case morphemes referring to Motion (Motion and Aspect).

2.1.3. Motion morphemes

Kracht (2002, 2005) suggests that there are 6 types of modes. The evidence from the morphological survey shows that these modes can be further decomposed into two parts: Motion and Aspect. Motion morphemes have a meaning of either absence or presence of movement to or away from a location in space. More generally, there are only three types of morphemes which correspond to the non-locational part of allative vs. ablative and illative vs. elative cases. The three-way distinction among the Motion morphemes also bears on the issue of the syntactic structure of PP, i.e. whether the structure of locational PPs has a directional component or not (Koopman 2000, Den Dikken 2006).

Consider the following paradigm from Finnish. Finnish has two series of local cases: 'inner' and 'outer' (/*s*/ and /*l*/-series respectively).

(15) Finnish local cases

Place	Essive	Allative	Ablative
s 'in'	ssa	han[6]	sta
l 'at'	lla	le	lta

[6] /han/ is another case of portmanteau morpheme, which will be discussed in section 3.

Finnish local cases can be decomposed into two parts: Place (/*s*/ or /*l*/) and Mode (M). There are three types of M morphemes in Finnish: movement away from the source (ablative, elative /*ta*/), movement towards the source (allative, illative /*Ce*/, which is bled by the portmanteau /han/, as in (15), cf. Estonian in (7)), and the absence of movement (essive, inessive /-*Ca*/).

In most cases the morphological marker for the absence of movement (some variant of essive case) is usually morphologically unmarked (∅) as opposed to allative and ablative cases. Nevertheless in some languages the situation is the opposite: the morphologically unmarked mode is "allative", while ablative and essive are characterized by morphological suffixes. Erzya, a Volgaic language of the Finno-Ugric language family, provides an example of this sort. As can be seen in (14), the local case morphemes consist of two parts: L (Place /*s*/) and M (∅ for movement to, /*o*/ for the absence of movement, and /*to*/ for movement away).

(16) Erzya local cases[7]

Place	Essive	Allative	Ablative
-s	-so	-s	-sto

While it is often the case that locative cases involve a ∅ morpheme in Motion node, this is not a universal principle but merely a tendency: 16 languages of the 111 languages surveyed have a non-∅ component for [-motion], as in (17), and 8 languages have a ∅ exponent for movement towards or away from some place, as in (17).

[7] Unlike the majority of the Finno-Ugric languages, Erza does not have two series (inner and outer) of local cases but just one, as shown in (16).

(17) a. g+a ‘onto something’, g+e ‘on something’, g +u ‘from on something’ (Akhvakh)

b. la+∅ ‘onto something’, la+ a ‘on something’, la+wo ‘from on something’ (Tindin)

This morphological evidence indicates that the directional part is always present in the structure of PPs, even in the case of PPs with locational meanings; in such cases the directional component of local cases is null (∅). Based on the morphological evidence, I then assume that both components of spatial expressions, locational and directional, are always present in the structure. I suggest that this holds for both local cases and adpositions. This view is not new: it has been proposed by Kracht (2002) and Svenonius (to appear) that spatial expressions always have two pieces. This view is different from the one arguing that locative expressions lack the directional component (Koopman (2000), Den Dikken (2006), among others).

2.1.4. Aspect morphemes

Besides morphemes that belong to Motion, there are other morphemes that describe the manner of this motion: whether that motion reaches its final destination or not, and whether it is going in a particular direction or not. These meanings are expressed by such cases as terminative, approximative, versative, and prolative. I suggest that these morphemes have at least one common property: they are all characteristics of motion, i.e., they provide additional characteristics of movement expressed by Mot morphemes. Aspect morphemes specify whether movement reaches its goal or not (telicity) or whether movement has a particular direction or not. Below I provide a discussion of Aspect morphemes found in the survey.

It has been proposed in the literature that PPs have an Aspect projection (Den Dikken 2006). Den Dikken proposes that AspP in prepositional phrases serves to distinguish locative and directional PPs, similarly to AspP in VP, where it distinguishes static and motion verbs. Zwarts (2005, 2006) suggests that spatial prepositions contribute to the aspect of the sentence. He observes that spatial prepositions can make a telic or atelic contribution to the aspectual structure of a sentence. Moreover, Zwarts (2006) suggests that telic/atelic prepositions can be directed and non-directed.

I propose that there is an Aspect node for morphemes that describe what kind of movement takes place. Similarly to Zwarts' types of spatial prepositions[8], the Aspect node hosts affixes with telic/atelic meaning denoting whether the movement reached its final point or not and directional/ non-directional meanings. This type of morpheme is found after the Motion morphemes. Let us consider several examples illustrating this point.

The first case under consideration is approximative case. This case is fairly rare and found only in three languages: Udmurt, Komi-Zyrian, and Komi-Permian. Approximative case denotes a movement that is directed towards something but does not reach its goal (i.e. incompletive aspect). Grammatical descriptions, e.g., Winkler (2001), point out that this case is used to emphasize that movement does not reach its goal. Having this in mind, I suggest that a feature that characterizes this case is [-telic]. Consider an example from Udmurt where the exponents of illative and approximative cases show morphological similarities:

[8] Zwarts (2005) divides prepositions into two groups telic (onto, to, from, etc) and atelic (toward, along).

(18) N-Place-Mot illative case
-la ∅

N-Place- Mot-Asp approximative case
-la ∅ ń

The counterpart of approximative case is terminative case. This case is used to describe movement that reaches its goal, i.e., it is opposite in meaning to approximative case. I propose to describe this case with feature [+telic], since movement arrives at its destination. An example of terminative case from Estonian is given in (19). Estonian has a portmanteau exponent of terminative case, whereas in the closely related Votic language the exponent of this case can be decomposed into two parts: Place (/s/) and Aspect (/sā/), as in (20).

(19) jõe- ni (Harms 1962: 80)
river-TERM
'as far as the river'

(20) mätšē-s- sā (Ariste 1968: 34)
hill -loc-term
'as far as the hill'

Another local case that encodes a particular type of movement is versative. Unlike terminative case, versative case is used when movement does not reach its goal; it just proceed in a general direction of some object (Magometov 1965: 129). Versative cases are found in the Nakh-Daghestanian languages. Grammatical descriptions explain the meaning of this case as movement in the general direction of some object, which is not considered a goal of this movement. In other words, this case denotes movement towards something (unlike translative case, discussed below, which does not specify any direction). I suggest that versative case is characterized by the feature [+direction].

Consider the following example of versative case. Tabasaran has versative case that is formed by adding a suffix */di/~/ri/* to other locative cases.

(21) allative N- K- Place- Mot-Asp
nir- i- q- in- ri "towards the bank of the river"
river- erg- on- all- versat

ablative nir- i- q- an- ri "from the direction of the bank of the river"
river-erg- on-abl-versat

The last case with a meaning opposite to versative case is prolative/translative case[9]: this case encodes movement without any direction, i.e. it is unspecified if an object moves towards something or not. Prolative/translative case is used to denote that movement is going through or along some location, which does not involve any meaning of direction. Therefore, I assume that this case is characterized by feature [-direction]. Consider the following examples from Lak in (22) (see (5) for full paradigm). Note that the translative case exponent in (22) is a portmanteau morpheme which attaches directly to the series marker */vu/*, whereas the versative case exponent is not a portmanteau: it attaches to the allative case marker */n/*, which, in turn, attaches to the series marker */vu/*, as in (22).

(22) a. qatlu- vu-∅ (Mukrelinsky 1967: 493)
house- in-ESS
'in the house'

[9] In this word 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.

b. qatlu-vu-n
house-in-ALL
'into the house'

c. qatlu- v- a
house-in- ABL
'out of the house'

d. qatlu- vu-x
house-in-TRANSL
'through the house'

e. qatlu-vu- n- maj
house-in- ALL-VERS

2.1.5. Orientation morphemes

Two languages of the survey, Tabasaran and Dargwa[10], have morphemes that might be considered to be a type of local case morphemes. They describe orientation in space (Magometov 1968): 'up/down from the object' and 'towards/away from the object'. There are four orientational expressions in Tabasaran: *mina* 'to here', *tina* 'to there', *ɣina* 'up', *kˀina* 'down' that can combine with ablative case. Consider the following examples from Tabasaran.

[10] Tabasaran and Dargwa are two Nakh-Daghestanian languages, which are distantly related and which are not closely related geographically.

(23) räq'ᵊ'an-tina 'on the road to there' (rä 'road)[11]
räq'ᵊ'an-mina 'on the road to here'
räq'ᵊ'an-γina 'on the road, upward'
räq'ᵊ'an-kᵊina 'on the road, downward'

It might be tempting to consider these morphemes as another type of local case morphemes[12], since the orientation element immediately follows the noun with Place and Motion morphemes, as schematically shown in (24).

(24) N] K] Place] Motion] Orientation]
rä ∅ q'ᵊ' an tina
road on allative towards

However, I will not pursue the option noted above. The four orientation markers can be decomposed into two parts: the first part is a pronominal element, corresponding to English 'there', whereas the second part is actually an ablative marker /*na*/. In other words, the word /*räq'ᵊ'an-tina*/ has a different structure from the one in (24): it consists of two nominals which are both marked with motion markers (allative and ablative), as in (25). The data in (25) are compatible with two analysis, one where the second NP (/*ti-na*/) is an afterthought to the first NP (/*rä-q'ᵊ-an*/) and one where the first NP takes the

[11] The translations of nouns with orientation makers may be somewhat confusing, since they are translated from Tabasaran into Russian and then into English. The following is the Russian translation of the data in (23).

(i) räq'ᵊ'an-tina 'по дороге туда' ='on the road to there'
räq'ᵊ'an-mina 'по дороге сюда'='on the road to here'
räq'ᵊ'an-γina 'по дороге вверх'='on the road, upward'
räq'ᵊ'an-kᵊina 'по дороге вниз'='on the road, downward'

[12] In my previous work (Radkevich 2008), I considered these morphemes to be the fifth type of local case affixes.

second NP as its complement. Due to insufficient data I cannot decide between these two options and leave this question for future research.

(25) rä-q'ᵊ'-an- ti- na
N-Pl- Mot- N- Mot

2.1.6. Interim summary: types of local case morphemes

There are only four types of local case morphemes attested in the languages of the survey. In the table below, I show the distribution of local case morphemes across languages of the survey.

Table 2: Local case morphemes in the languages of the survey.

Language	K[13]	Place	Distal	Motion	Aspect
Finno-Ugric					
Estonian	GEN	√		√	√
Karelian	GEN	√		√	
Veps		√		√	
Ingrian	GEN(?)	√		√	√
Votic		√		√	√
Livonian		√		√	
Finnish	GEN	√		√	√
Saami	GEN?	√		√	
Erzya		√		√	√
Mokša		√		√	√
Mari (Eastern)		√		√	
Mari (Mountain)		√		√	
Udmurt		√		√	√
Komi-Zyrian		√		√	√
Komi-Permiak		√		√	√
Khanty		√		√	
Mansi		√		√	
Samoyedic					
Nenets		√		√	√

[13]K in the table stands for non-local cases on top of which local cases are formed in some languages. If a language attaches local cases directly to a nominal stem, I leave the cell blank.

Selkup	GEN	√		√	√
Nganasan		√		√	√
Enets		√		√	√
Mongolic					
Buryat		√		√	
Kalmyk		√		√	
Manchu-Tungusic					
Even		√		√	√
Evenki		√		√	√
Neghidal		√		√	√
Nanay		√		√	
Ulchi		√		√	√
Orok		√		√	√
Orochi		√		√	√
Udeghe		√		√	√
Manchu		√		√	
Chukotko-Kamch					
Chuckchi		√		√	
Koryak		√		√	√
Alyutor		√		√	√
Kerek		√		√	
Itelmen		√		√	
Eskimo-Aleut					
Aleut					
Siberian Eskimo		√		√	√
Nakh-Dagestanian					
Chechen		√		√	
Ingush	GEN/DAT	√		√	√
Batsbi	GEN	√		√	√
Avar	ERG	√		√	
Andi	ERG?	√		√	
Botlikh		√		√	
Godoberi	ERG?	√		√	
Karatin		√		√	
Akhvakh		√		√	√
Bagvali		√		√	
Tindin		√		√	
Chamalin		√		√	
Tsez		√	√	√	√
Khvarshi		√		√	
Ginukh		√		√	√
Bezhta		√		√	

Hunzib		√		√	√
Lak		√		√	√
Dargwa	ERG	√		√	√
Lezgian	ERG	√		√	
Tabasaran	ERG	√		√	√
Agul	ERG	√		√	
Rutul		√		√	
Tsakhur		√		√	
Archi	ERG	√		√	
Budukh		√		√	√
Kryz		√		√	√
Khinalug		√		√	√
Udi		√		√	√
Turkic					
Karachay-Balkar		√		√	
Tuvin		√		√	
Khakas		√		√	
Turkish		√		√	
Australian					
Mangarayi					
Pama-Nyungan (Aus)					
Djinang		√		√	
Arabana		√		√	
Yanyuwa		√		√	
Woimurrung		√		√	
Danyjima		√		√	
Djabugay		√		√	√
Ngiyambaa		√		√	
Pintupi-Luritja		√		√	
Wamkumara		√		√	
Maruwari		√		√	? √
Nhanda		√		√	
Martuthunira		√		√	
Yindjiabarndi		√		√	√
Tangkic (Australian)					
Kayardild		√		√	?
West Barkly (Austr)					
Jingulu		√		√	
Woroan (Australian)					
Ungarinjin		√		√	√?
Maran (Australian)					
Warndarang		√		√	
Sino-Tibetan (Bodic)					

Kham		√		√	√
Limbu		√		√	
Dolokhā Newār		√		√	
Dumi		√		√	
Uto-Aztecan					
Chemehuevi		√		√	
Shoshone		√		√	√
Hokan					
Diegueño		√		√	
Hualapai		√		√	? √
Penutian					
Maidu		√		√	
Mollala		√		√	
Muskogean					
Koasati		√		√	
Choco					
Epena Pedee		√		√	
Arawakan					
Yanusha’		√		√	
Barbacoan					
Awa Pit		√		√	
Otomic (Afro-Asiat)					
Central Dizin		√	√	√	
Yenisean					
Ket		√		√	√
Isolates					
Savosavo		√	√	√	
Mosetén					
Yukaghir		√		√	
Nivkh		√		√	√

2.1.7. Putting morphemes together

The survey has shown that there are four types of local case morphemes: Place, Distal, Motion, and Aspect. Furthermore, all languages, without exception, confirm to the linear order in (26).

(26) N-K-Place-Distal-Motion-Aspect

The four local case morphemes in (26) can be divided into two groups: one relates to Location and the other one relates to Motion/ Direction. The first group is comprised of two types of morphemes: Place and Distal. These two morphemes describe location without any directional meaning. Then, the other two spatial morphemes belong to the second group, which describes motion or its absence to some location in space, as well as if this movement reaches its goal or not. The first group of morphemes is basically what Kracht (2002) calls Localizer, while the second group is what corresponds to Kracht's Modalizer:

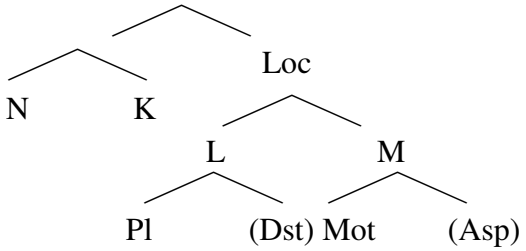
L (=Localizer): Place-Distal
M (=Modalizer): Motion-Aspect

Recall that Kracht assumes that both locational (L) and directional (M) components are always present in the structure, even in the cases where a spatial expression denotes the absence of movement. 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 ∅-marked as in Lak (see (5)); this is only a tendency. Some languages have overt morphological realization of essive case. In the survey there are 16 languages which have essive case non-∅-marked as, for example, in Akhvakh and Tindin (17). 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.

2.2. Geometrical organization of local cases

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, (27). In section 5, I will return to the question of how (27) is related to the syntactic structure of PPs in (2).

(27)



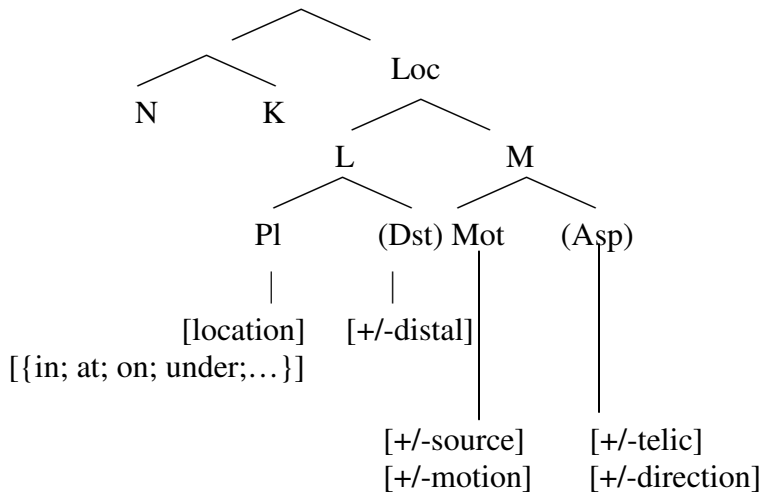
It is necessary to point out some assumptions underlying the structure in (27). First, not all nodes in the structure have equal status: there are two head nodes Place (Pl) and Mot (M), while other nodes are non-heads. What I understand by head nodes is that these two nodes (Place and Motion) contribute the core of the meanings of L and M and they are always present. Unlike the head nodes Place and Mot, Distal and Aspect are modifiers of Place and Motion, respectively.[14] Furthermore, they are optional.

The theoretical proposals in the dissertation are set in the framework of DM which postulates that lexical items (suffixes) are listed in the Vocabulary. Each

[14] "Non-head" nodes are given in parenthesis.

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 (28).

(28)



I suggest that the node Place under L is specified for the feature [location], since Place always refers to some location. The feature [location] can have special values such as [in], [on], [behind], [under], etc., which specify a more exact position of the object in space. I use privative features to capture the meaning of a particular location in space. However, a question arises if this can be done with binary features. I will consider this option by referring to the data from the Nakh-Daghestanian. There are only eight types of series markers, i.e., realizations of Place, attested in the Nakh-Daghestanian languages: in< on< under< at< behind< above< in front< among. Some languages distinguish two types of 'on': horizontal and vertical. Given the attested series markers, we can try to capture them with binary features. However, it is not clear that anything would be gained by doing so. The minimal number of binary valued features needed to define an 8-way

contrast is three cross-classifying features. However, there is no obvious semantic basis for three contrasting features that would generate the attested space of series markers. First, we can divide all the series markers into the following groups: in/at, on/ above/ under, behind/ in front, among. In some cases the opposition in meaning can easily be captured by using just one binary feature, as in (29).

(29) in [+interior] vs. at [-interior]

behind [+posterior] vs. in front [-posterior]

However, this approach would not work in the case of two other groups. First, there is a group which consists of on/above/ under. First, there is a clear distinction between above/ on and under. In other words, we can use a binary feature [+/-on] to distinguish them. Then, there is a further opposition between 'on' and 'above': in the former case an object touches the surface, while in the latter it does not. One more binary feature is necessary to capture the contrast: [+/-contact]. Finally, there are two types of 'on' in some languages. Consequently, we need another binary feature [+/-horizontal]. All in all, we need three binary features to distinguish between on (horizontal), on (vertical), above, and under. But the three features are all necessary only for 'on', whereas 'above' just needs two of them and 'under' needs one. The last series marker attested in the Nakh-Daghestanian languages is 'among' which does not have a series marker with an opposite meaning. If we employ a binary feature [+/-among] to describe the series marker 'among', this would predict that there is potentially an exponent with a [-among] feature, though it is unattested, unless other series morphemes are taken to have a feature [-among]. Based on

naïve semantic oppositions/groupings, there appears to be at least six distinct meaning components—if these are all represented as binary features that may freely cross-classify, there is significant over-generation (the potential for a 2^6 = 64-way contrast). Representing the series markers in terms of binary features suggests that groups of these morphemes should pattern as natural classes relative to some grammatical phenomena. However, I am not aware of any evidence for such patterning and so the binary feature representation would at this stage seem arbitrary.

The second node of L is Dst which is specified for the feature [+/-distal]. In this section, I do not take a stand on the question of whether vocabulary items are always fully specified, or whether they may be underspecified. For most of the cases here it does not make a difference if vocabulary items are fully specified or not, but this will become important in the discussion of syncretism in section 4.

(30) 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 (31).

(31) /k/ ⇔ [location, on, vertical]
/ʔ/ ⇔ [location, in] **Place**
/ʔin/ ⇔ [location, on]
/q/ ⇔ [location, behind]
/kk/ ⇔ [location, under]
/x^y/ ⇔ [location, at]
/γ^y/ ⇔ [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 (7). The rules for Estonian would be as follows:

(32) /s/ ⇔ [location, in] **Place**
/l/ ⇔ [location, at]

The next node under consideration is Distal, which is found only in three languages, one of which is Tsez. Only distal locations have a special morphological exponent. The distribution of distal/non-distal markers in Tsez is governed by the following rule.

(33) /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.

(34) /q/ ⇔ [location, on, vertical] **Place**
/de/ ⇔ [location, in front]
/ā/ ⇔ [location, in]
/ƛ/ ⇔ [location, among]
/ƛ̃/ ⇔ [location, on]
/ƛ̃’/ ⇔ [location, under]
/x/ ⇔ [location, at]

Having established the rules for L nodes, I now turn to M nodes: Motion and 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 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]. A second feature [+/-source] distinguished the two [+motion] cases: [+source] for ablative cases and [-source] for allative cases. The rules of insertion for the node Motion will have the following form:

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

An example of implementation of the rules in (35) is given below (the example is from Estonian)[15].

(36) /t/ ⇔ [+motion, +source]
/e/ ⇔ [+motion, -source]
/∅/ ⇔ [-motion]

Motion

To illustrate how the system discussed so far works, consider the following example from Estonian in (37). Estonian has allative case, whose exponent can be decomposed into two parts: Pl and Mot. The trees in (38) illustrate how the system works in this case.[16]

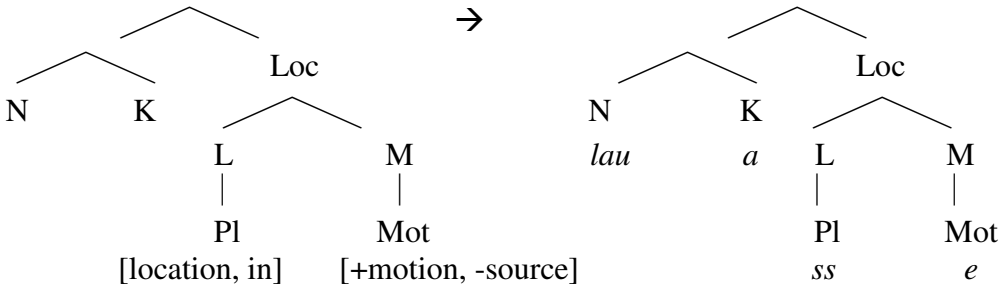
[15] Within DM, (36) could be simplified to: [+source], [-source] and Ø. The feature [+motion] is redundant with [+/-source], since having any value for source implies [+motion].

[16] In (38) I omit nodes not involved in the derivation.

(37) lau- a[17]- ss[18]-e (Kask 1966: 43)
table-GEN-in- ALL
'into the table'

(38)

/ss/ ⇔ [location, in]
/e/ ⇔ [+motion, -source]



There is one more M node that requires discussion. The last type of affixes is Aspect. As has been discussed in section 2.1.4, there are only four case exponents under this node: prolative, 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.

Recall the discussion of prolative and versative cases. I suggested that both cases modify the meaning of Mot by adding information regarding the direction of movement: prolative case does not specify the direction of movement, whereas versative case is used to convey the meaning of general direction toward some point in space. I have suggested

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

[18] The realization of the inner cases in Estonian alternates between single and geminate /*s*/. I do not have an account of this alternation, but assume that an account would lie in the phonology of the language.

using a binary feature [+/-direction]: with a positive value for versative case and negative value for prolative case. There is only one language that in which both cases have overt exponents, Lak, the rules for which are given in (39).[19]

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

The last group 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: terminative case is used to describe movement that reaches its destination, whereas approximative case is used in situations when movement does not reach its goal. I have proposed using a binary feature [telic], with [+telic] for terminative and [-telic] for approximative. Only the Permian languages of the Finno-Ugric language group have overt exponents of both cases, approximative and terminative, in their arsenal. Consider how the rules would work for Udmurt.

(40) /oz/ ⇔ [+telic] **Aspect**
/ń/ ⇔ [-telic]

Putting all the features together, we have the following system of rules for different nodes in the structure in (27).

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

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

Distal: [distal]

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

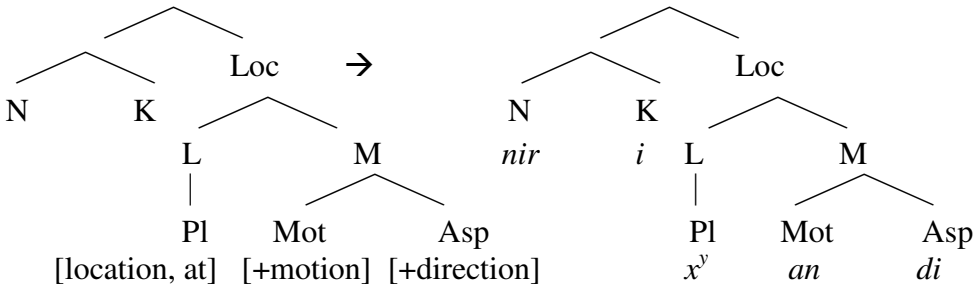
Aspect: [+/-telic]
[+/-direction]

Consider the following examples which illustrate how the suggested system of features works in Tabasaran (41).

(41) *Tabasaran*

/k/	⇔	[+location, on, vertical]	**Place**
/ʔ/	⇔	[+location, in]	
/l/	⇔	[+location, on]	
/q/	⇔	[+location, behind]	
/kk/	⇔	[+location, under]	
/x^y/	⇔	[+location, at]	
/γ^y/	⇔	[+location, among]	
/h/	⇔	[+location, near]	
/na/	⇔	[+motion, -source]	**Motion**
/an/	⇔	[+motion, +source]	
∅	⇔	[-motion]	
/di/	⇔	[+direction]	**Aspect**

nir- i- x^y -an- di (Magometov 1965: 129)
river-ERG-at- ALL-VERS
'toward the bank of the river'



3. Evidence for geometric organization

Having presented the results of the survey and provided the structure for local case affixes in (27), I would like to move to a discussion of the evidence in favor of the structure argued for in this chapter. 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 argument from implicational universals is discussed here.

As I mentioned earlier, not all the nodes in the structure in (27) have equal status. The nodes that L and M immediately dominate do not have the same status: Place is the head node under L, whereas Motion is the head node under M. Not all the nodes are available in all languages. All languages have at least two nodes Place (L) and Motion (M) which are the head nodes.

From the evidence examined here and summarized in Table 1, 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. In other words, if a language has non-zero exponence of non-head nodes Distal and Aspect, then that language has non-zero exponents of Place and Motion, respectively:

1) Distal → Place;
2) Aspect → Motion.

All 111 languages of the survey have exponents of two nodes Place and Motion. There is not a single language that has modifiers of Place and Motion, i.e., Distal and

Aspect, and lacks Place and Motion themselves. By proposing the structure in (27), I can unify two 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., a language realizing Place does not require the language to have 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 local case affixes argued for in this chapter correctly captures the facts about the implicational universals of the terminal nodes. In the next section of the chapter I will discuss the patterns of attested and unattested portmanteau morphemes with respect to the predictions made by the competing approaches to portmanteaus: the Vocabulary Insertion Principle and the Spanning/ Contiguity approach.

3.1. Possible and impossible portmanteaus

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 principles such 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.

3.1.1. 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, while phonological information being 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:

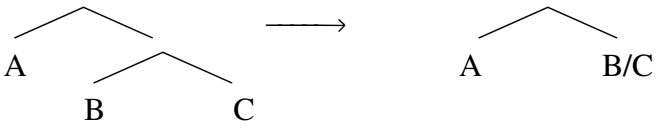
(42) The Subset Principle

> 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).

Within canonical DM, vocabulary insertion applies exclusively at terminal nodes. Portmanteau morphology provides a challenge, since a single exponent appears to carry the features of multiple terminal nodes. 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, B and C, in (43), standing for the features defining these nodes, and fuses them into a single node with the combined features of the two original nodes, as in (43). The output of the fusion rule thus produces a terminal node that serves as the target of vocabulary insertion for an apparent portmanteau vocabulary item (Chung

2007). Since fusion is, by hypothesis, restricted to sister nodes, portmanteau morphology in this theory provides evidence for morphological constituency.

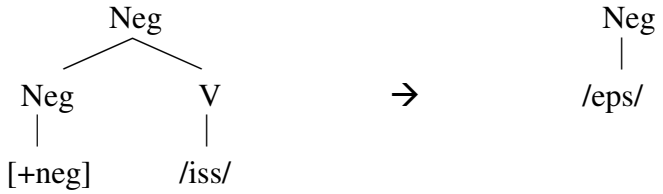
(43)



However, as noted by Radkevich (2009) and 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. In other words, it is the vocabulary item that determines whether Fusion applies or not. 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. I will describe Chung's proposal in brief below.

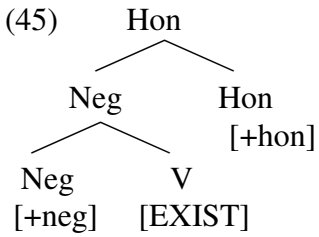
Chung (2007 a, b, 2009) investigates several cases of contextual allomorphy and suppletion in Korean: two verbs ('to know' and 'to exist') have different realizations depending on negation and honorification markers. He shows that the root of the verb 'to exist' is /*iss*/, but if the verb is negated the form is /*eps*/. The negative form of the verb is considered to be a portmanteau morpheme, which realizes two sets of features [EXIST] and [+neg]. Chung suggests the following fusion rule for such cases.

(44) Fusion of [+neg] and /iss/ to /esp/ (Chung 2009: 557)



Interestingly, the shape of the root changes if the verb is used with an honorification marker: /*kyey*/+/*si*/ instead of */*iss*/+/*si*/[20]. Then, there is an interesting question: what happens when there are both negation and honorification present in the structure, as in (45).

(45)



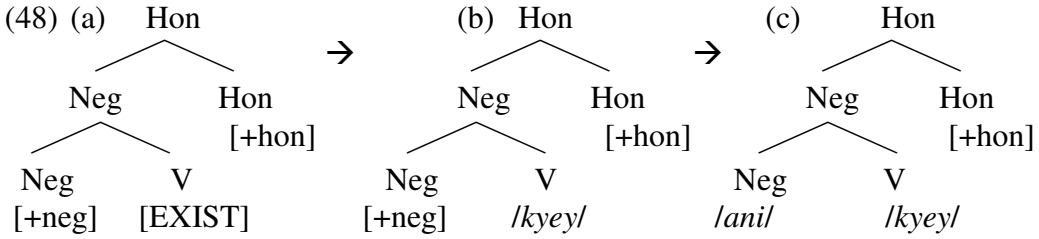
As expected, things get more interesting, when the verb 'to exist' is used with both an honorification and a negative marker: the root form used is the allomorph used with honorification markers (/*kyey*/) and the fusion of the verb root with negation is blocked. The form used in this case is given in (46). To account for the suppletive allomorphy in the presence of honorification markers, Chung proposes the rule in (47).

(46) /*ani*/-/*kyey*/-/*si*/.
NEG- exist- HON

[20] This case is an example of suppletive allomorphy, as discussed in detail in Chung (2007a).

(47) [exist] ⇔ /kyey/ when c-commanded by [+hon]

Chung describes this situation as a paradox since in the structure in (45), the fusion, i.e., the rule in (44), is blocked by a more peripheral element, namely the honorification marker. He suggests resolving this paradox by having vocabulary insertion interleaved with morphological operations such as Fusion. Chung assumes that the structure in (48)a enters PF as a whole. Vocabulary insertion in Chung's system is done in three cycles: in the first cycle, the suppletive allomorph of the verb 'to exist' is inserted because the rule in (47) since [+hon] c-commands the verb. The vocabulary item /*kyey*/ gets inserted, as in (48)b. Then, the fusion rule (44) is blocked and the regular negation marker /*ani*/ is inserted in (48)c. In other words, Chung proposes that Fusion must be interleaved with vocabulary insertion, which is different from traditional assumptions postulating that Fusion precedes vocabulary insertion.



Another approach to Fusion has been proposed in Bobaljik (1997). He argues that Fusion can account for complementary distribution of tense and agreement markers in English,

i.e., there is only one node (Agr/T) under which these markers compete for insertion. The node Agr/T is a output of Fusion of nodes Agr and T.[21]

3.1.2. Vocabulary insertion principle

I will now 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 will refer to the new approach as the Vocabulary Insertion Principle (VIP), which is given in (49) below.

(49) The Vocabulary Insertion Principle

The phonological exponent of a vocabulary item is inserted at the minimal node[22] dominating all the features for which the exponent is specified.

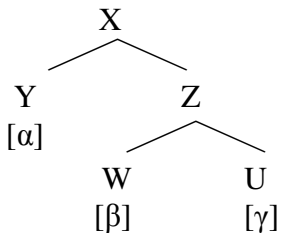
The VIP allows for vocabulary insertion at both terminal and non-terminal nodes, which I will illustrate below. Before showing how the VIP works, it is necessary to spell out my assumptions. I assume that vocabulary insertion proceeds bottom-up, which may

[21] The case under discussion where exponents of Agr and T compete for insertion under a single node can also be captured by the proposal argued for in this dissertation. First, in English Agr and T morphemes are not portmanteau exponents, i.e., they have features only of one head. Second, I assume that if there are no cases when exponents of two heads co-occur, there is only one node in that language, which is due to the presyntactic bundling (Bobaljik and Thráinsson 1998).

[22] A node X minimally dominates [α] iff:
(1) X dominates [α] and
(2) there is no node Z such that Z dominates [α] and X dominates Z.

be followed by re-writing of some vocabulary items, if necessary.[23] First, consider the structure in (50) and the list of vocabulary items (51) relevant for (50).

(50)



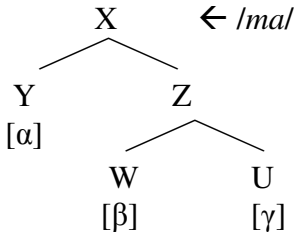
(51) /ma/ ⇔ [α, β, γ]
/pa/ ⇔ [γ]
/ba/ ⇔ [β]

If we adopt the VIP, the three vocabulary items in (51) can be inserted at three different nodes. */ba/* and */pa/* 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 vocabulary item */ma/* which is specified for three features each of which corresponds to one of the terminal nodes, Y, W, and U. The VIP requires insertion at a node which minimally dominates all the features the vocabulary item */ma/* is specified for. Looking at the structure in (50), we see that the node which minimally dominates [α], [β], and [γ] features is X: hence, the vocabulary item */ma/* gets inserted in X, which is not a terminal node, as shown in (52).[24]

[23] The assumption that vocabulary insertion can go top-down will work here as well. In the case of the top-down approach to vocabulary insertion, it is necessary to identify what constituents can be targeted by vocabulary insertion.

[24] One might argue that the vocabulary item */pa/* can be inserted at the node Z which has two features [β] and [γ] by feature percolation. This option is ruled out by the VIP since the VIP 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 */pa/*, it cannot be inserted at Z because the item is specified only for the feature [γ] and the minimal node that dominates the feature [γ] is U, hence the vocabulary item */pa/* can be inserted only at U.

(52)



How would the fusion approach deal with the vocabulary item */ma/*? The vocabulary item */ma/* specified for the three features in question 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 [α] and [β]. Next, the fused node W/U will undergo further fusion with the node Y, which would result in a terminal node specified for [α], [β], and [γ] features. Then, it would be possible to insert the vocabulary item */ma/* at the node created by fusion.

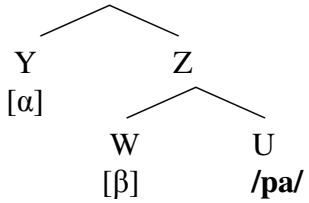
Comparing the VIP to Fusion, the following crucial difference can be noted. Fusion of two terminal nodes is driven by particular vocabulary items. Fusion is supposed to be a post-syntactic operation, which precedes vocabulary insertion. However, fusion is triggered by some portmanteau vocabulary item,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

Now I would like to consider a slightly different situation. Consider the structure in (50) and the vocabulary insertion rules in (53). The situation is different from the one discussed above: there is a vocabulary item specified for two features which correspond to non-sister nodes. How does the VIP work in this situation? Recall that I assume that

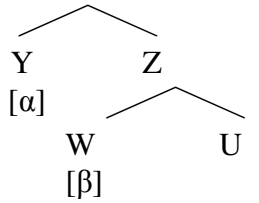
vocabulary insertion proceeds bottom-up. In the structure under consideration, the first node to be affected by vocabulary insertion is U, where the vocabulary item /pa/ is inserted as shown in (54)a. However, there is still a portmanteau vocabulary item realizing features of the two non-sister nodes Y and W. The VIP states that a vocabulary item can be inserted at a node minimally dominating all the features this item is specified for. In (54)b, the vocabulary item is inserted at the node X, as a result of which the previously inserted vocabulary item /pa/ is wiped out. In other words, the VIP predicts that it should be possible to have a vocabulary item realizing features of Y and W heads, but this will necessarily block the appearance of a vocabulary item that realizes features of U. The VIP predictions regarding possible portmanteaus in (50) are given in (55).

(53) /ma/ ⇔ [α, β]
/pa/ ⇔ [γ]

(54) a.



b.



(55) a. W+U
b. Y+W+U
c. Y+W/ ___ *U

3.2. Non-DM approaches to portmanteaus

In this part of the chapter, I will discuss two non-DM approaches to portmanteaus which, like the VIP, permit vocabulary insertion at non-terminal nodes. The two proposals that will be discussed are the Spanning Vocabulary Principle by Williams (2003) and the Universal Contiguity Principle by Caha (2009). The principles share the assumption that vocabulary insertion may realize any arbitrary span of contiguous terminal nodes, with no requirement that they form a constituent at any level of representation.

Consider the structure in (50): Williams and Caha predict that three portmanteaus are possible: Y+W, U+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. As discussed above, the VIP would exclude a Y+W portmanteau in the presence of U, 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 the syntax and the morphology. Nevertheless, the VIP makes a specific type of implicational prediction which the Spanning/Contiguity principle does not make. 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. Below, 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.

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. Before I move to comparing these two approaches with the VIP, I want to show how these two proposals work.

Williams (2003: 214) suggests that a morpheme can lexicalize a chain of functional projections if these projections are adjacent, i.e. if the chain is contiguous, as schematically shown in (56).

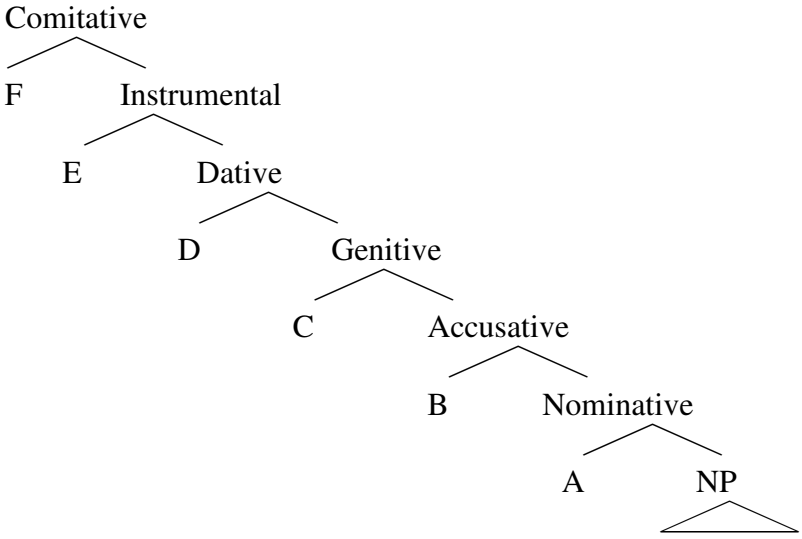
(56) $F_1 > F_2 > F_3 > F_4 > F_5 > F_6$
|---m_1----|
|---m_2----|
|---m_3---|

Williams illustrates the workings of his principle with an example from English which is given in (57) where 'was' is a lexical element that spans T and Agr_S and 'seeing' is a word that spans Asp, Agr_O, and V.

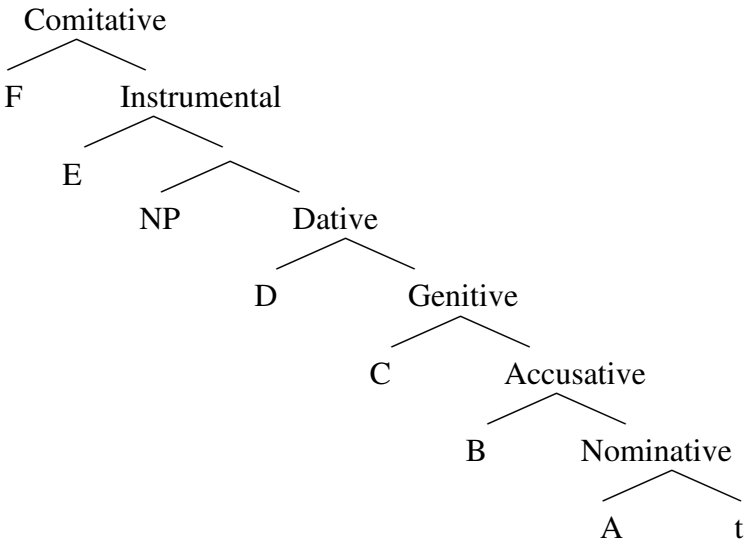
(57) T > Agr_S > Asp > Agr_O > V
|---was----|
|------seeing------|

Caha (2009) makes a similar proposal within the Nano-syntax framework. He assumes that syntax-morphology mismatches can be captured by the Universal Contiguity principle, which states that any contiguous string can be realized as a single vocabulary exponent, i.e., portmanteau. The Universal Contiguity principle is investigated in the case domain. Caha suggests that the core cases can be decomposed and hierarchically organized, as in (58). Basically, dative case can realize features of nominative, accusative, genitive, and dative cases. To be suffixed with the dative case morpheme, a noun must move to a position above dative, leaving a trace behind, as in (59). Then, the sequence of Dative-Nominative is realized as a single exponent. The noun undergoes movement as high as necessary to be inflected with a relevant case exponent.

(58) Case hierarchy



(59)



In the following 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.

3.3. Predicted local case portmanteau morphemes

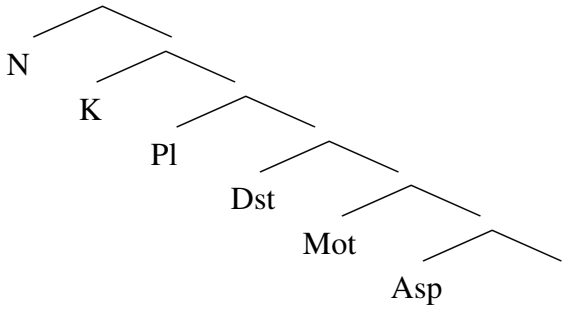
Recall that all languages which have local cases conform to the linear order of morphemes, which is given in (60).

(60) N-K-Pl-Dst-Mot-Asp

Both Caha and Williams deal with uniformly right-branching structures. Therefore, the predictions regarding possible portmanteau morphemes must be made with

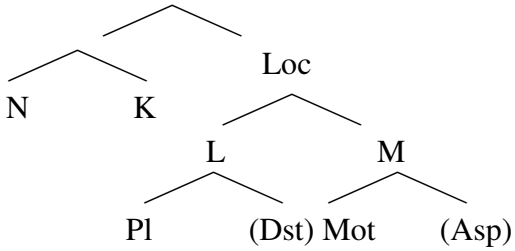
respect to the string of local case morphemes in (60), which is presented as a tree diagram in (61).

(61)



Under the Spanning/Contiguity approach, any contiguous string of projections can be lexicalized as a single vocabulary item. Based on (61), 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), Mot+Asp, etc. The VIP, however, can apply to the hierarchical structure of local case affixes proposed earlier in the chapter, which I repeat below in (62).

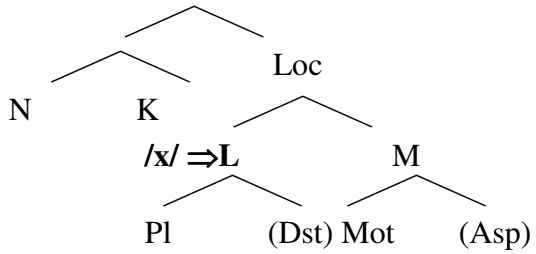
(62)



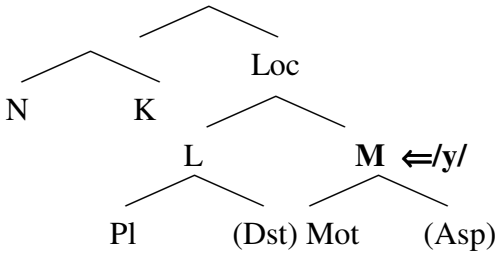
The VIP predicts that only three portmanteaus are possible: Pl+Dst, Mot+Asp, and L+M, which constitutes a proper subset of the predictions made by the Spanning/ Contiguity approach, as illustrated below in (63).

(63)

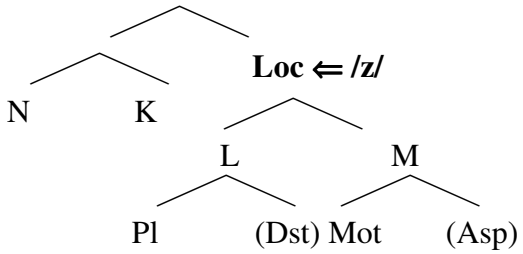
a.



b.



c.



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

3.4. 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 (62) but cannot be segmented ("cumulative exponence"). For example, 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 surveyed:[25]

3) morphemes lexicalizing Mot and Asp (M) ((63)b);
4) morphemes lexicalizing L and M (Loc) ((63)c).

The table below shows the distribution of portmanteaus across languages of the survey. Table 3 needs some clarification. The symbol * is meant to indicate such cases when a language has a Place+Motion portmanteau morpheme and a non-portmanteau Aspect morpheme, but these two morphemes never co-occur. Such cases are predicted by the VIP. The n/a indicates that a language simply lacks Asp morphemes. Furthermore, I do not include the Distal and K nodes in the table, since there is no language that has cumulative exponents involving these nodes. Then, there are a couple of cases which appear to be counterexamples to the claim I have made above. Consider Veps. The table shows that this language has a portmanteau morpheme which lexically realizes the nodes Place and Motion. Then, there is an unshaded cell, Aspect. This should be interpreted the following way: Veps has a portmanteau Place+ Motion, but it does not have Aspect morphemes at all.

[25] The fact that I did not find any portmanteau affixes realizing Pl and Dst terminal nodes (63)a may be due to the rarity of the distal marker.

Table 3: Portmanteau morphemes in the survey

Language	Place	Motion	Aspect
Estonian			
Karelian			
Veps			n/a
Ingrian			*
Votic			*
Livonian			n/a
Erza			
Mokša			
Udmurt			
Komi-Zyryan			
Komi-Permyak			
Selkup			
Nganasan			
Enets			
Nenets			
Archi			
Udi			
Lak			
Tsez			
Ginux			
Hunzib			
Koryak			
Itelmen			n/a
Yukagir			n/a
Ket			
Kham			n/a
Djinang			n/a
Bunuba			
Woiwurrung			n/a
Panyjima			n/a
Djabugay			
Pintu-Luritja			
Warndarang			n/a
Wankumara			n/a
Ungarinjin			
Muruwari			n/a
Yindjibarndi			
Diegueño			n/a
Hualapai			
Awa Pit			
C. Alaskan Yupik			

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

4) Dst and Mot;
5) Pl and Mot in the presence of Dst;
6) Pl and Asp in the presence of Mot;
7) Pl and Mot in the presence of Asp.

Recall that the structure in (62) and the VIP predict the three types of portmanteaus (Pl+Dst, Mot+Asp, L+M), while the Spanning/Contiguity approach predicts additional types of portmanteaus to be possible. The data from local case morphology confirm the predictions made by the VIP and show 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.

3.4.1. L (localizer) portmanteau morphemes

There are many languages that lack one of the two nodes dominated by L. The distal morphemes are particularly rare and are found only in three languages: Tsez, Savosavo, and Central Dizin. In the majority of languages there is only one node available: Place. Thus, although the VIP and the structure in (62) make different predictions in principle about the distribution of portmanteaus involving Distal, there are simply too few attested occurrences of distal nodes to draw any conclusions from this gap.

3.4.2. M (modalizer) portmanteau morphemes

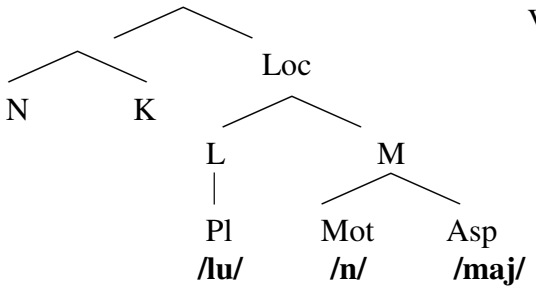
Unlike the cases of L nodes, many languages from the survey have at least two distinct exponents of Motion and Aspect which get lexicalized as two distinct morphemes. Consider the following paradigm from Lak in (64).

(64) *Lak*

/vu/	⇔	[+location, in]	**Place**
/j/	⇔	[+location, on]	
/lu/	⇔	[+location, under]	
/h/	⇔	[+location, behind]	
/ča/	⇔	[+location, near]	
/c/	⇔	[+location, at]	
/a/	⇔	[+motion, +source]	**Motion**
/n/	⇔	[+motion, -source]	
∅	⇔	[-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 (65)[26].

(65) Versative case (‘under’ series /*lu*/)

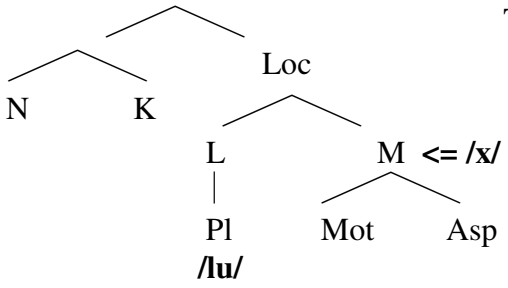


However, the prolative case exponent in Lak consists of only two components, one of which is a relevant series marker (Place), e.g., /lu/ (series marker ‘under’) + /x/.

[26] In (65) I leave out nodes which do not have morphological realization in Lak.

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 (49) 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 (66).

(66) Translative case ('under' series /*lu*/)



Another piece of evidence in favor of the structure in (62) 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 allomorphs[27] 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 elements: a series marker, a distality marker (/*(ā)z*/), and a versative case suffix (/*a/γor*/), as in (67).

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

(67) a. besuro-x- ∅ - γor (Comrie and Polinsky 1998)
fish- at-DIST –VERS

b. besuro-x- āz- a
fish- at-DIST-VERS

Under the present analysis, the versative suffix is not a lexicalization of the Aspect node but of M, as in the Lak examples in (65). 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 (66).

3.4.3. Loc portmanteau morphemes

In addition to the 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 cases such as inessive, illative, elative and adessive, allative, and ablative, as in (68).

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

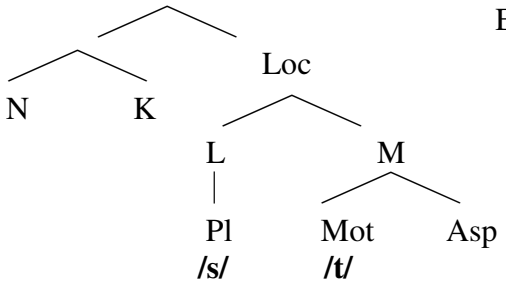
The rules of insertion for Estonian are given below.

(69) *Estonian*

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

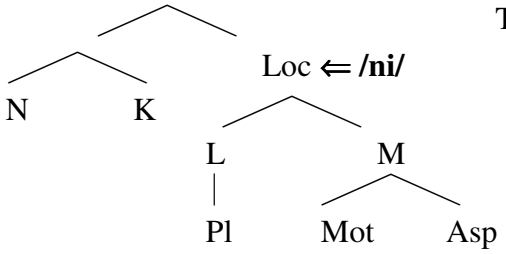
The elative case exponent is /*-st*/ which consists of two parts. The first part is /*s*/, which lexicalizes the Place node specified with the feature [+location, +in], and the second part is /*t*/, which realizes the Motion node specified with the feature [+source], as illustrated in (70).

(70) Elative case



However, Estonian 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 (71).

(71) Terminative case



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 (72).

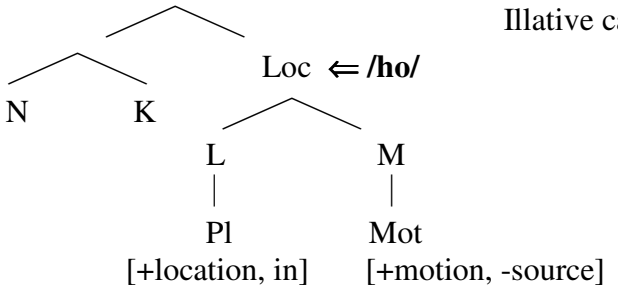
(72) Veps local cases

	essive-ablative	allative
/s/ 'in'	s-∅	**ho**
/l/ 'at'	l-∅	l-e

As can be seen in (72), 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 (73). 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 (74).

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

(74) Illative case



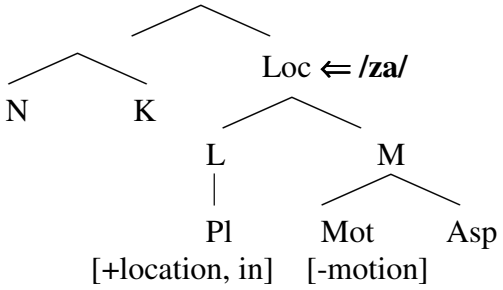
Another interesting case of portmanteaus is the one involving Place and Motion morphemes in a language that has Aspect morphemes. There are two languages in the survey, namely Votic and Livonian, that have a portmanteau morpheme realizing features of Pl and Mot as well as an Asp morpheme. I will illustrate the case in question with data from Votic (Ariste 1968).

Votic, as most Ugric languages, has two series of local cases: outer (/*l*/) and inner (/*s*/). Unlike Estonian, Votic has a portmanteau exponent of inessive case /*za*/. The inessive portmanteau realizes the features of two heads Pl and Mot, as shown in (75)b, since the minimal node dominating the relevant features is Loc. Then, there is one more portmanteau morpheme, an exponent of terminative case that realizes features of Mot and Asp. This morpheme never co-occurs with another portmanteau exponent /za/, but with the Pl morpheme /s/, as shown in (75)c, where the portmanteau suffix is inserted at the M node. Arriste (1968: 35) suggests that historically, the terminative case marker developed from attaching a postposition sā to the illative case suffix. The situation in Votic is presented in (75).

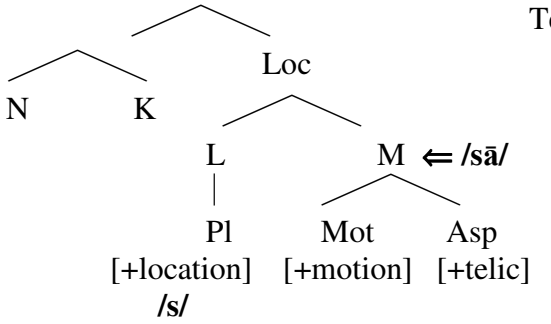
(75) a. Votic vocabulary insertion rules

/l/	⇔	[+location, at]	Place
/s/	⇔	[+location]	
/ta/	⇔	[+motion, +source]	Motion
/e/	⇔	[+motion, -source]	
/a/	⇔	[-motion]	
/za/	⇔	[+location, -motion]	Place+Motion
/sā/	⇔	[+motion, +telic]	Motion+ Aspect

b. Pl+Mot portmanteau (in the absence of Asp)



c. Mot+Asp portmanteau



The VIP predicts that no language can have a portmanteau of Pl + Mot, that potentially co-occurs with Asp. Spanning/Universal Contiguity approach allows exactly that. Votic is particularly interesting because it initially looks like a counter-example, in as much as it has an apparent Pl+Mot portmanteau, and has Asp exponents. But the VIP

forces inessive /*za*/ to be analyzed as a "Loc" portmanteau (i.e., Pl+Mot+Asp), predicting that it will necessarily be incompatible with the Asp exponent (that it wipes out). This prediction is not made by the competing theories, and is correct.

In this section, I have discussed attested patterns of portmanteau morphemes, demonstrating that they are all predicted by the geometrical representation of the structure of local case morphemes adopted in this dissertation, and the VIP, a principle which regulates vocabulary insertion and which allows vocabulary insertion at a non-terminal node in a particular configuration. I will now turn to unattested types of portmanteau morphemes.

3.5. Unattested portmanteau morphemes

The survey of 111 languages has shown the absence of the following patterns of portmanteau case exponents:

(76)

a) an exponent lexicalizing Distal and Motion;
b) an exponent lexicalizing Distal and Aspect;
c) an exponent lexicalizing Place and Aspect in the presence of Motion;
d) an exponent lexicalizing Place and Motion/Aspect in the presence of Distal;
e) an exponent lexicalizing Place and Aspect in the presence of Distal;
f) an exponent lexicalizing Place and Motion in the presence of Aspect.

As noted earlier, distal suffixes are found only in three languages. This fact may be due to the incomplete nature of some descriptive grammars, since even in the case of Tsez not all grammatical descriptions mention the distal marker. 52% of the surveyed

languages lexicalize Pl, Mot, and Asp. However, none of them have examples of portmanteau morphemes realizing Pl and Asp node. The fact that the patterns of portmanteau morphemes in (76) are not found in any language surveyed shows that the structure in (62), together with the VIP, correctly blocks unattested portmanteau morphemes: the proposal argued for in this dissertation predicts that only three types of portmanteau morphemes are possible, namely, Pl+Dst, Mot+Asp, and L+M. In comparing this aspect of the current proposal with competing approaches such as those incorporating Spanning/Contiguity, it is important to note that the compared theories do not differ in being able to describe the attested portmanteaus, i.e., they all capture the three existing types of portmanteaus. However, the Spanning/Contiguity approach also predicts to be possible types of portmanteaus that are excluded by the VIP and are unattested in the languages surveyed, e.g., Pl+Mot/ __ Asp is predicted to be possible by Caha and Williams but is unattested (see Votic). Moreover, 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[28] patterns (as discussed above), where the Spanning/Contiguity allows them. In the domain considered in this chapter, no overlapping portmanteaus arise—a striking generalization which, if confirmed in other domains, provides strong support for the more restrictive VIP.

[28] I call overlapping portmanteau morphemes cases where a language has three heads A-B-C and it has two portmanteau realizing A+B and B+C, i.e., where the two portmanteaus share features of the same head.

4. Local case syncretism

In this section, I consider a third argument in favor of the structure I have proposed in (62), specifically as it argues against the approach to local case structure proposed in Caha (2009), Pantcheva (2008a, b). The argument comes from attested patterns of case syncretism. By local case syncretism I mean instances when one vocabulary exponent is used to denote at least two cases which have separate vocabulary exponents in other languages. Consider the following example of local case syncretism from Nivkh, a language isolate spoken in the Russian Far East. Nivkh has one vocabulary exponent which realizes two cases: locative and ablative, as in (77).

(77) locative - /ux/ (Panfilov 1962)
locative-ablative - /in/
allative- /rox/

In this section I will focus only on one type of syncretism, the syncretism between local cases. The second type of attested syncretism, the syncretism between local and non-local cases, is discussed in the appendix to this chapter.

4.1. Syncretism in Distributed Morphology

Cases of syncretism in DM are captured by appealing to underspecification. Canonical DM postulates that both vocabulary items and terminal nodes, which are inputs to vocabulary insertion, can be underspecified[29]. Below I will show how underspecification can capture cases of syncretism. One of the examples regarding underspecification of

[29] Underspecification of terminal nodes can arise as a result of application of Impoverishment.

vocabulary items comes from the pronominal system of Russian. Russian has three genders and two numbers. Pronouns, which are characterized by the feature [+participant], i.e., first and second person pronoun, are underspecified for gender. However, third person singular pronouns have gender specification, as in (78).

(78) /on/ ⇔ [3rd sg, masculine]
/ona/ ⇔ [3rd sg, feminine]
/ono/ ⇔ [3rd sg, neuter]
/ja/ ⇔ [1st sg]
/ty/ ⇔ [2sg]

However, the situation is different in the plural. Russian does not distinguish gender in the plural, i.e. there is one exponent for all three genders of the third person pronoun 'they'. In other words, the third person plural pronoun is underspecified for the gender feature, (79). The gender feature underspecification derives the fact that Russian third person plural pronouns show syncretism among three genders, as suggested in Halle (1997: 428).

(79)
/i/ ⇔ [plural]
/a/ ⇔ [feminine]
/o/ ⇔ [neuter]
∅ ⇔ elsewhere

In this dissertation I adopt the approach discussed above to account for local case syncretism found in the languages of the survey.

4.2. Attested types of local case syncretism

Given the hierarchical structure for local cases (62), it is possible to make predictions regarding what types of case syncretism can be attested cross-linguistically. There could be three types of local case syncretism: the first one involves features under the node Pl, the second one involves features under the node Mot, and the last one has to do with the features under the node Asp. First, I will present the actual data from the survey and then I compare it with the predictions made by the theory proposed by Caha (2009) and Pantcheva (2008 a, b).

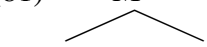
In my survey I found only two patterns of syncretism between local cases which are given below in (80):

(80)

1) essive-allative (Daghestanian languages)
2) essive-ablative (Nivkh, Veps)

Four Daghestanian languages (Godoberi, Bežta, Hunzib, Rutul) are characterized by having essive-allative syncretism. Recall that local cases consist of, at least, two components: one is a series marker and the second (Place) one is an exponent of the Motion node which basically corresponds to essive, allative, and ablative cases, as schematically shown in (81). In the system that I argue for in this paper, the Motion terminal node can be specified by the following features: [-motion] for essive, [+motion, -source] for allative, and [+motion, +source] for ablative.

(81)



[location] [+/-source; +/-motion]

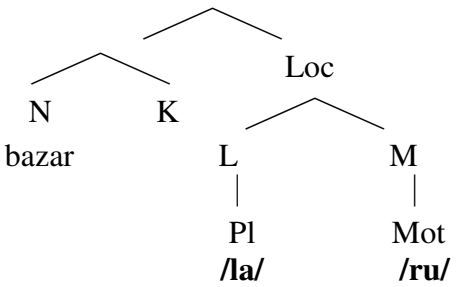
Importantly, in languages with this type of syncretism, the series markers combine with either essive-allative or ablative morphemes, in other words, only the Mot exponents are involved in this type of local case syncretism. I will illustrate this type of syncretism with data from Godoberi, which has only two exponents: one is for ablative case and one is for allative and essive cases. If we adopt the idea of vocabulary item underspecification, the rules for vocabulary insertion in Godoberi can be stated as in (82), where the ablative case exponent is specified for the [+source] feature, whereas the allative-essive exponent is an elsewhere entry.

(82) /ru/ ⇔ [+source]

∅ ⇔ elsewhere

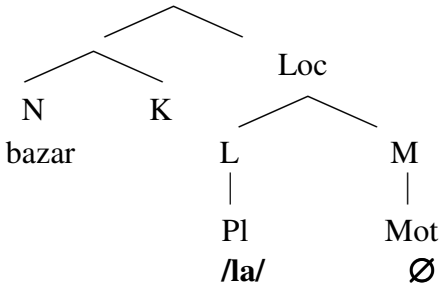
In Godoberi, there is a competition for insertion under the Mot node between two vocabulary exponents: /*ru*/ and ∅. The ablative case exponent get inserted when the node Mot is specified for the feature [+motion], otherwise it is ∅ that is inserted, as shown in (83).

(83) a.



bazar- la- ru
market-on- ABL
'from the market'

b.



bazar- la-∅
market- on-ALL/ESS

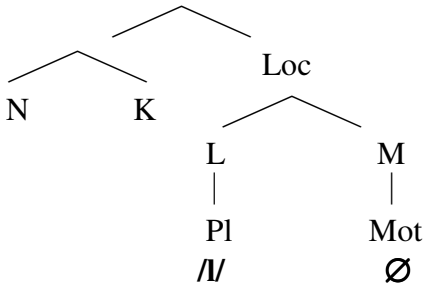
The second type of local case syncretism found in the survey is the syncretism between essive and ablative cases. There are only two instances of this type of syncretism in my survey –Veps (a Finno-Ugric language) and Nivkh (a language isolate). Similarly to the previous type of syncretism, the underspecification approach to syncretism will capture all relevant facts about Veps and Nivkh. To illustrate this type of local case syncretism, I will use data from Veps.

Veps data have been previously discussed in this chapter 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. Moreover, three local cases can be decomposed into two parts: Place and Motion. Similarly to other Finnic languages, Veps distinguishes two types of Place (location): 'in' (/*s*/) and 'at' (/*l*/). But unlike Finnish and Estonian, which have essive, allative, and ablative cases, Veps makes a distinction only between allative and ablative/essive. Recall that allative case can be specified for the feature [-source, +motion]. Veps allative case is only specified for [-source], whereas the ablative-essive exponent is an elsewhere item. The rules of vocabulary insertion, which summarize the Veps data, are given in (84).

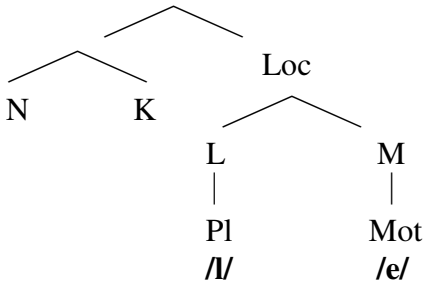
(84) /ho/ ⇔ [+location, in, +motion, -source]
/s/ ⇔ [+location, in]
/l/ ⇔ [+location]
/e/ ⇔ [-source]
∅ ⇔ elsewhere

Given the vocabulary insertion rules in (84), the vocabulary exponent of allative case is inserted when the node Pl is specified for the feature [-source], otherwise the adessive-ablative exponent is inserted, as in (85).

(85) a. adessive-ablative



b. allative



The second case of ablative-locative (essive) case syncretism comes from Nivkh, a language isolate spoken in the Russian Far East. Nivkh has several dialects which have some differences in their syntax and morphology. These dialectal differences include the case system. Recall the Nivkh data in (77). There are three local cases: locative, allative, and locative-ablative. Interestingly, the distinction between locative and ablative is found only in one dialect of the Lower Amur and the Takhtin district (Khaborvsk territory). In

this dialect, the ablative-locative case has just one meaning, namely ablative, while the locative meanings are expressed by the locative case marker. The situation, however, is different in other dialects of Nivkh: there are only two local cases, allative /*rox*/ and locative-ablative /*ux*/. The vocabulary insertion rules for the two dialects of Nivkh are given in (86).

(86) a. The Lower Amur and the Takhtin dialect[30]

/tɨkɨ/ ⇔ [location, +motion, +telic]
/rox/ ⇔ [location, -source]
/ux/ ⇔ [location, +source]
/in/ ⇔ elsewhere

b. Other Nivkh dialects

/tɨkɨ/ ⇔ [location, +motion, +telic]
/rox/ ⇔ [location, -source]
/ux/ ⇔ elsewhere

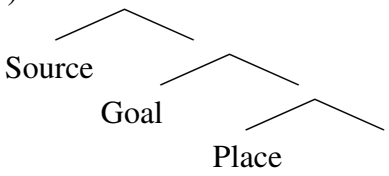
4.3. Local case syncretism in Caha (2009)

In addition to the predictions about portmanteaus discussed in section 3, Caha (2009) 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. His discussion of syncretism patterns of local cases is built on work by Pantcheva (2008 a, b). Pantcheva (2008 a, b) suggests that local cases have the following internal structure,

[30] I take local case exponents in Nivkh to be portmanteau morphemes: there is no evidence that /x/ part of allative and ablative is the same.

where Place (=locative) is the most embedded component with Goal (=allative) dominating it and Source (=ablative) dominating both Goal and Place.

(87)



The Universal Contiguity Principle predicts that only adjacent projections can be involved in syncretism. Given the structure in (87), 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. However, one of the types of syncretism admitted by the Universal Contiguity Principle, namely, 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 (87) 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. It is important to point out that the structure in (87) does not rule out the Source-Place syncretism, which has been discussed earlier in the section

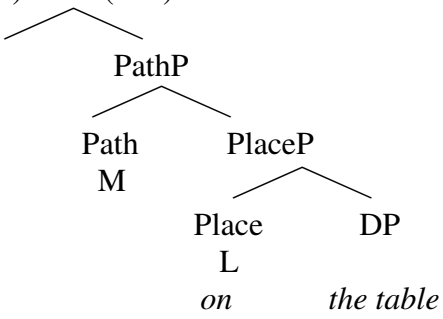
The results of my study are somewhat different from Pantcheva's (2008b): one of the two types of syncretism not attested in her sample is actually attested in mine. Specifically, syncretism between locative (Place) and ablative (Source), which is excluded by the Universal Contiguity Principle, is attested in Veps and Nivkh. For example, Nivkh has a locative-ablative case which combines functions of both locative (stative) and ablative cases, as shown in (77) and (86). These two languages challenge the claims made by Pantcheva (2008b) and Caha (2009): the system they work in makes incorrect predictions regarding possible types of syncretism.[31] This particular type of syncretism is especially important since its existence is admitted by the theory proposed here. The two necessary ingredients for the account of the ablative-essive syncretism are the structure of local cases proposed in this dissertation (62) and the underspecification approach to syncretism. The facts from local case syncretism provide additional support for the structure put forth in this study.

[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). The grammatical description of Veps does not have actual examples with local cases. Therefore, one might argue that adessive-ablative case is actually adessive case.

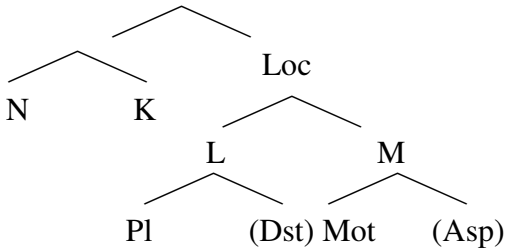
5. Local cases vs. adpositions

In the beginning of the chapter, I referred to the issue regarding similarities between the PP structure in (88) and the local case affixes structure in (89).[32] I will address in this section, demonstrating how the morphological structure in (89) is related to the syntactic structure in (88).

(88)



(89)



A quick look at (88) and (89) reveals quite a few differences between the morphological structure of local cases in (89) and the syntactic structure of adpositions in (88). Despite the differences, I propose that local cases and adpositions are two sides of the same coin. In this section I will present arguments in favor of this view and show that the differences between (88) and (89) are only apparent.

[32] It is necessary to point out that in (89) I use labels different from the ones in the syntactic tree. It is done for the ease of exposition in the discussion of morphology: Pl head is actually L, which is optionally modified by Dst.

The idea that local cases and adpositions have the same structure is not new. Recently, it has been argued for by Asbury (2008), Spencer (2008), Trommer (2008) that Hungarian, a language with a local case system similar to the ones discussed earlier in this chapter, does not actually have local cases, but adpositions. 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 certain P heads (DirP or LocP), whereas other (core) cases are realizations of D and φ heads. Spencer (2008) adopts a similar view on the case system in Hungarian and argues that Hungarian does not have a case system. He puts forward an idea that Hungarian nouns and pronouns that are inflected for case are simply special forms of nouns and pronouns. He draws parallels between cases and adpositions and concludes that Hungarian nouns inflected for local cases are different from nouns which reflect a relevant grammatical function (direct object, indirect object, subject).

Another proposal about the status of local cases 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 in PF is due to differences in their phonological form: phonologically smaller realizations of P get integrated into a preceding word, whereas phonologically bigger realizations of P (adpositions) are not affected by this process.

In this chapter I adopt the general line of research pursued by Asbury (2008), Spencer (2008), and Trommer (2008) and I assume that local cases are PF realizations of P. Another case in which cases behave like prepositions is discussed in Bošković (2006). In certain cases instrumental case in Serbo-Croatian behaves like one of the local cases.

There is no preposition in (90)a, however, the sentence has a noun inflected for instrumental case which has a spatial case like interpretation of moving along something. Bošković also shows that in certain contexts where for morphological reasons the noun cannot be inflected for instrumental case, a preposition emerges to express the same meaning. This is the case with (90)b. Finally, (90)c is unacceptable since neither instrumental case nor the preposition is present. (Note that, in contrast to Russian, Serbo-Croatian numerals like five do not inflect for case, but the noun following five must always be in genitive.)

(90) a. Trčao je šumom.
Run is forest. INSTR.SG
'He ran through the forest.'

b. Trčao je kroz pet šuma.
Run is through five forest.GEN.PL

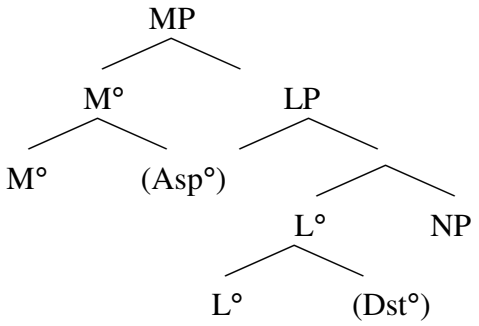
c. *Trčao je pet šuma.
Run is five forest.GEN.PL

Now I will spell out my assumptions about the structure of spatial expressions. First, I assume that cases and adpositions have the same core structure, i.e., they both at least have a locational (Place=L) and a directional component (Motion=M).[33] Spatial expressions realized as local cases can have complex L and M heads: L can be modified by Dst, while M can be modified by Asp. I suggest that Dst and Asp are adjuncts that adjoin to the element they modify, i.e., the L and M heads respectively. This assumption is similar to the traditional view on adjuncts (Ernst 2002) where adjuncts adjoin to what

[33] PPs and NPs inflected for local cases behave differently with respect to c-command and binding. The difference can be attributed to differences in the amount of functional structure they have.

they modify.[34] For example, adverb *completely* modifies VP and it adjoins to VP. In my case, Dst and Asp modify L and M respectively, hence Dst head adjoins to L and Asp head adjoins to M. The implicational universals discussed earlier in section 3 follow from the assumption that Dst and Asp are modifiers that adjoin to L and M: Dst and Asp are impossible in the absence of L and M, since then there would be nothing for them to modify.

(91)

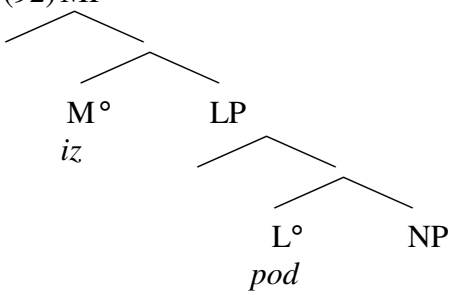


I assume that the syntactic structure of adpositions is the one given in (91), where optional elements are in parentheses. Languages with adpositions (as opposed to local cases) rarely have complex prepositions, realizing all four heads (M-Asp and L-Dst). In other words, some languages have all four heads, some three (L, M and Asp or Dst), while others have only two (L and M). In this chapter we have already seen that languages with local cases can have different number of heads. The same holds for languages that have adpositions, e.g., Russian has a complex prepositions *iz-pod* 'from

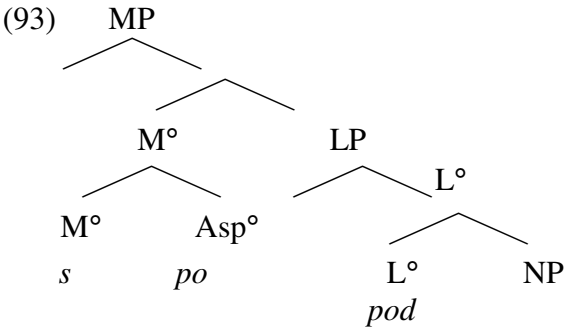
[34] It has also been proposed that Adverbs (more precisely, Adv°) adjoin to other heads (Travis 1988, Rivero 1994, Williams 1994).

under', while Slovak has a preposition *s-po-pod* 'from under (along something[35])'. The Russian complex preposition is a realization of two heads L and M, as in (92), while the Slovak preposition is a realization of three heads L, M and Asp, as in (93).

(92)



(93)

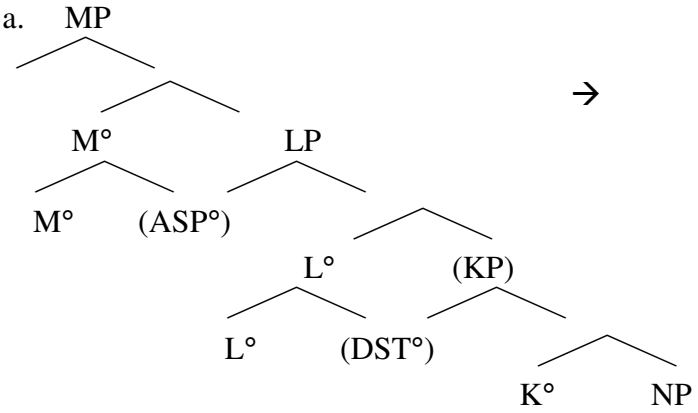


Recall from the discussion of local cases earlier in the chapter that local case affixes are attached to nouns that are inflected for either ergative or genitive cases. Based on this morphological evidence, I argued for the K node in the structure of local cases that hosts ergative and genitive case exponents. The next question is what its equivalent in the structure of PPs is. Languages that have morphological realization of cases have NP-complements of PPs marked for some case. I suggest that this case corresponds to K in the morphological structure.

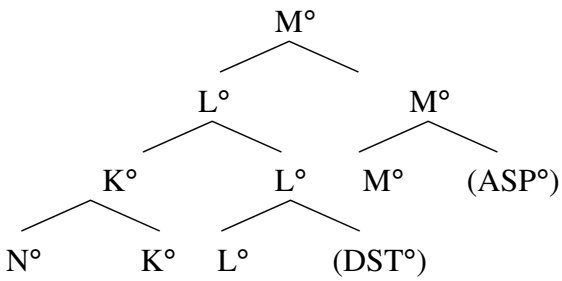
[35] The preposition *po* both in Russian and Slovak is similar in a way to prolative case and has a meaning 'along', which corresponds to Asp.

The syntactic structure in (94)a is still different from the morphological one: complex heads M and L are sisters in (89). I suggest that the morphological structure in (89) is a product of head movement and rebracketing. First, applications of successive cyclic movement yield the structure in (8)b.

(94) a.



b.



Then, Rebracketing applies. Rebracketing turns adjacent heads into a complex head without changing the morpheme order, as schematically shown below in (9).[36]

(95) A> B> C → [A B] > C

[36] The morphological operation of rebracketing will be discussed at length in chapter 4.

Then, if we apply the morphological operation of rebracketing to the output of the head movement in (94)b, we get the structure in 0.

(96) [[[N K] [L (DST)]] [M (ASP]] → [[N K] [[L (DST)] [M (ASP]]]

In this section I addressed the issue of how the morphological structure for local cases I have argued for is related to the syntactic structure of PPs. I showed that the two have the same structure: the morphological structure is derived by head movement and rebracketing.

6. Conclusion

In this chapter I have addressed several descriptive and theoretical issues in the morphology of local cases. First, I have presented and discussed the results of an investigation of 111 languages with local cases. All 111 languages without exception conform to the linear order in 0. Furthermore, I have suggested that local case affixes have a complex geometric organization, as in (89). I have provided evidence for the structure in (89) which comes from attested and unattested portmanteau morphemes and implicational universals. I have shown that only the types of portmanteau morphemes predicted in (89) are attested in the languages of the survey. I have also examined cases of local case syncretism which provide additional support for the structure in (89).

The discussion of portmanteau affixes has raised an important issue about how this type of morphemes should be dealt with. I have discussed both DM and non-DM approaches and showed that the non-DM proposals (Williams 2003, Caha 2009) run into a problem of overgeneration of local case portmanteaus i.e., they predict both attested and unattested types of portmanteaus. Furthermore, I have proposed a new approach to vocabulary insertion (the Vocabulary Insertion Principle) which allows insertion at non-terminal nodes and which enables us to dispense with the DM operation of fusion. I have shown that the VIP and the structure in (89) correctly predicts possible and impossible local case portmanteau morphemes.

In the next two chapters I will address some issues raised in this chapter in more detail. In particular, chapter 3 is devoted to the discussion of the syntactic structure of adposition which develops further the proposal about their structures put forward in this chapter. In chapter 4 I will go back to the morphological issues raised in chapter 2. I will test if it is possible to extend proposals made in this chapter (the Vocabulary Insertion Principle, rebracketing) to other domains, e.g. Tense-Aspect-Mood morphology.

APPENDIX: Attested cases of local-non-local case syncretism

Although the main focus of this chapter has been on local cases, there is also syncretism between local cases and non-local cases, namely dative and instrumental, in the data I investigated. The main purpose of this appendix is to present the patterns attested in the data and to make some preliminary speculations regarding how these might be incorporated into the general approach to local cases adopted here.

There are several instances of syncretism between local and non-local cases. The survey of 111 languages conducted reveals the following three patterns of this type of case syncretism.

1) dative-allative (the Samoyed languages, Kerek, Orok, Chukchi)
2) dative-locative (Even, Evenki, Nanay, Ulchi, Udeghe; Itelmen (the Sedanka dialect))
3) instrumental-locative (the Samoyed languages)

Interestingly, almost all local case morphemes involved in this type of syncretism are portmanteau morphemes.[37] It has been proposed in the literature that non-local cases are characterized by a set of features (Blake 1990). Calabrese (2008) proposes a system of features for non-local, oblique cases, i.e., non-nominative and non-accusative, that include some of the same features that are used in this work for local cases. Here I adopt feature specification for relevant cases (dative and instrumental) proposed by Calabrese (2008). I also assume that oblique case features are under the node K. One more

[37] The only case of non-portmanteau exponent is found in the Tungusic languages: it consists of the Pl part /*du*/ and the Mot ∅.

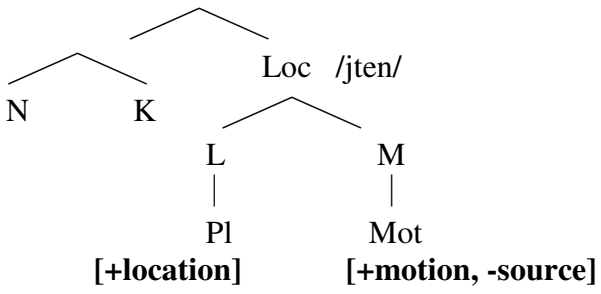
assumption needs to be made: I assume that in the case of syncretism between oblique and local cases, the feature [location] is binary, i.e. [+/-location]. [+location] indicates that the M dependents are semantically interpreted, whereas [-location] gives corresponding oblique cases without locational interpretation. I also assume that in whenever the noun is inflected for non-local cases, the only nodes present are K and N.

The first type of syncretism is dative-allative. This type syncretism is found in several unrelated languages. I will discuss this case using an example from Kerek, a Chukotko-Kamchatkan language. Kerek has three local cases which are given in (97).

(97) locative – nan
ablative- nan-ku
allative – jten

The exponents of locative and ablative cases lexicalize two nodes: L (Place */nan/*) and M (Motion */ku/* for ablative [+source] and ∅ for locative [-motion]). However, the exponent of allative case is a portmanteau morpheme which lexicalizes node Loc which is characterized by features [+location, +motion, -source], as shown in the tree in (98).

(98) allative



The exponent of allative case in Kerek is also used as an exponent of dative case. I adopt Calabrese's (2008) featural specification of dative case in (99), which has the same features as local cases.

(99) Dative: [-source, +motion, -location]

The syncretism between allative and dative cases can be captured by appealing to the operation of Impoverishment. I follow Calabrese (2008) who argues that feature deletion (impoverishment) is followed by feature filling, i.e., a feature can be deleted and replaced with the same feature with a different value: so [-x] can only be replaced with [+x] . In the case at hand, the feature of the dative case that undergoes deletion is [-location], in place of which a feature [+location] is inserted, as shown in (100).

(100) [-source, +motion, -location] → [-source, +motion, +location]

As a result of impoverishment, the node K is specified for the feature bundle [-source, +motion, +location], which allows the exponent of allative case to be inserted under K, as shown in (87).

(101) a. /jten/ ⇔ [+location, +motion, -source]

b.

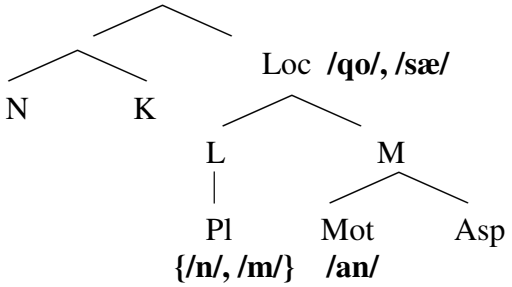
The second type of syncretism between local and non-local cases involves locative and instrumental cases. The syncretism between locative and instrumental cases is found un all four Samoyed languages (Enets, Nenets, Nganasan, and Selkup). Consider the following example from Selkup. There are 5 local cases, as shown in (102).

(102) ablative – n-an
allative – n-ɨk
prolative – m-ɨk
locative - sæ
translative- qo

The morpheme /*n*/ in ablative and allative cases is an exponent of the node Place [+location], whereas /*m*/ in prolative is an exponent of [+edge]. Then the morpheme /*an*/ is an exponent of the node Motion [+source], /*ɨk*/ is an exponent of the node M [+motion, -source], /*qo*/ lexicalizes the node Loc [+location, +motion, -direction], and finally /*sæ*/ is a lexical representation of the node Loc [+location, -motion, -source]. The rules of insertion are given in (103) and the tree with points of insertion for different morphemes is in (104).

(103) /qo/ ⇔ [+location, +motion, -direction]
/sæ/ ⇔ [+location, -motion]
/ɨk/ ⇔ [+motion, -source]
/an/ ⇔ [+motion, +source]
/m/ ⇔ [edge, +location]
/n/ ⇔ [+location]

(104)

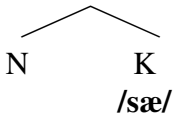


As I have mentioned above, the lexical item /*sæ*/ realizes the node Loc which has the following features: [+location, -motion, -source]. Recall that the same exponent is used to express the meaning of instrumental case. Calabrese (2008) suggests that instrumental case has the following features: [-source, -motion, -location]. Similarly to the previously discussed case, I use the operation of Impoverishment to account for the locative-instrumental syncretism: the feature [-location] is deleted and replaced by the feature with an opposite value, as shown in (105).

(105) [-motion, -source, -location] → [-motion, -source, +location]

The operation of impoverishment yields the feature specification of the node K as [-motion, -source, +location], which results in insertion of the exponent of locative case under K, as in (106).

(106)



The last case of syncretism between local and non-local cases comes from four Tungusic languages, where locative and dative cases are syncretic. To further discuss the issue, consider a relevant part of the local case paradigm in Evenki.

(107) locative – du
allative – du-la
ablative- du-k
translative- du-li

All four cases in (107) share the same component */du/*, which is a lexicalization of the node Place [+location]. Having compared these cases, I conclude that the node Motion can have the following exponents: */la/* ([+motion]), */k/* ([+source]), and ∅ ([-motion]). Moreover, there is a portmanteau morpheme */li/* expressing features [+motion, -direction] of the node M.

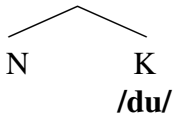
(108) /du/ ⇔ [+location]
/li/ ⇔ [-direction]
/la/ ⇔ [-source]
/k/ ⇔ [+source]
∅ ⇔ [-motion]

I assume that dative case has the following features: [-source, +motion, -location]. In Calabrese's (2008) system, a language can have constraints on feature combinations. The feature combination of the dative case is disallowed in Evenki, i.e., there is a constraint in the language against this combination of features. As in the two cases discussed above, I will use the operation of Impoverishment: first, the feature [-location] is deleted and then replaced with the feature with an opposite value, as shown in (109).

(109) [-source, -location, +motion] → [-source, +location, +motion]

I assume that there is a feature hierarchy, according to which the feature [+location] is ranked the highest. Then, the feature deletion in (109) makes possible insertion of the exponent of locative case under K, since this vocabulary item /*du*/ wins the competition against the other three exponents, as shown in (110).

(110)



To summarize, in this section I have discussed syncretism between local and oblique cases, giving an overview of attested patterns. I have also suggested an analysis of these patterns based on Calabrese (2008).

CHAPTER 3: ON THE FUNCTIONAL STRUCTURE OF PP

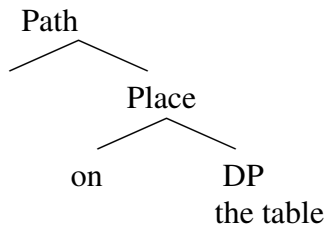
1. Introduction

This chapter is devoted to the discussion of the syntactic structure of PP. Early on it was standardly assumed that PP consisted only of a preposition and its complement NP. However, the view on the structure of PP has changed significantly: it has been proposed that PPs have a more complex structure than just P and NP, i.e., that there are a number of additional functional projections above PP. In this chapter I investigate the functional structure of PPs relying on cross-linguistic data from Slavic and Romance languages. In the first part of the chapter I propose a new functional structure for PP and suggest that languages differ with respect to the amount of functional structure they have in PPs. To determine the exact amount of functional structure in PP in each language, I will use three diagnostics: measure phrase availability, binding properties of PPs, and availability of quantifier float in PPs. The second part of the chapter focuses on the syntactic behavior of one element of the PP structure, namely measure phrases in Russian. I will examine their interaction with such syntactic phenomena of Russian as left-branch extraction, approximative inversion, and preposition doubling.

The syntactic structure of PPs has been debated for three decades. Since van Riemsdijk (1978), it has been recognized that spatial PPs have a complex internal structure, beyond simply [$_{PP}$ P [NP]]. Although many current proposals (see the references below) differ in many respects, there is a consensus that at a minimum, there are two layers of functional structure within spatial PPs: an inner layer denoting location, and an outer layer denoting direction/motion (with authors disagreeing as to whether the

outer layer is present for static/locational expressions, such as 'on the table'), as in (1). This claim was supported by the morphological data discussed in chapter 2: there are always two layers (locational and directional) present in the spatial expressions. This complexity is transparent in 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. Ranging from the minimum structure in (1), many proposals (especially Koopman 2000, Bošković 2004b, Den Dikken 2006, Svenonius to appear) posit even more articulated functional structure within PPs. This chapter consists of two parts: the first half of the chapter discusses the structure of spatial PPs (Path/PlaceP) cross-linguistically, whereas the second part focuses on one element of the structure, namely, measure phrases in Russian.

(1)



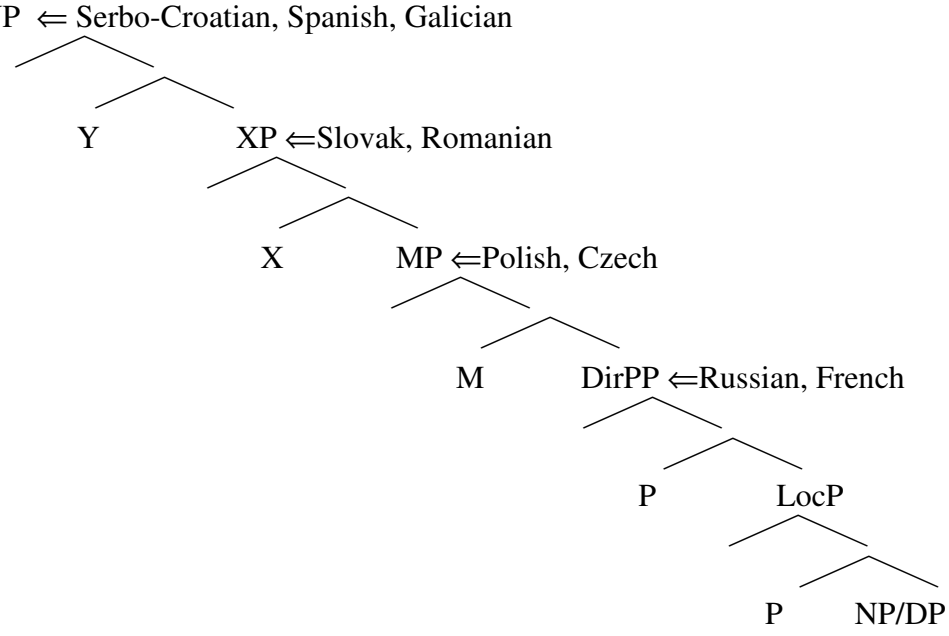
It has been previously suggested that PPs have a full clausal structure similar to CP (Bošković 2004b, Noonan 2004, Den Dikken 2006).[1] In this chapter I argue on the basis of a comparative study of Slavic and Romance languages that PP functional structure is not uniform across languages. More specifically, I propose that there is cross-linguistic variation in the amount (but not the ordering of) functional projections in the PP, in line with similar proposals about variation in functional inventories in the inflectional domain (Bobaljik 2002, Bobaljik & Thráinsson 1998), in the size of

[1] However, there are proposals arguing for poor functional structure of PPs, e.g., Abels (2003).

infinitives (Wurmbrand 2001, etc.), and the DP/NP domain (Corver 1992, Bošković 2008).

I will examine three diagnostics for PP-internal functional structure across Slavic (Russian, Polish, Czech, Slovak, and Serbo-Croatian) and Romance languages (French, Spanish, and Galician): first, I discuss the availability of measure phrases (MP) in PPs in these languages; then, I examine binding properties in PPs, and, finally, I compare the languages in question with respect to the possibility of quantifier float within PPs. Based on the three diagnostics listed above, I propose that languages differ with respect to the amount of functional structure in PPs, as in (2); moreover, the amount of functional structure can vary even within a single language.

(2)



Some assumptions need to be spelled out regarding the structure in (2). First, I assume that all languages have the minimum structure of [$_{\text{DIRPP}}$ Dir [$_{\text{LOCPP}}$ Loc [NP/DP]]], as argued in chapter 2. Second, there are implicational relations between functional

projections in the structure in (2), which go top-down, i.e., the presence of a higher projection (XP) implies the presence of a lower projection (MP), but the presence of a lower projection (MP) does not imply the presence of a higher projection (XP).

2. How different are PPs cross-linguistically?

2.1. Degree modification in PPs

I will start the discussion of spatial PPs with an investigation of degree modification. The possibilities for degree modification in PPs have been discussed by Koopman (2000) and Den Dikken (2006) with respect to Dutch and English.

Koopman (2000) is among the first works arguing for rich functional structure for adpositional phrases. She bases her analysis on data on Dutch prepositions and assumes that PPs have a rich structure which has a lexical P-head in both types of PPs: locational and directional. Koopman also investigates the position of degree modifiers of adpositions, as in (3), in the structure of PPs.

(3) John swam [$_{PP}$ **5 meters** under the bridge].

Koopman suggests the following structure for locative PPs where Place P is a landing site for Dutch R-pronouns, Deg(ree) P is a place for modifiers, and finally CP is another landing site for Dutch R-pronouns.

(4) [$_{CP(Place)}$ Spec $_{[+R]}$ [C (Place) [$_{DegP(Place)}$ MOD [Deg (Place) [$_{PlaceP}$ Spec$_{[+R]}$ [Place [$_{PP}$ P_{Loc} DP]]]]]]]

Furthermore, Koopman considers directional PPs to be minimal extensions of locative PPs suggesting that prepositional PPs have a Path head above locational PPs with the structure given in (4). The structure of directional PPs is given in (5), where [Locative] stands for the structure in (4).

(5) $[_{PathP}$ Spec [Path=ø [LOCATIVE]

Den Dikken (2006) suggests several changes to the structure of PPs proposed by Koopman (2000). He discusses Dutch data with modified PPs which are ambiguous between two readings: Location and Path, as illustrated in (6) with respect to English. In other words, the degree modifier in (6) can be interpreted as the height at which the plane was flying over the beach or it can mean that the plane flew the distance of five meters over the beach. Den Dikken refers to the first reading as Place and to the second reading as Path.

(6) The plane flew five meters over the beach. (ambiguous)

Den Dikken uses this as evidence for the existence of one more DegP for Path modifiers. The extended structure is shown in (7).

(7) $[_{CP(Path)}$ [C (Path) $[_{DegP\ (Path)}$ Deg (Path) $[_{PathP}$ [Path $[_{PP}$ [P $_{Dir}$ $[_{CP\ (Place)}$ [C (Place) $[_{DegP\ (Place)}$ [Deg (Place) $[_{PlaceP}$ [Place $[_{PP}$ [P $_{Loc}$ DP]]]]]]]]]]]]]]]

Den Dikken also suggests that there is a parallelism between the structure of PPs and the structures of VP and NP, i.e., that they have the same clause-like functional structure, as in (8).

(8) a. $[_{CP}\,C^{[force]}\,[_{DxP}\,Dx^{[tense]}\,[_{AspP}\,Asp^{[event]}\,[_{VP}\,V\,\ldots]]]]$

b. $[_{CP}\,C^{[def]}\,[_{DxP}\,Dx^{[person]}\,[_{AspP}\,Asp^{[num]}\,[_{NP}\,N\,\ldots]]]]$

c. $[_{CP}\,C^{[space]}\,[_{DxP}\,Dx^{[space]}\,[_{AspP}\,Asp^{[space]}\,[_{PP}\,P\,\ldots]]]]$

Den Dikken argues that AspP in prepositional phrases serves to distinguish locative and directional PPs, similarly to AspP in VP, where it distinguishes static and motion verbs; DxP distinguish between 'here' and 'there' for locative PPs and 'towards the speaker' and 'away from the speaker' for directional PPs; CP has the same function as in Koopman's work. Den Dikken suggests that locative and directional PPs have the following structures respectively, assuming, like Koopman (2000), that locational adpositions lack a directional layer in their structure.

(9) a. $[_{CP}\,C^{[place]}\,[_{DxP}\,Dx^{[place]}\,[_{AspP}\,Asp^{[place]}\,[_{PP}\,P_{loc}\,\ldots]]]]$

b. $[_{CP}\,C^{[path]}\,[_{DxP}\,Dx^{[path]}\,[_{AspP}\,Asp^{[path]}\,[_{PP}\,P_{dir}\,\ldots]]]]$

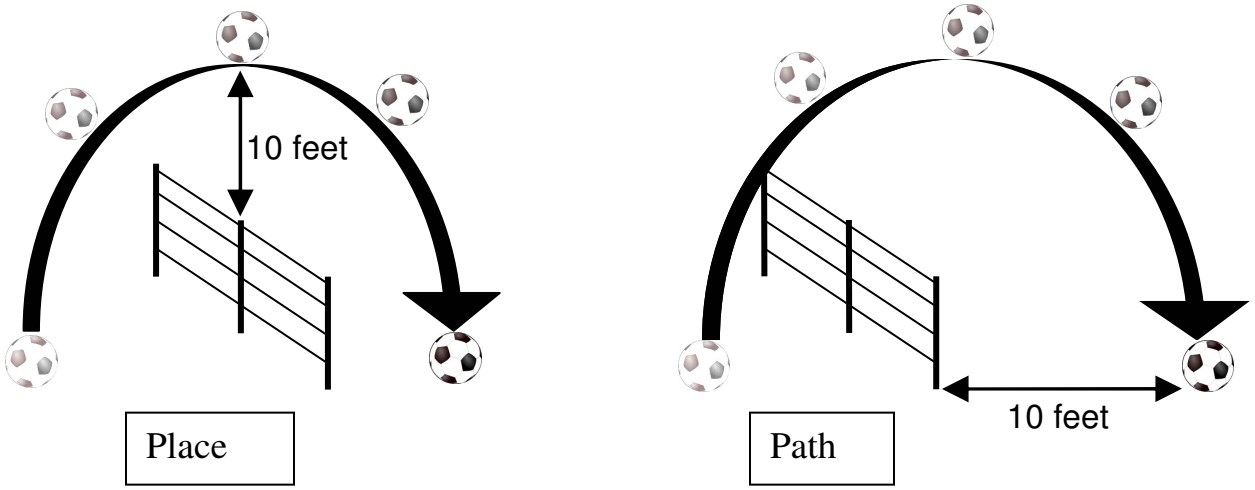
Consider now the example in (10). The sentence in (10) is at least two-way ambiguous[2]: it can mean that the ball was flying at distance of 10 meters above the fence but it can

[2] There is actually another interpretation of the sentence in (10): 10 meters can also mean the distance from the point from which the ball was thrown to the point where it landed.

also mean that the ball landed 10 meters behind the fence. These readings are illustrated in (11).

(10) John threw the ball 10 meters over the fence. (ambiguous)

(11)



As noted above, these two readings correspond to Den Dikken's Place and Path respectively and interprets these facts about the ambiguity of sentences with degree modifiers in PPs as evidence for two structural positions for measure phrases in PP, yielding two types of interpretations: one is in the locational component and the other one is in the directional component of PP.

Interestingly, languages vary with respect to the possibility of measure phrase modification in PPs. The Slavic languages under discussion do not behave uniformly. First, one language, namely Russian, disallows NP measure phrases, which I will refer to as NP_{MEAS}, as shown in (12)-(13).

(12) *Ivan brosil mjač 10 metrov za zabor. (Russian)
Ivan threw ball 10 meters behind fence
'Ivan threw the ball 10 meters over the fence.'

(13) *Ivan brosil mjač 10 metrov nad zaborom.
Ivan threw ball 10 meters above fence

The only way to have degree modifiers in Russian is to use another PP to introduce them, as in (14) and (15). I will refer to PP measure phrases as PP_{MEAS}.

(14) Ivan brosil mjač na 10 metrov za zabor. (Russian)
Ivan threw ball on 10 meters over fence
'Ivan threw the ball 10 meters over the fence' (Path)

(15) Ivan brosil mjač na 10 metrov nad zaborom.
Ivan threw ball on 10 meters above fence (Place)

Other Slavic languages covered in this survey do not pattern with Russian but with English and Dutch in allowing NP_{MEAS} within PPs. Consider the following example from Serbo-Croatian (16), which allows NP_{MEAS} in PPs, like English and Dutch. However, Serbo-Croatian is different from these two languages: it does not show the ambiguity found in English and Dutch, but it uses two different prepositions to express Place and Path meanings.

(16) a. Jovan je bacio loptu 10 m iznad ograde. (Serbo-Croatian)
Jovan is threw ball 10 m over fence (Place)

b. Jovan je bacio loptu 10 m preko ograde. (Path)
Jovan is threw ball 10 m over fence

Other Slavic languages (Czech, Slovak, and Polish) pattern with Serbo-Croatian: first, they allow degree modification in PPs by NP_{MEAS}; second, they do not show ambiguity, as in (10), but use two different prepositions for the two meanings (Path and Place). The examples from Czech, Slovak, and Polish illustrating this point are given in (17)-(19).

(17) a. Honza hodil ten balón 10 metrú přes plot. (Czech)
Honza threw this ball 10 meters over fence (Place)

b. Honza hodil ten balón 10 metrú za plot. (Path)
Honza threw this ball 10 meters behind fence

(18) a. Ján prehodil loptu päť metrov nado hradou. (Slovak)
Jan threw ball five meters above fence (Place)

b. Ján prehodil loptu päť metrov za ohradu. (Path)
Jan threw ball five meters behind fence

(19) a. Jan rzucił piłkę dziesięć metrów nad płotem. (Polish)
Jan threw ball ten meters above fence (Place)

b. Jan rzucił piłkę dziesięć metrów za płot. (Path)
Jan threw ball ten meters behind fence

Interestingly, the Romance languages that I surveyed behave like Slavic languages in some aspects. First, French, like Russian, does not allow NP_{MEAS} with PPs, as shown in (20). The only way to make the sentence grammatical is to use another preposition, as in (21). French, however, is still different from Russian: the sentence in (21) has two readings: Place and Path.

(20) *Jean a lance la balle 10 mètres par-dessus la clôture. (French)
John has thrown the ball 10 meters over the fence

(21) Jean a lance la balle à 10mètres par-dessus la clôture. (French)
John has thrown the ball at 10meters over the fence

All other Romance languages (Galician, Spanish, and Romanian) allow NP_{MEAS} degree modification in PPs. Nevertheless, these languages differ with respect to the Path-Place ambiguity. Spanish and Galician are the Romance counterparts of the Slavic languages in the chapter (besides Russian): Spanish and Galician have NP_{MEAS} in PPs but they do not show the ambiguity found in English and Dutch, as shown in (22) and (23).

(22) a. El chico golpeó le pelota 10meters sobre le valla. (Spanish)
The boy kicked the ball 10meters over the fence (Place)

b. El chico golpeó le pelota 10meters más allá de le valla.
The boy kicked the ball 10meters over the fence. (Path)

(23) a. Jon tirou a pilota 10metros sobre a cancela. (Galician)
Jon threw the ball 10meters over the fence (Place)

b. Jon tirou a pilota 10 metros mais alo da cancela.
Jon threw the ball 10 meters over of.the fence (Path)

The last language of the present study is Romanian. Romanian behaves like English and Dutch: Romanian allows NP degree modification of PP and shows the Path-Place ambiguity.

(24) Ion a aruncat mingea zece metri peste gard. (Romanian)
John has thrown ball-the ten meters over fence

As has been shown above, Slavic and Romance languages do not behave uniformly with respect to whether they allow NP_{MEAS} in PPs: some languages do not allow it at all (Russian, French), some languages (Serbo-Croatian, Czech, Slovak, Polish, Spanish and

Galician) allow NP_{MEAS} in PP but do not show the Path-Place ambiguity with one preposition, whereas Romanian exhibits syntactic behavior similar to English and Dutch, i.e., it allows NP_{MEAS} modification in PPs and such expressions are ambiguous between Place and Path interpretations.

The differences in the behavior of Slavic and Romance languages with respect to degree modification in PPs can be explained in the following way: not all languages have an MP projection, which is the locus of NP_{MEAS} (Russian, French). Note that I assume that only the presence of NP_{MEAS} implies the presence of the MP projection; PP_{MEAS} not being located in MP, but lower in the structure, directly modifying Path/Place P (PP_{CORE}) (see the discussion below). This means that Russian and French have less PP structure than other languages examined here, since they then lack MP. Contrary to Den Dikken (2006), I assume that there is a single MP projection above PP_{CORE}. The results of my cross-linguistic survey suggest that all languages allow both types of degree modification (Path and Place); there is no language that allows NP_{MEAS} with only Path or Place. Having one MP dominating both DirPP and LocPP, which then has both Loc and Dir in its scope, predicts that both types of degree modification should be possible. Finally, not all languages have the Place/Path ambiguity in that they use a single preposition for both meanings. I suggest that the Path-Place ambiguity can be attributed to differences in the lexical meanings of prepositions across languages, i.e., in some languages (Romanian, English) the preposition is polysemous, whereas in other languages (Spanish, Serbo-Croatian, etc.) it is not. Notice, however, that not all English prepositions behave like 'over' in (10), which is three-way ambiguous. The ambiguity disappears if the preposition 'over' is replaced with 'across' or 'above', as in (25): in (25)a the only

meaning is Path, whereas in (25)b the only available meaning is Place. This fact of English also shows that what matters is the choice of preposition, whose lexical meaning determines what interpretation (Path or Place or both) it is available in combination with a NP_{MEAS}.

(25) a. John threw the ball 10 meters across the fence.

b. John threw the ball 10 meters above the fence.

Returning to the above proposal that NP_{MEAS} and PP_{MEAS} should be treated differently, some evidence to this effect comes from the different behavior of the two with respect to several phenomena, illustrated in (26)-(29) for French, (30)-(33) for Spanish, and in (34)-**Error! Reference source not found.** for English.[3]

(26) Jean a lancé la balle à 10 mètres par-dessus la clôture. (French)
John has thrown the ball at 10 meters over the fence
'John threw the ball 10 meters over the fence.'

(27) ?Jean a lancé la balle par-dessus la clôture à 10 mètres.
John has thrown the ball over the fence at 10 meters

(28) C'est à 10 mètres que Jean a lancé la balle par-dessus la clôture.
Is at 10 meters that John has thrown the ball over the fence
'It was 10 meters that John threw the ball over the fence.'

(29) C'est à 10 mètres par-dessus la clôture que Jean a lancé la balle.
Is at 10 meters over the fence that John has thrown the ball
'It was over the fence that John threw the ball for 10 meters.'

[3] Note that the relevant tests involve word order/extraction differences. Consequently, I will be comparing only non-Slavic NP_{MEAS} and PP_{MEAS} languages since the extreme freedom of word order and the possibilities of subextraction in the Slavic languages interfere with the tests conducted here. I will, however, discuss the behavior of Russian and SC in the relevant respect in the second part of this chapter, namely section 3.)

(30) Juan tiró la pelota diez metros sobre la valla.
Juan threw the ball ten meters over the fence
'John threw the ball ten meters over the fence.'

(31) *Juan tiró la pelota sobre la valla diez metros.
John threw the ball over the fence ten meters

(32) ?Fue diez metros sobre la valla que Juan tiró la pelota.
was ten meters over the fence that John threw the ball
'It was 10m over the fence that John threw the ball.'

(33) ???Fue 10 metros que Juan tiró la pelota sobre la valla.
was 10 meters that John threw the ball over the fence
'It was 10 meters that John threw the ball over the fence.'

(34) John threw the ball ten meters over the fence.

(35) *John threw the ball over the fence ten meters

(36) It was ten meters over the fence that John threw the ball.

(37) *It was ten meters that John threw the ball over the fence.

(26)-(27) show that French, a PP_{MEAS} language, allows the inverted order where the measure follows PP_{CORE}. This order is disallowed in Spanish (31) and English (35), NP_{MEAS} languages. This can be captured if, being an adjunct, PP_{CORE} can be either left or right adjoined, while NP_{MEAS}, which is located in SpecMP, must be to the left, assuming that Specs must always be to the left of the head.[4]

Notice also that the PP measure can be clefted in French (28), which is not possible with the NP measures in English (37) and Spanish (33). While it is not completely clear what

[4] The phenomenon will be discussed in more detail in section 3, where the measure will receive an afterthought treatment on the inverted order. This can be accommodated by assuming that only adjuncts can be treated this way. It is also worth noting here that some speakers allow the preposition *a* to be used with the measure in Spanish. Interestingly, for one of my informants (31) improves in that case, as in (i).

(i) Juan tiró la pelota sobre la valla a diez metros.
John threw the ball over the fence at ten meters

is going on here it is possible that what is responsible for the unacceptability of the English and Spanish examples is something similar to the ban on left-branch extraction, with MP being a "barrier" for A'-movement of its specifier. The different behavior of French and Spanish/English in this respect is then not surprising, given the different treatment of NPmeas and PPmeas proposed above.

2.1.1. Measure phrases in other domains

An objection against a special projection MP could be raised by the observation that some languages do not allow bare NP measure phrase modification at all, in all language domains. Snyder (1995) conducted a survey of languages with respect to their ability to have measure phrases in adjectival phrases, as in (38).

(38) Mary is 2 inches shorter than John.

Snyder (1995) noticed that there are two languages that cannot have measure phrases in AP: French and Russian. These two languages are exactly the only two languages of my survey that do not allow NP_{MEAS} modification in PPs. In this section, I will investigate the possibility that the type of measure phrase modification (NP vs. PP) not only varies across languages, but also across different domains in one language. Results of another cross-linguistic study of degree modification in comparative constructions are reported in Beck at al (2009).

As noted above, Russian and French are the two languages in my survey that cannot have NP_{MEAS} either in PPs or in APs, as shown in (39) and (40). They use PP_{MEAS} in both PPs and APs.

(39) a. *Marie est plus grande que Jean 2 cm. (French)
Mary is more tall than John 2 cm

b. *Ivan dva santimetra vyše Marii. (Russian)
Ivan two centimeters taller Maria

(40) a. Marie est plus grande que Jean **de** 2 cm. (French)
Marie is more tall than John of 2 cm

b. Ivan **na** dva santimetra vyše Marii. (Russian)
Ivan on two centimeters taller Maria

Then, there are languages which are characterized by a completely opposite behavior from Russian and French. These languages allow NP_{MEAS} modification in both PPs and APs. This group of languages consists of Serbo-Croatian, Polish, Spanish, and Galician.

(41) Juan es 2 cm mias alto que Maria. (Spanish)
Juan is 2 cm more tall than Maria

(42) Maria e dous centimetros mais alta que Xan. (Galician)
Maria is two centimeters more tall than John

(43) Maria jest dwa centymetry wyższa od Janka. (Polish)
Maria is two centimeters taller from John

(44) Maria je 2 cm viša od Milana. (Serbo-Croatian)
Maria is 2 cm taller from Milan

The data discussed so far indicate that languages can differ with respect to the availability of MP in the language in general. There is, however, a third group of languages that are not uniform across syntactic categories with respect to the availability of MP. In my survey, there are four languages, Czech, Slovak, Romanian, and Hebrew,[5] which do not allow NP_{MEAS}, hence, MP in AP, like Russian and French, but can have it in PP, like the languages of the second group. Data in (45)-(48) illustrate this point. We have already seen that these languages allow NP_{MEAS} in PPs. However, NP_{MEAS} is not possible in AP, where a PP_{MEAS} must be used, as in Russian.

(45) a. Maria e **cu** 2 cm mai înaltă decât/ ca Ion. (Romanian)
Maria is with 2 cm more tall than as John

b. * Maria e 2cm mai înaltă decât/ca Ion.
Maria is 2cm more tall than as John

(46) a. Ján je **o** päť centimetrov vyšší než Mária. (Slovak)
John is by five centimeters taller than Maria

b. * Ján je päť centimetrov vyšší než Mária.
John is five centimeters taller than Maria

(47) a. Marie je **o** dva cm viší neź Honza. (Czech)
Maria is by two cm taller than John

b. *Marie je dva cm viší neź Honza.
Maria is two cm taller than John

(48) a. Meri (yoter) gvoha mi- Jon **be**-xamiSa sentimeter. (Hebrew)
Mary more tall from-John in-five centimeter

[5] Hebrew is not a part of the discussion in this chapter since many interfering factors arise in Hebrew with respect to the tests discussed below. Hebrew, however, allows MPs in PPs, as shown in (i).

(i) Ha-matox tas xamiSa mail me-al ha-xof/ la-hof
the-plane flew five miles from-on the-beach/ to-the beach
'The plane flew five miles over the beach.'

b. *Meri (yoter) gvoha mi- Jon xamiSa sentimeter.
Mary more tall from-John five centimeter

The data in this section suggest that there is no uniformity with respect to what type of measure phrase modification is allowed across different languages and across different domains of one language. It is not quite clear why NP_{MEAS} is possible in some contexts, whereas in others PP_{MEAS} must be used. Further investigation is needed to determine what exactly is responsible for the distribution of PP_{MEAS} and MP_{MEAS} within one language and cross-linguistically. What is important for our purposes, however, is that in the PP domain there is a special measure phrase projection (MP) available in all languages of the survey but Russian and French.[6]

2.2. Binding in PPs

One of the tests to determine the amount of functional structure in PPs I will use concerns binding properties of pronouns and anaphors inside PPs. It is well-known that complementarity between pronouns and anaphors breaks down in PPs (Hestvik 1991, Reinhart and Reuland 1993), as in (49).

(49) $Mary_i$ put the gun near her_i/ herself.

Interestingly, pronouns co-referential with a clause-mate subject are not allowed in non-spatial PPs.

[6] It is possible that interfering factors block the presence of MP in APs in Romanian, Slovak, Czech, and Hebrew. As a speculation, these interfering factors could involve, e.g., the PF affix status of M° or the way comparatives are formed in these languages could be relevant.

(50) Mary$_i$ does not like talking about *her$_i$ / herself.

It has been proposed that co-referential pronouns are possible in spatial PPs because spatial PPs constitute a binding domain for pronouns, therefore, they can be co-indexed with subjects. Hestvik (1991) suggests that there is a null subject in spatial PPs, which is obligatorily controlled by the object of the verb, as shown in (51).

(51) Mary$_i$ put the gun$_j$ [PRO$_j$ near her$_i$].

In the case of non-spatial PP, co-referential pronouns are impossible because they form a syntactic unit with VP (Hestvik 1991, Reinhart and Reuland 1993). A possible way of dealing with the binding facts is to assume that the rich functional structure of PP is responsible for spatial PPs constituting the binding domain for pronouns.

Not all languages show complementarity between anaphors and co-referential pronouns in PPs. The Slavic languages under discussion are not uniform: some languages do not have option of using co-referential pronouns in PPs, whereas others allow them. Russian, Czech, and Polish show a similar pattern with respect to the binding facts: pronouns co-referential with a clause-mate subject are not possible even in PPs. I illustrate this fact with data from the three languages in (52) (53), and (54).

(52) Ivani položil ružjo vozle sebja$_i$/*nego$_i$. (Russian)
Ivan put gun near self/ him
'Ivan put the gun near himself.'

(53) Marie$_i$ položila ten revolver vedle sebe$_i$/*nii$_i$. (Czech)
Maria put this gun near self/ her
'Maria put the gun near herself.'

(54) Maria$_i$ położyła broń koło siebie$_i$/*niej_i. (Polish)
Maria put gun near self her
'Maria put the gun near herself.'

Unlike the three languages above, Serbo-Croatian and Slovak have the option of co-referential pronouns in PPs, as shown in (55) and (56)[7].

(55) Jovan$_i$ je video psa blizu sebe$_i$/?njega$_i$. (Serbo-Croatian)
Jovan is saw dog near self/ him
'John saw a dog near him'

(56) Mária$_i$ položila zbraň blízko seba/?nej$_i$. (Slovak)
Maria put gun near self her

The Romance languages are more uniform in their behavior with respect to binding in PPs. Unfortunately, French does not have a SELF-anaphor comparable to SELF-anaphors in other Romance languages under discussion: the French anaphor *lui-même* has emphatic and contrastive meanings (Labelle 2008). Therefore, it is impossible to test if a SELF-anaphor is the only variant, since French is forced to have a co-referential pronoun in PPs due to the lack of SELF-anaphors. However, in all other Romance languages discussed in the paper both options (SELF-anaphors and co-referential pronouns) are available in spatial PPs, as illustrated in (57)-(59).

(57) Maria$_i$ puso la pistola cerca de ella$_i$/ sí. (Spanish)
Maria put the gun near of her self

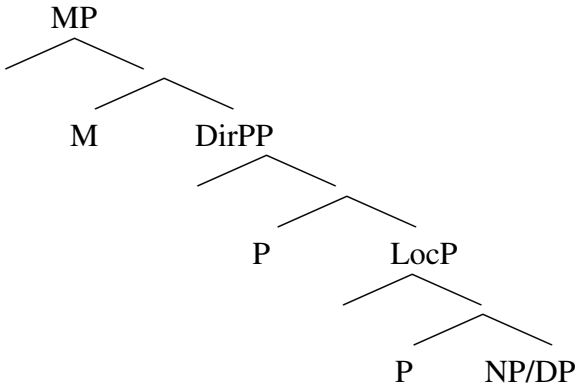
(58) Maria$_i$ a pus pistotul lângă ea$_i$/ sine. (Romanian)
Maria has put gun-the near her self

[7]Judgments of acceptability of co-referential pronouns may actually vary across speakers. Miloje Despić (p.c.) and Magdalena Mullek (p.c.) note that for Serbo-Croatian and Slovak the anaphor is more preferable for some speakers.

(59) Maria$_i$ puxo a pistola preto dela$_i$/ se mema (Galician)
Maria put the gun near of.her self

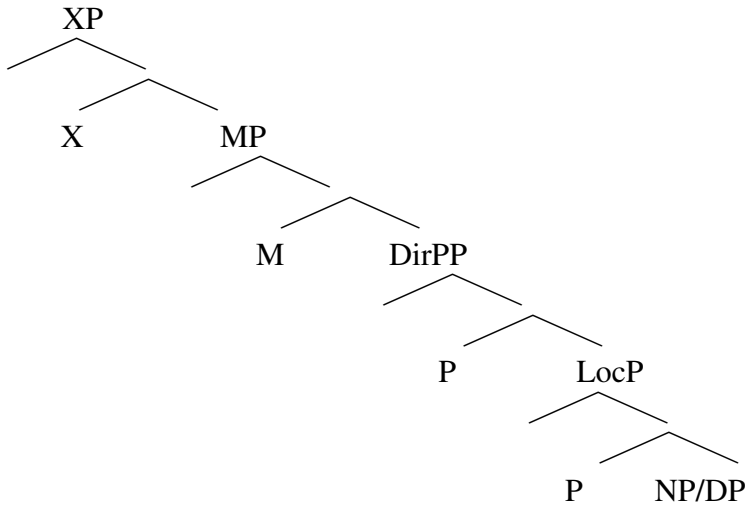
Above, I have shown that not all languages show non-complementarity between anaphors and co-referential pronouns in spatial PPs: two Slavic languages (Serbo-Croatian and Slovak) and all Romance utilize both options, while the rest of the Slavic languages only allow anaphors in these contexts. I suggest that this difference may be due to a difference in the amount of structure a given language can have: for languages which disallow co-referential pronouns in PP the maximum amount of structure is up to MP, as in (60)a,[8] while for languages that allow co-referential pronouns the functional structure of PP can extend up to XP, as shown in (60)b. In other words, the structure beyond MP is required to allow co-referential pronouns in PPs. That MP is the right structural cut will become clear during the discussion below, where different tests are combined. For the time being, it suffices to note that although Polish and Czech have MP, as described above, they do not allow co-referential pronouns in PPs, which means that MP is not enough to allow such pronouns.

(60) a. *co-referential pronouns in PPs



[8] Note that Russian and French have even less structure, since they cannot have MP in PPs.

b. co-referential pronouns in PPs



In the next section, I will use another test, namely the availability of quantifier float in PPs, to investigate the amount of functional structure in PPs.

2.3. Quantifier float in PPs

The next diagnostic for PP-internal functional structure has to do with the availability of quantifier float in PPs. Bošković (2004b) argues for a PP/clause parallelism based on certain facts concerning quantifier float in Germanic languages. He notes that quantifier float in PPs is only possible with definite NPs, which is also true for object shift in Icelandic: only definite NPs can undergo object shift, as in (61)-(62). Bošković (2004b) points out a correlation between these two phenomena and concludes that object shift is

responsible for quantifier float in PPs. In particular, quantifier float from (61)c is only possible in the Germanic languages that have object shift of full DPs in clauses.

(61) a. *Ég talaði við stúdenta$_i$ alla t$_i$. (Bošković 2004b: 104)
I talked with students all (Icelandic)

b. Ég talaði við alla stúdenta
I talked with all students

c. ?Ég talaði við stúdentana$_i$ alla t$_i$.
I talked with the-students all

(62) a. Halldór las bækurnar$_i$ allar ti.
Halldór read the-books all

b. *Halldór las bækur$_i$ allar t$_i$.
Halldór read books all

c. cf. Halldór las allar bækur.

Bošković (2004b) shows that quantifier float of definite NPs is possible under the assumption that the functional structure of VP must be rich enough to allow movement of NPs. The same is true for the movement of definite NPs in PPs. In my analysis of PP-internal quantifier float I follow Bošković (2004a) who adopts Sportiche's analysis of quantifier float but argues that quantifier float is disallowed in θ-positions.[9] As an illustration of the generalization, consider the data in (63)-(64).

(63) a. The students seem all t to know French. (Bošković 2004 a)

b. The students were all arrested t.

c. Mary believes that the students all to know French.

[9] See Bošković (2006a) for a deduction of the generalization; for a different approach to quantifier float, which treats floating quantifiers as adverbs that are not generated in the NP they modify, see Baltin 1995, Bobaljik 1995, Torrego 1996, Brisson 1998, among others.

(64) a. *The students completely [$_{VP}$ all understood].

b. *The students$_i$ arrived all t_i.

c. *The students$_i$ were arrested all t_i.

In the grammatical examples in (63), the quantifier is clearly not located in a θ-position (given the VP internal subject hypothesis). However, the floating quantifier is located in a θ-position in the unacceptable examples in (64). The underlying assumption regarding (64)a is that 'completely' is a very low adverb, which is located right above the subject θ-position.

Now I would like to go back to the cases of PP-internal quantifier float. Given the above discussion, (62)a is derived as follows. NP first undergoes movement to a non-θ position; the quantifier, which is an adjunct, gets inserted acyclically, then, NP moves to another functional projection, leaving the quantifier behind in a non-θ position, as in (65).

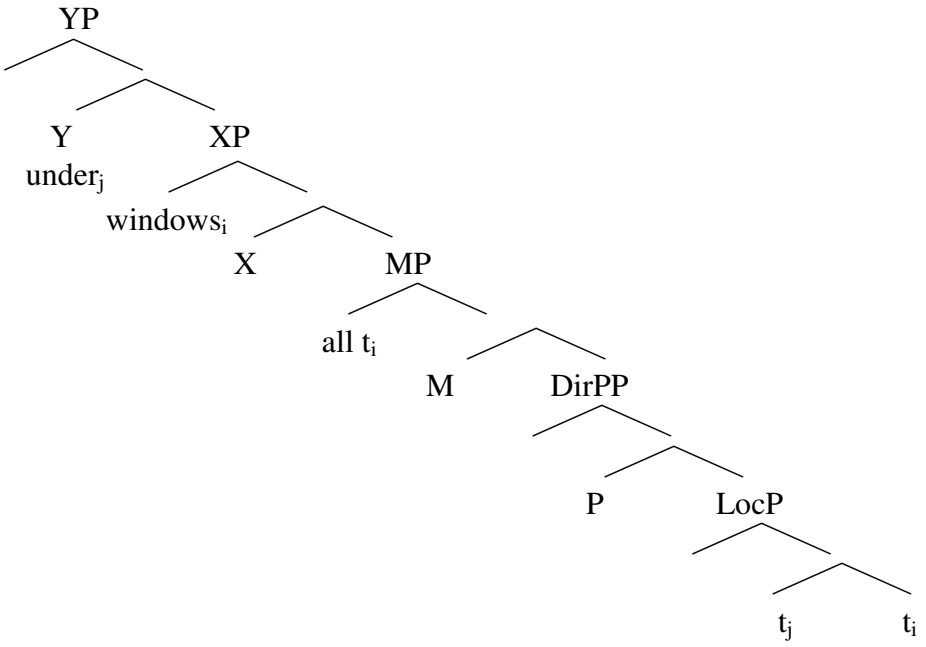
(65) Halldór las$_j$ [$_{OP}$ bækurnar$_i$ t_j [ekki [$_{AgroP}$ [allar t_i] t_j [VP t_j t_i]]]].
Halldór read the-books not all (Bošković 2004b: 107)

The assumptions underlying the analysis of quantifier float in clauses (Bošković 2004a) are extended here to the analysis of this phenomenon in PPs. Due to the ban on quantifier float in θ-positions, the relevant NP must move to a non-θ-position before the acyclic insertion of the quantifier itself; then, NP moves to the next functional projection, whereas the quantifier remains in its original (non-θ) position. Given the above discussion, we need more structure than in (1) to have floating quantifier constructions.[10]

[10] I assume that θ-domain in PPs includes both DirP and LocP. As discussed above, floating quantifiers are not possible in θ-positions, which then prevents 'all' from being stranded in PP_{CORE}. Another way to block quantifier float in PP_{CORE} is to assume that both specifier positions are A'-positions. In this case, it would also be impossible to have a floating quantifier there, assuming that quantifiers can be stranded only under

(66) shows the minimal structure needed, under Bošković's analysis, for quantifier float in a locative PP.

(66) *under windows all



In the light of the discussion in this section, the possibility of quantifier float can be used as a test for additional structure in PPs. Languages which, by the test above, lack sufficient functional structure in PPs should therefore also disallow quantifier float in PPs. First, I will discuss the availability of this phenomenon in the Slavic languages. Then, I will compare them with the Romance languages.

The Slavic languages discussed in the paper are not uniform in their behavior with respect to the availability of quantifier float in PPs. Russian, Czech, Polish, and Slovak disallow quantifier float in PP, as in (67)-(70).

A-movement in the languages under consideration, stranding by A'-movement, in fact, being quite rare. (Note that it is necessary to block floating quantifiers in PP_{CORE} because of Slovak and Romanian, which have the structure up to XP.)

(67) *Ivan prošol vdol' rek vsex. (Russian)
Ivan walked along rivers all
'Ivan traveled along all rivers.'

(68) *Honza se podíval do barú všech. (Czech)
John refl looked into bars all
'John looked into all bars.'

(69) *Zaglądneliśmy do książek wszystkich. (Polish)
looked-1pl in books all
'We looked in all books. '

(70) *Ján sa plavil po riekach vsetkých. (Slovak)
Jan has swam on rivers all
'Jan sailed along rivers all.'

Interestingly, Serbo-Croatian does not pattern with the rest of the Slavic languages in that it does allow quantifier float in PPs.

(71) Plovili smo niz reke sve. (Serbo-Croatian)
swam are down rivers all
'We traveled along all rivers.'

The Romance languages do not behave uniformly with respect to this test. Romanian and French disallow quantifier float in PPs, as shown in (72) and (73).

(72) *Jean est allé dans les bars tous (cherchant Jeanne). (French)
John is gone in the bars all (looking.for Jane)
'John went into all bars looking for Jane.'

(73) *Ion s- a uitat în barurile toate căutând-o pe Ioana. (Romanian)
Ion refl-has looked in bars-the all searching-her.cl PE Ioana
'John looked into all bars, looking for Jane.'

However, Spanish and Galician can have floating quantifiers in PP, as illustrated in (74) and (75).

(74) Juan buscó en los bares todos (mientras buscaba a Ben) (Spanish)
John looked into the bars all (while looking for Ben)
'John looked into all bars while looking for Ben.'

(75) Jon mirou en bares todolos. (Galician)
John looked into bars all

We can then conclude that Spanish, Galician, and Serbo-Croatian have more structure in PPs than Romanian, French, Russian, Czech, Polish, and Slovak. The results of the three tests discussed so far are presented in the table below.

Table 1: summary of the properties of PPs cross-linguistically

Language	MP	Pronouns in PP	QF
Russian	*	*	*
French	*	n/a	*
Polish	√	*	*
Czech	√	*	*
Slovak	√	√	*
Romanian	√	√	*
Serbo-Croatian	√	√	√
Spanish	√	√	√
Galician	√	√	√

The languages in the survey can be divided into four groups: 1) languages that do now allow any of the three phenomena (Russian, French); 2) languages that allow only MP in PP but not the other two phenomena (Polish, Czech); 3) languages that allow MP and co-referential pronouns in PPs, but disallow quantifier float (Romanian, Slovak); 4) languages that allow all the three phenomena (Serbo-Croatian, Spanish, and Galician).

I hypothesize that the differences reflected in the table above can be attributed to differences in the amount of structure in PPs, i.e., Russian and French have the smallest amount of functional structure, whereas Serbo-Croatian, Spanish, and Galician have the biggest amount of functional structure in PPs, as in (76)-(77). Structure at least up to MP is needed to allow NP_{MEAS}, as in Polish and Czech; then, structure up to XP is needed to allow co-referential pronominals in PPs, as in Romanian and Slovak; finally, the full structure (up to YP) is needed for quantifier float in PPs, as in Serbo-Croatian, Spanish, and Galician.

(76) Russian, French >>Polish, Czech>>Romanian, Slovak>>Serbo-Croatian, Spanish, Galician

(77) Russian, French $_{DIR/LOCP}$] >>Polish, Czech $_{MP}$]>>Romanian, Slovak $_{XP}$]>>Serbo-Croatian, Spanish, Galician $_{YP}$]

The next step is to confirm that the structural hierarchy in (76) is preserved when the tests in question are combined and to see whether their interaction can reveal further insights into the functional structure of PPs. I will focus on the languages that allow MP, co-referential pronouns, and floating quantifiers in PPs (Serbo-Croatian, Spanish, and Galician).

2.4. Interaction between the tests

In this section I will combine several tests to see if the hypothesis about rich/poor functional structure of PPs holds. First, I will test an interaction between quantifier float and binding in PPs. Second, I will look at an interaction between measure phrases and quantifier float.

2.4.1. Quantifier float and binding in PPs

In the previous section I showed that the availability of quantifier float in PPs presupposes a certain amount of structure. If there is more structure, then the binding facts may change since PP may be big enough to constitute a separate binding domain. Unfortunately, Spanish and Galician do not have possessive SELF-anaphors, therefore, I will not be able to use them here. However, Serbo-Croatian has both a possessive SELF-anaphor and pronouns. Consider the following sentence from Serbo-Croatian. The co-referential pronoun is still slightly degraded.

(78) Marija$_i$ je zasadila ruže ispod svih svojih$_i$/?njenih$_i$ prozora. (SC)
Maria is planted roses under all self's her windows.
'Maria planted roses under all her windows.'

However, when the quantifier 'svih' is floated, the acceptability of the co-referential pronoun increases. Moreover, the possessive pronoun is preferred to the possessive SELF-anaphor in this case.

(79) a. ??Marija je zasadila ruže ispod svojih prozora svih. (SC)
Maria is planted roses under self's windows all.

b. Marija$_i$ je zasadila ruže ispod njenih$_i$ prozora svih.
Maria is planted roses under her window sall

I suggest that the increased acceptability of co-referential pronouns in PPs in sentences with floating quantifiers, as in (79)b, may be due to the fact that PPs with floating quantifiers have more (richer) structure, which is sufficient to constitute a binding domain. Recall that to allow quantifier float in a PP, a language must have structure up to YP, which, I speculate, is needed to fully constitute a binding domain for pronouns. This may explain why the pronoun becomes fully acceptable in (79)b and why the anaphor is less acceptable in (79)a. An interesting question then arises regarding (78): how much structure is present in PPs without quantifier float? My tentative suggestion is that Serbo-Croatian projects up to XP without quantifier float, hence the slightly degraded status of the co-referential pronominal, as in (78).

2.4.2. Interaction between quantifier float and measure phrases

There are three languages that allow both quantifier float and degree modification in PPs: Serbo-Croatian, Spanish, and Galician. The sentences which have quantifiers and measure phrases in PPs are slightly degraded in all three languages, as shown in (80)-(82).

(80) ?Marija je zasadila ruže 10m ispod svih prozora. (Serbo-Croatian)
Maria is planted roses 10m under all windows.
'Maria planted roses 10 meters under all windows.'

(81) ?Maria plantou rosas 10metros debaixo de todalas fiestras.[11] (Galician)
Maria planted roses 10 metros under of all windows

(82) ?Maria planto rosas 10 metros debajo de toda ventanas. (Spanish)
Maria planted roses 10 meters under of all windows

However, the situation changes when we try to float a quantifier in these sentences: they become ungrammatical, as in (83)-(85).

(83) *Marija je zasadila ruže 10m ispod prozora svih. (Serbo-Croatian)
Maria is planted roses 10m under windows all.

(84) *Maria plantou rosas 10metros debaixo de fiestras todalas. (Galician)
Maria planted roses 10metros under of windows all

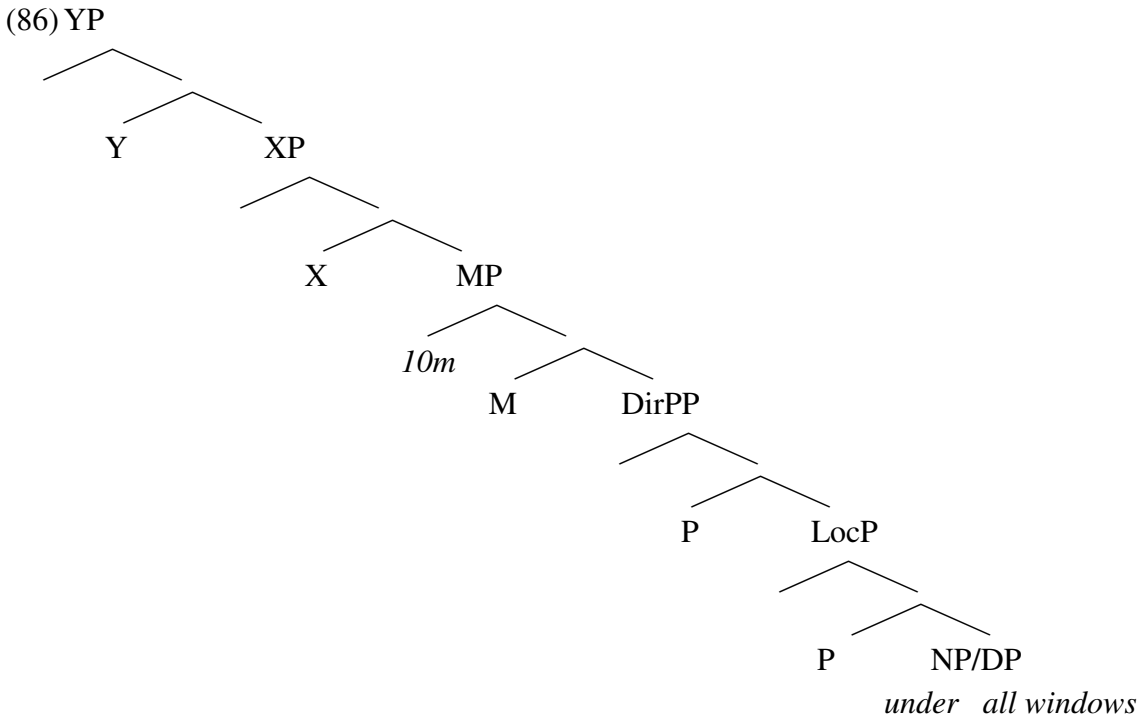
(85) *Maria planto rosas 10 metros debajo de ventanas toda. (Spanish)
Maria planted roses 10meters under of windows all

The impossibility of quantifier float in PPs with measure phrases can be straightforwardly accounted for under Bošković's (2004a) analysis of quantifier float discussed in the previous section. There is simply no space to perform quantifier float below '10 meters' in the structure in (86).[12]

[11] The prepositions used in (81)-(82) consist of two prepositions, though they are treated as complex prepositions rather than a combination of two prepositions (Terzi 2008). The use of simple prepositions would not affect the grammaticality of using such examples.

[12] There is another case that involves quantifier float and MP, as in (i). (i) can be still ruled out because 'all' cannot be located in a non-θ position (see ftn. 10). However, there is an issue with the sentence in (ii), where 'under' is in Y° and 'windows' is in Spec, XP, whose grammaticality status is not completely clear. If it needs to be ruled out, one possibility is to assume that YP cannot be projected without quantifier float (see the discussion of (78) above). Another possibility is that it is not possible to cross a filled Spec, MP (see section 3).

(i) * Marija je zasadila ruže ispod prozora 10m svih. (Serbo-Croatian)
Maria is planted roses under windows 10m all.

(86) 

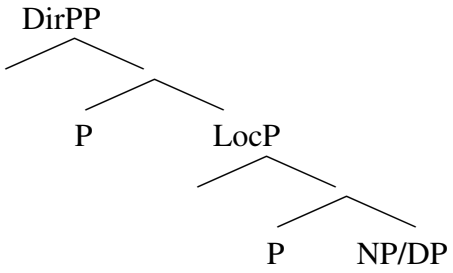
2.5. Summary

In this section I have compared the syntactic behavior of languages from two language groups, namely Slavic and Romance, with respect to the three diagnostics for the functional structure of PPs: the possibility of degree modification, co-referential pronouns, and quantifier float in PPs. The results of the tests indicate that languages can have different amount of functional structure in PPs: Russian and French have the smallest PPs, as in (87)a, then, Polish and Czech have more structure since they can have MP in PP, as in (87)b, Romanian and Slovak have one projection more then Polish and Czech since these languages also allow for co-referential pronouns in PP, as in (87)c,

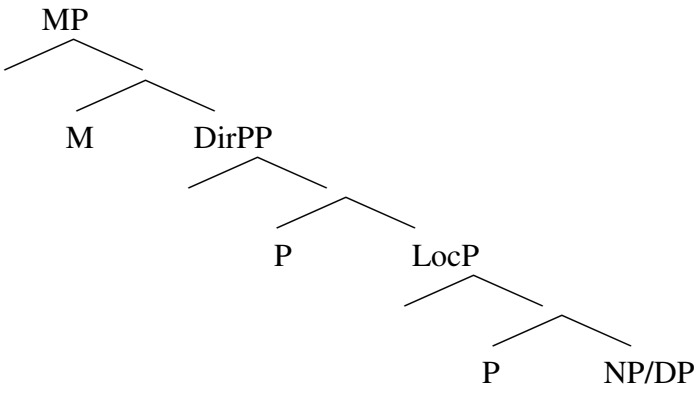
(ii) ?? /? Marija je zasadila ruže ispod prozora 10m.
Maria is planted roses under windows 10m.

finally Serbo-Croatian, Spanish, and Galician can have the largest PPs since they allow quantifier float in PPs which requires more functional structure than what is available in other languages of the survey, as in (87)d. I also showed that the amount of functional structure can vary even in the same language, as in the case of Serbo-Croatian.

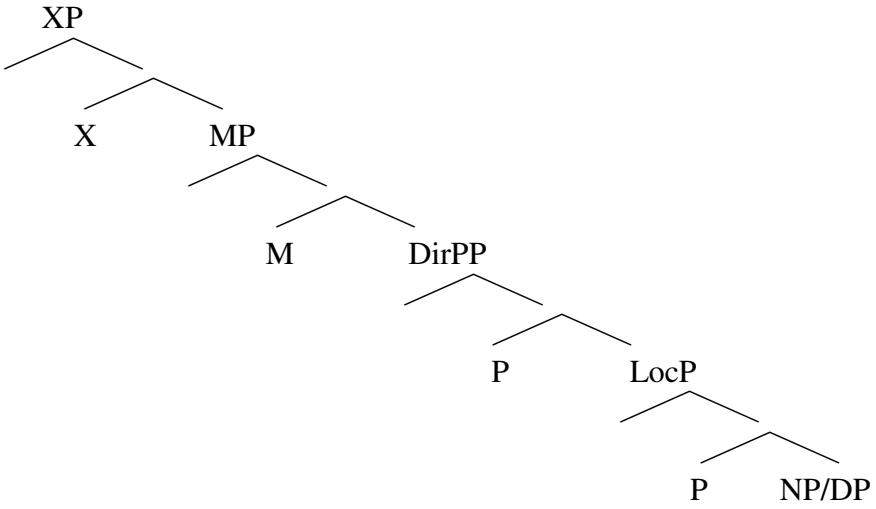
(87) a. Russian and French



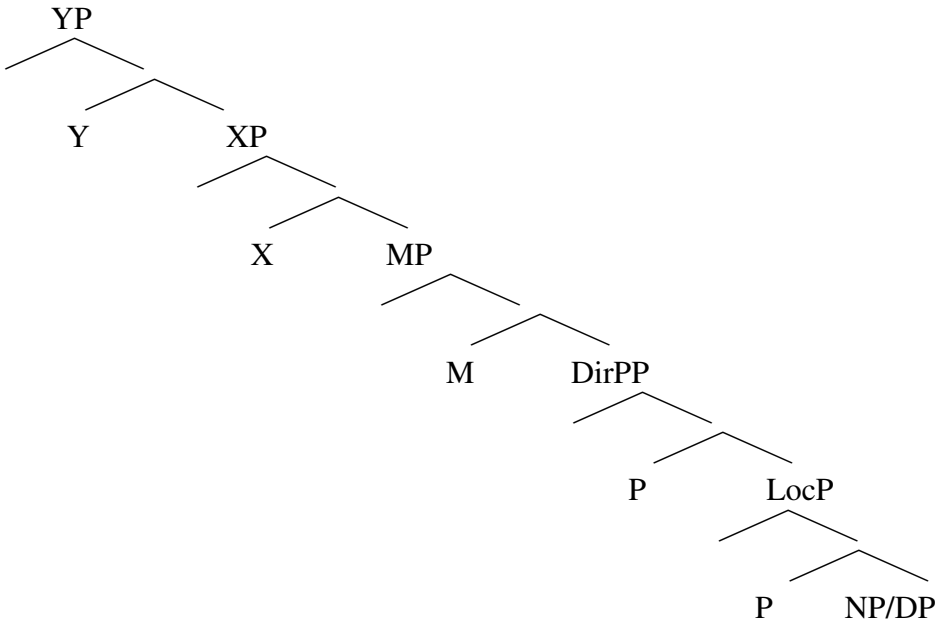
b. Polish and Czech



c. Romanian and Slovak



d. Serbo-Croatian, Spanish and Galician



3. Measure phrases and movement out of PP in Russian

One of the questions raised in the first part of this chapter has to do with the difference between languages like Russian and French, which have PP_{MEAS} in PPs, and languages that allow NP_{MEAS} in PPs. I will now focus on one language, Russian, and examine the syntactic behavior of PP_{MEAS} and its relationship with PP_{CORE}. I have suggested above that Russian has small PPs, lacking even MP - the phrase where NP_{MEAS} is hosted. I have also suggested that PP_{MEAS} is low in the structure, adjoined to PP_{CORE}. I will now examine to look for properties that might bear on this proposal for Russian.

First, I will discuss three phenomena of Russian syntax: left-branch extraction out of PP, as in (88), approximate inversion in PPs (89), and preposition doubling (90). Then, I will investigate their interaction with PP_{MEAS} in Russian. The section is organized as follows. In sections 3.1 and 3.2 I will discuss the phenomenon of left-branch extraction and approximative inversion, respectively. In section 3.3 I will discuss effects of PP_{MEAS} on left-branch extraction and approximative inversion. In section 3.4 I will briefly discuss preposition doubling. Finally, I will conclude the chapter with a general discussion of the position of PP_{MEAS} in Russian.

(88) a. Ivan priexal v novom kostjume.
Ivan came in new suit
'Ivan came in a new suit.'

b. V novom Ivan priexal kostjume.
In new Ivan came suit

(89) a. Ivan porabotal v pjati gazetax.
Ivan worked in five newspapers
'Ivan has worked in five newspapers.'

b. Ivan porabotal v gazetax pjati.
Ivan worked in newspapers five
'Ivan has worked in approximately five newspapers.'

(90) V novom Ivan priexal v kostjume.
In new Ivan came in suit

3.1. Extraordinary left-branch extraction in Russian

Bošković (2008) argues that languages differ regarding whether they have NP or DP in their nominal domain. He convincingly shows that languages that lack articles exhibit different behavior from languages with articles with respect to a number of phenomena including left-branch extraction, scrambling, negative raising, superiority effects in multiple wh-movement constructions, clitic doubling, etc., which Bošković shows can be explained if article-less languages lack DP. The languages discussed in this chapter can be divided into two groups based on the criterion whether a language has NP or DP: all Slavic languages discussed in the chapter lack overt articles,[13] thus are NP languages, while all Romance languages have articles and hence are defined as DP languages.

The property of NP-languages relevant to the topic of this chapter is left-branch extraction. NP-languages allow left-branch extraction out of NPs, as shown in the following example from Russian.

(91) a. Ivan kupil [$_{NP}$ novyj dom].
Ivan bought new house

[13] Two Slavic languages that have overt definite articles, Bulgarian and Macedonian, are not discussed in this dissertation.

b. Novyj Ivan kupil [$_{NP}$ t dom]
new Ivan bought house

Another property of article-less Slavic languages is that they allow extraction of what appear to be non-constituents out of PPs, which Bošković (2005) calls extraordinary left-branch extraction. Consider the following data from Serbo-Croatian which illustrates this phenomenon.

(92) U veliku on uđe sobu.
In big he entered room
'He entered the big room.'

Bošković (2005) discusses several options for analyzing such data. First, (92) can be analyzed as a constituent movement which involves remnant PP fronting, as shown in (93) (for details see Franks & Progovac 1994, Abels 2003a, Ćavar and Wilder 1999, and Franks 1998).

(93) [$_{PP}$ U veliku t_i]$_j$ on uđe t_j sobu$_i$.

This analysis, however, has several problems. First, it does not work in constructions in which PP is modified by another element, as in (92). It predicts that the modifier would undergo movement with the rest of the PP, but such sentences are ungrammatical in Serbo-Croatian.

(94) *Pravo u veliku on uđe sobu.
Straight in big he entered room

Another problem that the remnant movement analysis faces is the ungrammaticality of sentences like in (95): NP movement out of PP should be possible since it is a prerequisite for remnant PP-movement.

(95) *Sobu on uđe u veliku.
Room he entered in big

The second option is the Copy and Delete analysis (Ćavar and Fanselow 2000): this analysis involves movement of PP which is followed by scattered deletion, as shown in (96). This approach to extraordinary left-branch extraction also has problems: for example, it is difficult to capture the ungrammaticality of (94) and (95) in this approach, since nothing in the analysis restricts the application of scattered deletion.

(96) [$_{PP}$U veliku ~~sobu~~] on uđe [$_{PP}$~~u veliku~~ sobu].

The last approach to the extraordinary left-branch extraction is the restructuring (Borseley and Jaworska 1989) or preposition lowering analysis (Corver 1992). The gist of this analysis is as follows: a preposition adjoins to an adjective and then the P+Adj undergoes movement, which, in fact, can be analyzed as a regular left-branch extraction out of NP, which is allowed in article-less Slavic languages (see Bošković 2005 for arguments that extraordinary left-branch extraction indeed involves regular left-branch extraction).[14]

Having considered some facts about extraordinary left-branch extraction in Slavic, I would like to discuss Russian data. I will consider different types of prepositions

[14] On a version of this analysis considered by Bošković, AP moves to a position within PP, after which the preposition raises to it.

and their properties with respect to extraction: locational vs. directional preposition, simple vs. complex prepositions, clitic vs. non-clitic prepositions (see also Yadroff 2000, Franks and Yadroff 2001 who make a different cut –functional vs. lexical prepositions; Pereltsvaig 2007 also discusses extraordinary left-branch extraction in Russian though without comparing different types of prepositions).

First, consider the following data with the preposition *v* 'in'. The preposition *v* can be used as either locational or directional. Whenever the preposition has a locational meaning, the NP inside the *v*-PP has locative case. However, when this preposition has a directional meaning, the relevant NP has accusative case. This type of case alternation is a common phenomenon across Indo-European languages (cf. Zwarts 2007). The first group of sentences with *v*-PP has a locational meaning. Similarly to Serbo-Croatian, Russian allows extraction of a sequence of P+Adj, as in (97)b. However, Russian also allows examples like (97)c, where the preposition and the noun undergo fronting, leaving the adjective in its original position. This type of movement is impossible in Serbo-Croatian. To distinguish movement of P+Adj from P+N, I will refer to the latter as inverted extraordinary left-branch extraction.

(97) a. Ivan sidel v bol'šoj komnate.
Ivan sat in big room

b. V bol'šoj Ivan sidel komnate.
In big Ivan sat room

c. V komnate Ivan sidel bol'šoj.
In room Ivan sat big

d. *Komnate Ivan sidel v bol'šoj.
Room Ivan sat in big

The next group of sentences has *v*-PP too, though in (98) the PP has directional meaning. As the data in (98) show, properties of extraordinary left-branch extraction do not change with the change of the preposition meaning from locational to directional.

(98) a. Ivan zagljanul v bol'šuju komnatu.
Ivan looked.into in big room
'Ivan looked into a big room.'

b. V bol'šuju Ivan zagljanul komnatu.
In big Ivan looked.into room

c. V komnatu Ivan zagljanul bol'šuju.
In room Ivan looked.into big

d. *Komnatu Ivan zagljanul v bol'šuju.
Room Ivan looked.into in big

The next issue to examine is if it matters whether prepositions are complex or not. Some explanation is necessary regarding what I mean by 'complex prepositions'. Russian used to have complex prepositions which had two parts: *iz* 'from' +location. Nowadays, there are only two productively used complex prepositions in Russian: *iz-pod* 'from-under' and *iz-za* 'from behind'. Consider the following group of sentences with a complex preposition *iz-pod* 'from under'.

(99) a. Ivan vylez iz- pod novoj mašyny.
Ivan got.out from-under new car
'Ivan got out from under a new car.'

b. ?? Iz- pod novoj Ivan vylez mašyny.
From-under new Ivan got.out car

c. ???Iz- pod mašyny Ivan vylez novoj.
From-under car Ivan got.out new

d. *Mašyny Ivan vylez iz- pod novoj.
Car Ivan got.out from-under new

In contrast to (97)b and (98)b, the movement of P+adjective is not fully acceptable here, the sentence (99)b is degraded. (99)c, which involves inverted extraordinary left-branch extraction of a preposition *iz-pod* and a noun *mašyny*, is also quite marginal, as opposed to its counterparts with the preposition *v* 'in' in (97)c and (98)c.

The next group of sentences involves a non-clitic preposition *čerez* 'over, through'. Unlike the preposition *v* 'in', which is considered to be a clitic,[15] the preposition *čerez* 'over' is not a clitic in nature as it forms a prosodic word on its own (Yadroff 2000).

(100) a. Ivan perelez čerez vyskokij zabor.
Ivan climbed.over over tall fence

b. ??Čerez vysokij Ivan perelez zabor.
Over tall Ivan climbed.over fence

c. ???Čerez zabor Ivan perelez vysokij.
Over fence Ivan climbed.over tall

d. Zabor Ivan perelez čerez vysokij.
Fence Ivan climbed.over over tall

The comparison of the data in (99) and (100) reveals similarities between extraction facts with the complex preposition *iz-pod* and the non-clitic preposition *čerez*: the sentences with P+Adjective extraction (99)b and (100)b are degraded and the sentences with inverted extraordinary extraction of P+N are marginal. The example in (100)d stands out among other examples involving extraction of a noun out of PP (without a preposition):

[15] By clitic prepositions I understand monosyllabic prepositions.

(100)d) is grammatical, unlike its counterparts in (97), (98), and (99). I will put this example aside for now and return to it later in the section to explain this difference.

The summary of the findings regarding extraordinary left-branch extraction is given in the table below.

Table 2: Extraordinary LBE in Russian

Type of preposition	P+Adj	P+N
Clitic, locational	√	√
Clitic, directional	√	√
Complex	??	???
Non-clitic	??	???

Russian extraordinary left-branch extraction is different from Serbo-Croatian extraordinary left-branch extraction in that Russian allows inverted extraordinary extraction of P+N, which is disallowed in Serbo-Croatian. Below I will propose an analysis of the Russian extraction facts.

I suggest that extraordinary left-branch extraction and inverted extraordinary left branch extraction can be accounted for by appealing to the restructuring/lowering analysis of non-constituent movement discussed above. Recall that it matters what type of preposition is used in this type of construction: only clitic prepositions are fully acceptable. In other words, a clitic preposition forms a unit with the element that follows it and thus can undergo ordinary left-branch extraction out of NP with it. The next question is how to deal with cases where P+N undergo movement leaving an adjective behind. Following Corver's (1992) account of Polish, I suggest that the relevant fact here

is that Russian adjectives can be either pre-nominal or post-nominal, as in (101)b, unlike Serbo-Croatian, where the order N+Adj is found only in poetry (101)a.

(101) a. *haljine crvene (Serbo-Croatian)
dress red

b. platje krasnoe (Russian)
dress red

I suggest that in Russian examples involving inverted extraordinary left-branch extraction of P+N, the order Adj-N is inverted. Then the operation of preposition lowering applies to the output of the inversion, i.e. to the N-Adj sequence, with the clitic preposition forming a unit with the noun adjoining to it, and then it undergoes movement. As expected under this analysis, (102) is also acceptable in Russian.

(102) Platje Marina kupila krasnoje.
Dress Marina bought red
'Marina bought the red dress.'

There is a handful of Russian adjectives that cannot undergo Adj-N inverstion (for a discussion of the N-Adj order in Polish and Serbo-Croatian see Rutkowski and Progovac 2004). One such adjective is *general'nyj* 'general', which can never be used post-nominally, as in (103).

(103) general'nyj direktor vs. *direktor general'nyj
general director director general

general'naja repetitsia vs. *repetitsia general'naja
general rehearsal rehearsal general

Interestingly, inverted extraordinary left-branch extraction is impossible with this adjective, as in (104)c, though extraordinary left-branch extraction of P+Adj is still possible (104)b. This restriction on inverted left-branch extraction provides additional support for the analysis pursued in this section, which is also confirmed by the ungrammaticality of (104)d.

(104) a. Ivan vystrelil v general'nogo direktora.
Ivan shot in general director
'Ivan shot at the general director.'

b. V general'nogo Ivan vystrelil direktora.
In general Ivan shot director

c. *V direktora Ivan vystrelil general'nogo.
In director Ivan shot general

d. *General'nojo Ivan nenavidit direktora.
General Ivan hates director

One case that was put aside so far involves N-extraction out of PP. Consider the data below.

(105) Zabor Ivan perelez čerez vysokij.
Fence Ivan climbed.over over tall
'Ivan climbed over the tall fence.'

(106) Škaf Ivan sprjatalsja v staryj.
Closet Ivan hid in old
'Ivan hid in the old closet.'

(107) Krovat' Ivan zalez pod staruju.
Bed Ivan got under old
'Ivan got under the old bed.'

The sentences in (105)-(107) all look like examples of nominal extraction out of PP. However, these cases are only apparent examples of nominal movement out of PPs. I suggest that in such sentences we are dealing with a base-generated, sentence-initial, topic and a PP with a null noun.[16] Such cases are only possible when the noun has the same form for nominative and accusative case, which is the case with the nouns in the sentences above. I suggest that the reason for this is that the sentence initial topic noun in such sentences has a default case, which is nominative in Russian. Syncretism with accusative may be needed for identification of the null noun within the PP, which is accusative, which also has an effect on interpretation.[17] Therefore, the syncretism between nominative and some other case (accusative or genitive) is a crucial prerequisite for the possibility of sentences like (105)-(107). However, this analysis cannot be

[16] The sentences in (105)-(107) are grammatical only when a noun is in the sentence initial position. When a noun is not sentence initial, they are ungrammatical, as shown below. The ungrammaticality of (i-iii) supports the above analysis given the assumption that the topicalization operation in question targets sentence initial position.

(i) * Ivan zabor perelez čerez vysokij.
Ivan fence climbed.over over tall

(ii) *Ivan škaf sprjatalsja v staryj.
Ivan closet hid in old

(iii) *Ivan krovat' zalez pod staruju.
Ivan bed got under old

[17] Russian also has a handful of nouns that have syncretic forms in nominative and locative cases. In this case, an apparent nominal extraction out of PP is also possible, as in (i), as opposed to (ii) and (iii).

(i) Platje Marina prišla v krasnom.
Dress-NOM/LOC Marina came in red-LOC
'Marina came in a red dress.'

(ii) *Kostjume Maradonna prišol v dorogom.
Suit-LOC Maradonna came in expensive-loc

(iii) *Kostjum Maradonna prišol v dorogom.
Suit-NOM Maradonna came in expensive-loc

extended to ((97)d, (98)d, (99)d), where the sentence initial nouns are not syncretic with nominative case forms.

3.2. Approximative inversion in Russian

Russian is the only Slavic language (Franks 1995) that has approximate inversion, where the standard order Numeral+ Noun changes to Noun+ Numeral. The sentence in (108)a) has a neutral word order, whereas in (108) the order is inverted and the sentence has a meaning that the speaker is not sure how many books Ivan bought, since he knows only an approximate number.

(108) a. Ivan kupil pjat' knig.
Ivan bought five books
'Ivan bought five books'

b. Ivan kupil knig pjat'.
Ivan bought books five
'Ivan bought approximately five books.'

Approximate inversion in Russian cannot apply in all contexts: it depends on the case the noun bears (Mel'čuk 1985, Franks 1995). Only nouns that are assigned genitive case can undergo approximate inversion; whereas nouns bearing other cases are frozen for this type of movement, as shown in (109)-(112).

(109) a. Ivan kupil pjat' knig.
Ivan bought five books-GEN
'Ivan bought five books.'

b. Ivan kupil knig pjat't
Ivan bought books-GEN five
'Ivan bought approximately five books.'

(110) a. Ivan imel pjat' domov v sobstvennosti.
Ivan had five houses-GEN in property
'Ivan owned five houses.'

b. Ivan imel domov pjat' v sobstvennosti.
Ivan had houses-GEN five in property
'Ivan owned approximately five houses.'

(111) a. Ivan pomog pjati starikam perejti dorogu.
Ivan helped five-DAT old.people-DAT cross road
'Ivan helped five old people to cross the road.'

b. *Ivan pomog starikam pjati perejti dorogu.
Ivan helped old.people-DAT five-DAT cross road
'Ivan helped approximately five old people to cross the road.'

(112) a. Ivan gorditsja pjatju studentami.
Ivan proud five-INSTR students-INSTR
'Ivan is proud of five students.'

b. *Ivan gorditsja studentami pjatju.
Ivan proud students-INSTR five-INSTR
'Ivan is proud of approximately five students.'

Another restriction on the distribution of approximate inversion is found when a noun is modified by adjective (Mel'čuk 1985: 151, Yadroff and Billings 1998), as in (113) and (114).

(113) *On provjol tam tjažolyx let pjat.
He spent there hard years five
'He spent approximately five difficult years there.'

(114) *On kupil dorogix knig dvadcat'.
He bought expensive books twenty
'He bought approximately twenty expensive books.'

The acceptability of the sentences in (113) and (114) improves if nouns move on their own, leaving adjectives behind, as shown in (115) and (116), respectively.[18]

(115) On provjol tam let pjat' tjažolyx.
He spent there years five hard

(116) On kupil knig dvadcat' dorogix.
He bought books twenty expensive

It has been proposed in the literature (Yadroff 1999, Billings and Yadroff 1998, Pereltsvaig 2006) that there is a projection above NP and NumP to which a noun undergoes movement, though the authors differ with respect to the nature of this projection. Moreover, some authors argue that approximative inversion involves adjunction. Thus, Franks (1996) and Bošković (2006) argue that approximative inversion involves adjunction to the maximal projection of the numeral.

Having identified some restrictions on the application of approximative inversion in Russian, I would like to move to the discussion of approximate inversion in PPs. Interestingly, approximative inversion is possible in PPs. Furthermore, approximate inversion in PPs has the same restrictions as approximate inversion in NPs: it is disallowed in PPs when prepositions assign cases other than locative and genitive, as shown in (96-99).[19] The cases of approximate inversion involving these prepositions are a

[18] Yadroff and Billings (1998) propose that approximative inversion cases are possible only with adjectives that invert. However, it does not seem to be the case in the following example with the adjective *generalnyj*, discussed above.

(i) On uvolil direktorov pjat general'nyx.
He fired directors five general
'He fired approximately five CEOs.'

[19] Approximative inversion with locative case is actually found only in PPs, since locative case is found only on nouns used with prepositions.

bit degraded but still acceptable. As shown in the data below, the NP affected by approximative inversion can be placed either right before the numeral, as in the regular cases of approximative inversion, or in front of the preposition; it cannot be moved outside of the PP, as in examples (96d). What I assume is that the NP in (96c) stays within the PP.[20]

(117) a. Ivan obratilsja k pjati druzjam za sovetom.
Ivan called to five-DAT friends-DAT behind advice
'Ivan asked five friends for advice.'

b. *Ivan obratilsja k druzjam pjati za sovetom.
Ivan called to friends-DAT five-DAT behind advice

c. *Ivan obratislsja druzjam k pjati za sovetom.
Ivan called friends-DAT to five-DAT behind advice
'Ivan asked approximately five friends for advice'

(118) a. Ivan polučil pis'ma ot pjati studentov.
Ivan received letters from five-GEN students-GEN
'Ivan received letters from five students.'

b. Ivan polučil pis'ma ot studentov pjati.
Ivan received letters from students-GEN five-GEN

c. Ivan polučil pis'ma studentov ot pjati.
Ivan received letters students-GEN from five-GEN
'Ivan received letters from approximately five students.'

---

[20] Recall that extraordinary left-branch extraction crucially depends on the size of the preposition. However, this restriction does not hold in the approximative inversion cases, as shown in (i).

(i) Ivan perelez čerezzaborov pjat.
Ivan climbed over fences-GEN five
'Ivan climbed over approximately five fences.'

(119) a. Samoljot proletel nad pjatju sjolami.
Plane flew above five-INSTR villages-INSTR
'The plane flew over five villages.'

b. *Samoljot proletel nad sjolami pjatju.
Plane flew above villages-INSTR five-INSTR

c. *Samoljot proletel sjolami nad pjatju.
Plane flew villages-INSTR above five-INSTR
'The plane flew over approximately five villages.'

(120) a. Ivan prepodaval v pjati universitetax.
Ivan taught in five-loc universities-LOC
'Ivan taught at five universities.'

b. ?Ivan prepodaval v universitetax pjati.
Ivan taught in universities-LOC five-LOC

c. ?Ivan prepodaval universitetax v pjati.
Ivan taught universities-LOC in five-LOC
'Ivan taught at approximately universities.'

I conclude that approximative inversion in PPs is sensitive to the same restrictions as in non-PP contexts: it is only possible with nouns inflected for genitive case.

3.3. Measure Phrases and its effects on extraction

In this section I will investigate how measure phrases, more precisely $PP_{MEAS,}$ interact with the two phenomena described above: extraordinary left-branch extraction and approximative inversion. I will start by considering cases involving approximative inversion and then compare it to the cases of extraordinary left-branch extraction. Finally, I will discuss measure phrases and their structural position in other languages.

3.3.1. Measure phrases and approximative inversion

Now I will first test if the facts about approximate inversion can be affected by adding extra structure to PPs, in particular by adding PP_{MEAS}. It is necessary to spell out some assumptions regarding PP_{MEAS}. In Russian, PP_{MEAS} behaves similarly to adverbials: all PP_{MEAS}s in (121) can in fact be replaced with an adverbial *daleko* 'far' with no effect on the grammaticality. I assume that PP_{MEAS} is located in an A'-position, either in Spec, DirP or adjoined to DirP. Consider the following examples involving both PP_{MEAS} and approximate inversion.

(121) a. Samoljot proletel v dvux metrax ot pjati domov.
Plane flew in two meters from five-GEN houses-GEN
'The plane flew 2 meters from five houses.'

b. ??Samoljot proletel v dvux metrax ot domov pjati.
Plane flew in two meters from houses-GEN five-GEN

c. *Samoljot proletel v dvux metrax domov ot pjati.
Plane flew in two meters houses-GEN from five-GEN

d. *Samoljot proletel domov v dvux metrax ot pjati.
Plane flew houses-GEN in two meters from five-GEN
'The plane flew two meters from approximately five houses.'

In (121), approximate inversion is only possible (but still marginal) in one case, namely (121)b, where the noun *domov*' inverts with the numeral *pjat*'. The unacceptability of the sentences in (121)c and (121)d can be accounted for in two ways. The first account is the Relativized Minimality account. If we assume that approximative inversion is an A'-movement, then (121)d can be ruled out because it involves A'-movement across an A'-element (PP_{MEAS}), i.e., it involves a locality violation. The suggestion here is that we are

basically dealing here with the same kind of phenomenon as pseudo-opacity in French (see Obenauer 1976, 1984, Rizzi 1990), where *beaucoup* blocks A'-extraction; in fact, both arguments and adjunct A'-extraction (see Takahashi 1994 for evidence to this effect).[21] Alternatively, the ungrammaticality of (121)c-d can be accounted for if the PP_{MEAS} (*v dvux metrax*) occupies the same position which serves as the landing site for a noun in the approximative inversion in PPs. I will try to tease these two proposals apart by considering more data involving approximative inversion and PP_{MEAS}.

The next thing to test is to check if movement of PP_{MEAS} has any effect on approximative inversion in PPs. What happens if PP_{MEAS} *v dvux metrax* is fronted? Interestingly, such sentences (122) are much better than (121)c-d.

(122) ?[V dvux metrax]$_j$ samoljot proletel t_j domov$_i$ ot pjati t_i.
in two meters plane flew houses from five

Chomsky (1995) originally proposed that traces do not count as interveners for Relativized Minimality. Bošković (in press) deduces this generalization by suggesting a rescue-by-PF deletion analysis, which relies on an idea that an offending copy can be deleted at PF. Consider the following situation in (123). In (123)b, X undergoes movement across Y and this induces a Relativized Minimality violation, which results in *-marking on the intervening element. Then, Y undergoes movement, as in (123)c, note that * on Y is not copied. Under the assumption that the presence of a *-marked element

[21] Interestingly, it appears that PP_{MEAS} in French can even be placed in the same position as *beacoup* within the clause, as shown in (i).

(i) Jean a à 10 mètres lancé la balle par-dessus la clôture.
John has at 10 meters thrown the ball over the fence
'John threw the ball 10 meters over the fence.'

in PF causes a violation, the derivation in (123) can be saved by deleting the offending, *-marked copy of Y in PF under standard copy deletion.

(123) a. Y … X
b. X … *Y … X
c. Y… X … *Y … X
d. Y… X … ~~*Y~~ … X

Going back to the sentence in (122), the situation is identical to the one described above in (123), where Y corresponds to the PP_{MEAS} and X corresponds to the noun undergoing approximative inversion: the *-marked copy of the PP_{MEAS} is deleted in PF, thus rescuing the derivation in question. I will therefore assume that (121)d is ruled out due to a Relativized Minimality violation, which enables us to account for the improvement in (122).

In this section I have discussed how the presence of PP_{MEAS} affects approximative inversion in PPs. Now I would like to move to a discussion of interaction between extraordinary left-branch extraction and PP_{MEAS}.

3.3.2. Extraordinary left-branch extraction and measure phrase PPs

In section 3.1 I have discussed cases of extraordinary left-branch extraction, which involves movement of P+Adj. We have seen that Russian also has inverted extraordinary left-branch extraction, where what undergoes movement is P+N, leaving A behind. I will now examine whether the presence of measure phrase PPs affects extraordinary left-branch extraction.

Consider the data in (124). Similarly to the cases in (121) with approximative inversion, it is not possible to move either P+Adj or P+N across the measure phrase PP 'v pjati metrax', as in (124)d and (124)e[22]. The unacceptability of these examples can also be accounted for in terms of Relativized Minimality; we are dealing here with A'-movement over an A'-element.

(124) a. Ivan položil ključ v pjati metrax ot krasnoj korobki.
Ivan put key in five meters from red box
'Ivan put the key five meters from the red box.'

b. ?V pjati metrax Ivan položil ključ ot krasnoj korobki.
In five meters Ivan put key from red box

c. ?Ot krasnoj korobki Ivan položil ključ v pjati metrax.
From red box Ivan put key in five meters

d. *Ot krasnoj Ivan položil ključ v pjati metrax korobki.
From red Ivan put key in five meters box

e. *Ot korobki Ivan položil ključ v pjati metrax krasnoj.
From box Ivan put key in five meters red.

Recall that in the case of approximative inversion, grammaticality improved after turning the PP_{MEAS} into a trace, i.e., after the PP_{MEAS} undergoes independent movement. I will apply the same test to the cases in (124)d and (124)e.[23]

[22] The issue of whether movement in (124)b and (124)c involves full phrasal movement and what type of movement is involved here will be discussed later in the chapter.

[23] Recall that the possibility of extraordinary left-branch extraction in Russian depends on the size of preposition, i.e., sentences involving extraordinary left-branch extraction with polysyllabic and complex prepositions are degraded. Interestingly, fronting of the PP_{MEAS} does not improve their grammaticality as significantly, as in (125). (id) is close to being completely unacceptable and (ie) is unacceptable (cf. (125)a and (125)b respectively).

(i) a. Samoljot prizemlilsja v 5 metrax pered krasivym domom.
Plane landed in 5 meters in.front beautiful house
'The plane landed 5 meters in front of the beautiful house.'

(125) a. ?V pjati metrax Ivan ot krasnoj položil ključ korobki.
In five meters Ivan from red put key box

b. ?V pjati metrax Ivan ot korobki položil ključ krasnyj.
In five meters Iavn from box put key red.

The fronting of the PP_{MEAS} significantly improves acceptability of sentences with extraordinary left-branch extraction. The explanation of this fact is straightforward if we follow Chomsky's (1995) generalization that traces do not count as interveners and Bošković's (in press) deduction of this generalization. In (125), P+Adj undergoes movement across the measure phrase PP, which results in *-marking on the PP_{MEAS}. Then, the PP_{MEAS} undergoes fronting. Finally, the *-marked PP_{MEAS} is deleted in PF, thus saving the derivation, as shown in (126).

(126) a. MP … P+Adj

b. P+Adj… *MP … P+Adj

c. MP …P+Adj … *MP … P+Adj

d. MP …P+Adj … ~~*MP~~ … P+Adj

---

b. *Pered krasivym prezemlilsja samoljot v 5 metrax domom.
In.front beautiful landed plane in 5 meters house

c. *Pered domom prizemlilsja samoljot v 5 metrax krasivym.
In.front house landed plane in 5 meters beautiful

d. ???/*V 5 metrax samoljot pered krasivym prizemlilsja domom.
In 5 meters plane in.front beautiful landed house

e. *V 5 metrax samoljot pered domom prizemlilsja krasivym.
In 5 meters plane in.front house landed beautiful

In (125)b the situation is almost identical to the one in (125)a, the only difference is that what undergoes extraction is P+N not P+Adj. I provide a schematic derivation for (125)b in (127) below.

(127) a. MP … P+N

b. P+N… *MP … P+N

c. MP …P+N … *MP … P+N

d. MP …P+N … ~~*MP~~ … P+N

In (128) I provide additional data involving extraordinary left-branch extraction out of a PP, which is modified by PP_{MEAS}. As in (128), both PP_{CORE}[24] and PP_{MEAS} can undergo movement, as in (128)b and (128)c. However, extraordinary left-branch extraction (P+Adj and P+N) is only possible when the PP_{MEAS} also undergoes movement to the sentence initial position, as in (128)g and (128)h.

(128) a. Samoljot proletel v dvux miljax nad amerikanskim gorodom.
Plane flew in two miles above American city
'The plane flew two miles above the American city.'

b. V dvux miljax samoljot proletel nad amerikanskim gorodom.
In two miles plane flew above American city

c. Nad amerikanskim gorodom samoljot proletel v dvux miljax
above American city plane flew in two miles

e. *Nad amerikanskim samoljot proletel v dvux miljax gorode.
Above American plane flew in two miles city

[24] Recall that I use PP_{CORE} to refer to the part of PP which PP_{MEAS} modifies, as illustrated in (i).

(i) Ivan sidel [$_{PP}$ [$_{PPmeas}$ v trjox metrax] [$_{PPcore}$ ot zabora]].
Ivan sat in three meters from fence
'Ivan was sitting three meters from the fence.'

f. *Nad gorodom samoljot proletel v dvux miljax amerikanskim
above city plane flew in two miles American

g. V dvux miljax samoljot nad gorodom proletel amerikanskim.
In two miles plane above city flew American

h. V dvux miljax samoljot nad amerikanskim proletel gorodom.
In two miles plane above American flew city

3.4. Preposition doubling in Russian

Another property of PPs found in Russian, as well as in other Eastern Slavic languages, Ukrainian and Byelorussian, is preposition doubling, as shown in (129)a. In the case of extraordinary left-branch extraction in (129)b, the preposition is also used with the noun. A similar situation is found with inverted extraordinary left-branch extraction, as in (129)c.

(129) a. Ivan sidel v bol'šoj komnate.
Ivan sat in big room
'Ivan sat in a big room.'

b. **V** bol'šoj Ivan sidel **v** komnate.
In big Ivan sat in room

c. **V** komnate Ivan sidel **v** bol'šoj.
In room Ivan sat in big

Interestingly, there are restrictions on what prepositions can be doubled in Russian. First, it is impossible for a complex preposition to double with extraordinary left-branch extraction and inverted extraordinary left-branch extraction, as in (130)b and (130)c respectively.[25]

[25] For some speakers of Russian, sentences with doubling of complex prepositions are marginally acceptable (???).

(130) a. Medved' vygljanul iz- za starogo duba.
Bear looked.out from-behind old oak
'The bear looked out from the old oak.'

b. *__Iz- za__ starogo medved' vygljanul __iz- za__ duba.
From-behind old bear looked.out from-behind oak

c. *__Iz- za__ duba medved' vygljanul __iz- za__ starogo.
From-behind oak bear looked.out from-behind old

A similar constraint holds for polysyllabic prepositions: doubling of this kind of prepositions is ungrammatical or marginally acceptable, as in (131).

(131) a. Ivan perelez čerez vysokij zabor.
Ivan climbed.over over tall fence

b. *__Čerez__ vysokij Ivan perelez __čerez__ zabor.
Over tall Ivan climbed.over over fence

c. *__Čerez__ zabor Ivan perelez __čerez__ vysokij.
Over fence Ivan climbed.over over tall

Recall that Russian has restrictions on extraordinary left-branch extraction and inverted extraordinary left-branch extraction: these two types of extraction are only marginally acceptable with complex and non-clitic simple prepositions. The restrictions on P-doubling go along the same lines: only simple clitic prepositions can be doubled. In other words, the restriction on preposition doubling actually stems from the restriction on extraordinary left-branch extraction in Russian.

Yadroff (2000) discusses this phenomenon in Russian and points out that in some dialects of Northern Russia prepositions undergo doubling freely. He makes an observation that all functional prepositions (both spatial and non-spatial prepositions) can

undergo doubling in that variety of Russian. Yadroff suggest that preposition doubling is only available for functional preposition because they have some functional structure that can be reiterated.

The phenomenon that is important for our purposes is interaction between P-doubling and PP_{MEAS}. Preposition doubling is also impossible with PP_{MEAS}, as in (132)b and (132)c. However, if the PP_{MEAS} undergoes independent fronting, the grammaticality of these sentences improves significantly, as shown in (132)d-e. This case is the same as the one discussed above with respect to left branch extraction and approximative inversion, where the trace of the measure phrase PP does not count as an intervener for Relativized Minimality (Chomsky 1995, Bošković in press).

(132) a. Ivan podbrosil mjač na 5 metrov nad novym zaborom.
Ivan threw ball on 5 meters above new fence

b. *Nad novym Ivan podbrosil mjač na 5 metrov nad zaborom.
Above new Ivan threw ball on 5 meters above fence

c. *Nad zaborom Ivan podbrosil mjač na 5 metrov nad novym.
Above fence Ivan threw ball on 5 meters above new

d. ?? Na 5 metrov Ivan podbrosil nad zaborom mjač nad novym.
On 5 meters Ivan threw above fence ball above new

e. ?? Na 5 metrov Ivan podbrosil nad novym mjač nad zaborom.
On 5 meters Ivan threw above new ball above fence

I merely note here the similarity in the interaction of PP_{MEAS} with approximative inversion, left branch extraction and P-doubling, leaving the account of the last phenomena for future research, pending better understanding of P-doubling itself.

3.5. Position of PP_{MEAS} in PP in Russian

In this section I will briefly discuss the structural relationship between PP_{MEAS} and PP_{CORE} it modifies. I will reserve the term PP for the whole PP_{MEAS}+PP_{CORE} complex. As noted briefly above, both PP_{MEAS} and PP_{CORE} are mobile. In addition, they can occur in either order in-situ, as in (133).

(133) a. Samoljot proletel v pjati metrax nad domom.
Plane flew in five meters above house
'The plane flew 5 meters above the house.'

b. ?Samoljot proletel nad domom v pjati metrax.
Plane flew above house in five meters

c. ? V pjati metrax proletel samoljot nad domom.
In five meters flew plane above house

d. ??Nad domom samoljot proletel v pjati metrax.
above house plane flew in five meters

I will now consider the case of long-distance extraction, where it is clear that we are dealing with movement. The sentences in (134) have a subjunctive clause introduced by the complementizer *čtoby*. Russian allows movement out of subjunctive clauses. Either PP can move out of the subjunctive clause, as in (134)b and (134)c. If they are fronted together, the only acceptable order is PP_{MEAS} PP_{CORE}, as in (134)d.

(134) a. Ivan xotel čto- by Marina posadila cvety v 2 metrax ot zabora.
Ivan wanted that-subj Marina planted flowers in 2 meters from fence
'Ivan wanted Marina to plant flowers two meters from the fence.'

b. V 2 metrax Ivan xotel čto by Marina posadila cvety ot zabora.
In 2 meters Ivan wanted that-subj Marina planted flowers from fence

c. Ot zabora Ivan xotel čto by v 2 metrax Marina posadila cvety.
From fence Ivan wanted that-subj in 2 meters Marina planted flowers

d. V 2 metrax ot zabora Ivan xotel čto by Marina posadila cvety.
In 2 meters from fence Ivan wanted that-subj Marina planted flowers.

e. *Ot zabora v 2 metrax Ivan xotel čto by Marina posadila cvety.
From fence in 2 meters Ivan wanted that-subj Marina planted flowers.

Now consider the example in (135).

(135) Marina posadila cvety ot zabora v dvux metrax.
Marina planted flowers from fence in two meters
'Marina planted flowers 2 meters from the fence.'

If we compare (134)e and (135), there is a clear contrast in acceptability: (135) is a bit degraded but still acceptable, whereas (134)e is ungrammatical. I take the contrast between (134)e and (134)d to indicate that only in the order PP_{MEAS}+PP_{CORE}, the two form a constituent, which immediately accounts for the ungrammaticality of (134)e. Then, why is the order PP_{CORE}+PP_{MEAS} possible in (135). For (135) to be acceptable, PP_{CORE} and PP_{MEAS} must be separated by a pause. I suggest that PP_{MEAS} is an afterthought here, as supported by the data in (136). (136)b is ungrammatical because as an afterthought, PP_{MEAS} must follow everything in the sentence, which is not the case in this example, since the PP_{MEAS} here is followed by the adverb 'twice'.

(136) a. ?Ivan pytalsja pribit' kartinu v 2 metrax nad kaminom dvaždy.
Ivan tried nail picture in 2 meters above fireplace twice.
'Ivan tried to put the picture 2 meters above the fire place twice.'

b. *Ivan pytalsja pribit' kartinu nad kaminom v 2 metrax dvaždy.
Ivan tried nail picture above fireplace in 2 meters twice.

Consider now question-answer pairs. The only possible answer to the question in (137)a is in (137)b, not (137)c, i.e., the only possible order is PP_{MEAS} PP_{CORE}, not PP_{CORE} PP_{MEAS}.

(137) a. Gde Ivan xotel čto- by Marina posadila cvety?
Where Ivan wanted that-subj Marina planted flowers
'Where did Ivan want Marina to plant flowers?'

b. V dvux metrax ot zabora
in two meters from fence

c. *ot zabora v dvux metrax
from fence in two meters

This may be also interpreted as an indication that only the sequence $PP_{MEAS}PP_{CORE}$ is a constituent. I will adopt this analysis, assuming that PP_{MEAS} in (135) should be treated as an afterthought, only noting a potential alternative. The alternative is to analyze (135) as involving low movement of PP_{MEAS}, followed by the remnant movement of PP. Notice that the remnant movement derivation would have to be confined to the lower part of the sentence, given in (134)e.

Given that the sequence $PP_{MEAS}PP_{CORE}$ is a constituent, a question arises, what is its structure? There are several ways of analyzing this structure. One possibility is that PP_{MEAS} is adjoined to PP_{CORE}, in which case we need to allow for the lower segment of the adjoined structure to undergo movement in (134)c. Another option is to assume that PP_{MEAS} is located in the specifier of PP_{CORE}. Under this view, to account for (134)c, we need to assume that we are dealing here with P'-movement. Finally, another possibility

here is that there is a projection above PP_{CORE} in Russian, where PP_{MEAS} is located, so that (134)c can involve full phrasal movement of the complement of the head of that projection. But then we need to assume that the availability of this projection does not affect syntactic properties of PPs in Russian discussed in the first part of this chapter.

I will conclude this chapter with a brief discussion of Serbo-Croatian, where both NP_{MEAS} and PP_{CORE} are mobile. However, the sentences in (138) are not of equal status: (138)b is better than (138)c, then (138)d is better than (138)e, finally, (138)a is better than (138)f.

(138) a. Jovan je bacio loptu 10 m preko ograde
John is threw ball 10 m over fence

b. 10 m preko ograde je Jovan bacio loptu.
10 m over fence is John threw ball

c. ?Preko ograde 10 m je Jovan bacio loptu.
over fence 10 m is John threw ball

d. 10 m je Jovan bacio loptu preko ograde.
10 m is John threw ball over fence

e. ?Preko ograde je Jovan bacio loptu 10 m.
over fence is John threw ball 10 m

f. ?Jovan je bacio loptu preko ograde 10 m
John is threw ball over fence 10 m

Turning to left-branch extraction, recall that Serbo-Croatian allows extraordinary left branch extraction, as discussed earlier in this chapter. NP_{MEAS} has a blocking effect on left-branch extraction: if we move P+Adj out of PP modified by $NP_{MEAS,}$ the result is ungrammatical, as in (139)b. As in Russian, there is some improvement, when NP_{MEAS} is fronted, as in (139)c.

(139) a. Marija je stajala 5 metara iza nove ograde.
Maria is stood 5 meters behind new fence
'Maria stood 5 meters behind a new fence.'

b. * Iza nove je Marija stajala 5 metara ograde
Behind new is Maria stood 5 meters fence

c. ???5 metara je Marija iza nove stajala ograde.
5 meters is Maria behind new stood fence

Conclusion

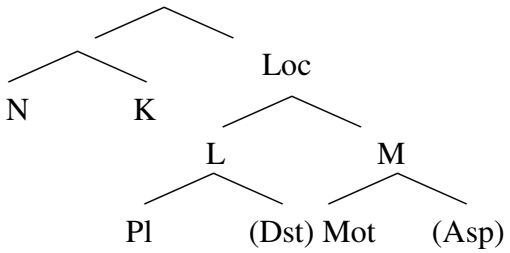
In this chapter I have discussed the syntactic structure of PPs. I have proposed a new functional structure for PPs and suggested that languages differ with respect to how much functional structure they have in PPs. I have used three diagnostics (measure phrase availability, binding properties, availability of quantifier float) to determine the size of PPs in languages from two language families – Romance (French, Spanish, Galician, and Romanian) and Slavic (Russian, Polish, Czech, Slovak, and Serbo-Croatian). In the second part of the chapter I have discussed one aspect of the syntax of Russian PPs, namely measure phrases. I have examined the interaction of Russian PP measure phrases with several syntactic phenomena, namely left-branch extraction, approximative inversion, and preposition doubling.

CHAPTER 4: THE VOCABULARY INSERTION PRINCIPLE AND (IM)POSSIBLE TENSE-ASPECT-MOOD PORTMANTEAUS[1]

1. Introduction

Chapter 2 of this dissertation discussed the structure for local case affixes and its relation to the structure of adpositions. Besides the proposal for the novel universal structure for spatial expressions in (1), chapter 2 contains a new proposal regarding vocabulary insertion, namely, the Vocabulary Insertion Principle (VIP), which allows for the possibility of vocabulary insertion at non-terminal nodes, though in very restricted contexts. It was demonstrated that the VIP, along with the geometric structure for local cases, as in (1), gives new results: it correctly predicts possible and impossible portmanteaus in the domain of local case morphology, as well as, captures implicational universals in the inventories of local case morphemes.

(1)

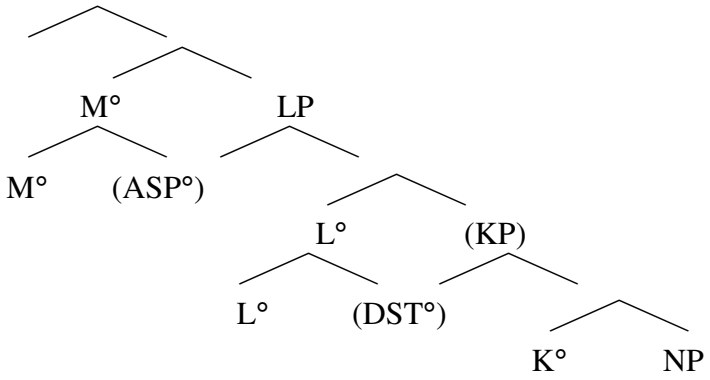


If the VIP is indeed a principle, and thus a part of Universal Grammar, its effects should be detectable throughout morphology, not limited to the domain of local cases. In this chapter I will provide independent evidence for the VIP from other language domains.

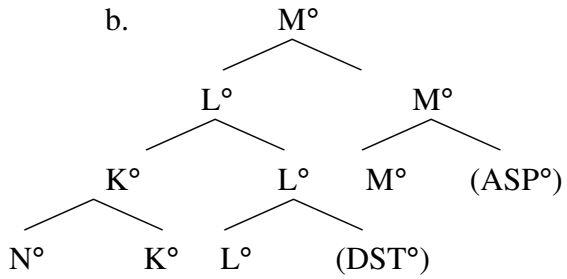
[1] Portions of the research reported here were supported by an NSF research grant #BCS-0616339 *An Integrated Morphosemantics of Agreement* (PI: Jonathan Bobaljik).

Another component of the theory presented in chapter 2 which requires further discussion is the morphological, post-syntactic, operation of Rebracketing. This operation was applied to derive the correct structural relations in the structure of local cases, as in (1), from the structure of adpositions, as in (2): (2)a is the structure before and (2)b after head movement. Rebracketing affects only structural relations between adjacent morphemes, without inflicting changes to the morpheme order. Similarly to the VIP, the appeal to rebracketing to derive complex morphological structures should find evidence in other domains.

(2) a. MP[2]



b.

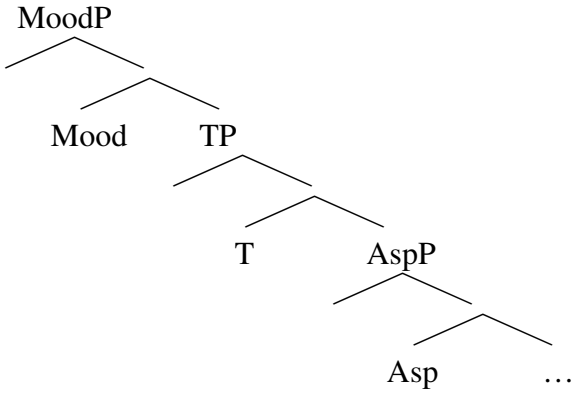


Providing independent evidence for the theory of portmanteau morphology put forward in chapter 2, in particular, the two ingredients of the theory, namely the VIP and

[2] MP corresponds to PathP and LP to PlaceP from chapter 3.

the postulated operation of rebracketing, is the main goal of this chapter. Both the VIP and rebracketing will be discussed in relation to portmanteau morphemes in the Tense-Aspect-Mood (TAM) agreement domain, which is shown in (3) below. Based on data from a cross-linguistic survey of TAM morphology, I show that the VIP and the Rebracketing operation give us correct results regarding possible and impossible portmanteaus in TAM morphology.

(3)



The chapter is organized as follows. Section 2 is devoted to the discussion of the VIP and how it is different from other DM and non-DM approaches to generation of portmanteau morphemes. I will show what predictions are made by the VIP and compare it with results of a previous cross-linguistic study of verbal morphology (Julien 2002). I will also demonstrate that attested and unattested TAM portmanteau morphemes can be predicted by the VIP for the structure in (3), if we apply the morphological operation of Rebracketing. Section 3 presents results of a cross-linguistic survey of TAM morphology and explains them by appealing to the VIP and Rebracketing. In section 4 I consider alternative approaches to formation of contexts eligible for portmanteaus in TAM.

Finally, I will discuss subject and object agreement portmanteau morphemes and show that the VIP makes correct predictions regarding portmanteaus in this domain as well.

2. The Vocabulary Insertion Principle, Rebracketing, and TAM morphology

This section is intended to set the theoretical background for a discussion of the TAM cross-linguistic survey. Below I will spell out my assumptions and show what predictions they make.

2.1. Approaches to cumulative exponents and the VIP

Distributed Morphology (DM) utilizes several post-syntactic operations to account for syntax-morphology mismatches: fusion, fission, morphological merger, and impoverishment (Halle and Marantz 1993, Bobaljik 1995, Halle 1997, Noyer 1997, Harley and Noyer 2001). The main assumption under which these operations are possible is Late Insertion, namely: the proposal that the syntax manipulates abstract nodes and features, devoid of phonological content, and that syntax is followed by a process of Vocabulary Insertion, which relates these nodes to their phonological exponents. The DM operations just listed apply after the syntax but prior to vocabulary insertion, and thus account for mismatches between the structure expected on syntactic grounds and the overt morphological structure. Morphology operates on feature bundles which manipulates abstract features.

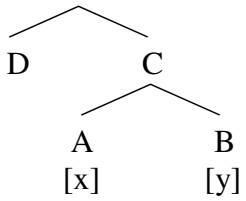
Another notion of DM important for the present work is the Subset Principle, which postulates that vocabulary insertion is only possible at terminal nodes, as given in (4).

(4) 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).

The operation relevant to this discussion is Fusion which is designed to account for cases when a single vocabulary item corresponds to two or more terminal nodes: Fusion takes two sister nodes and turns them into one, so that there is only one terminal node combining the features of the two original nodes. Consider the following scenario. Language X has two vocabulary items, as in (5). The relevant syntactic structure is given below in (5).

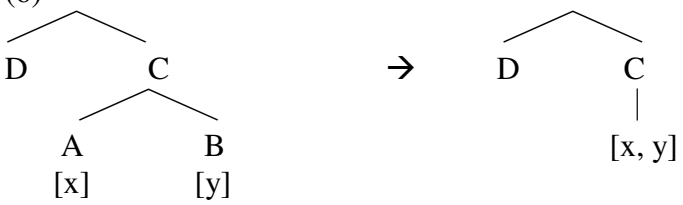
(5) /α/ ⇔ [x, y]
/β/ ⇔ [y]



In this scenario, the vocabulary item /α/ is a portmanteau morpheme, which lexicalizes features of two separate nodes simultaneously. Since /α/ cannot be inserted into any terminal node and the Subset Principle disallows insertion in non-terminal

nodes, the only way out in traditional DM is to apply the operation of Fusion. As shown in (6), the two nodes A and B which have two distinct sets of features are fused into one (C), which inherits both sets of features and now the vocabulary item /α/ can be inserted at this node.

(6)



The operation of Fusion is a structure changing operation triggered by a particular vocabulary item. The operation of Fusion is often invoked to deal with portmanteau morphemes, e.g., in a situation where a language has vocabulary items which correspond to individual nodes A and B in (6) and a vocabulary item which has features of both nodes A and B. The nodes A and B are fused into a single node only in the latter case when there is a single vocabulary item lexically realizing two nodes. In this case Fusion is triggered by a specific vocabulary item. As we have seen in (5)-(6), nothing in the structure itself conditions Fusion, but it is the vocabulary item /α/ that triggers the change. Fusion occurs before actual vocabulary insertion, though nothing in the system at that time requires it, which leads to a Look-ahead problem. The problematic nature of the operation of Fusion has been recently discussed in the literature (Chung 2007, 2010, Caha 2009, Radkevich 2008) and some proposals have been made to eliminate these problems[3]. Chung (2007, 2009) suggests that the definition of Fusion

[3] An alternative proposal to the ones discussed in the dissertation is made in Siddiqi (2009) who argues that Fusion is the norm, in other words, languages try to be as economical as they can. One of the ways the

must be altered: he argues that Fusion should be considered a post-vocabulary insertion operation. On the other hand, Caha (2009) argues that what has to be altered is the Subset Principle which governs vocabulary insertion in DM. For Caha, the only condition for vocabulary insertion at non-terminal nodes (or "phrasal spell-out" in Caha's terms) is that a vocabulary item lexically realizes a contiguous string of functional projections. In other words, the alternative to the Subset Principle, the Superset Principle, allows vocabulary insertion at non-terminal nodes. Recall that in Chapter 2 I showed that, although it can explain some syntax-morphology mismatches, the Superset Principle does overgenerate with respect to possible and impossible portmanteaus in the domain of local cases.

In chapter 2 I proposed another alternative to Fusion which eliminates the problems discussed above. I introduced a new approach to vocabulary insertion, the Vocabulary Insertion Principle (VIP), which allows insertion at non-terminal nodes. As I have shown, the VIP makes more accurate predictions with respect to the distribution of portmanteau morphemes than the Superset Principle (Caha 2009) and the Spanning Vocabulary Principle (Williams 2003), which can be attributed to the fact that it can only apply in very limited configurations. The definition of the VIP is repeated in (7).

(7) The Vocabulary Insertion Principle (VIP)

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

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economy can be achieved is by using the principle 'minimize exponence', which, in its turn, can be obtained by Fusion. I will not explore the workings of the 'minimize exponence' principle in this dissertation which I leave for future research.

Recall from chapter 2 how the VIP works in the scenario described in (5). In (5) there is a portmanteau vocabulary item which has two features corresponding to two individual sister nodes. According to the VIP, the vocabulary item /β/ can be inserted at the terminal node B, whereas the vocabulary item /α/ can be inserted at the non-terminal node C, which dominates all the features this exponent is specified for, as schematically illustrated in (8).[4]

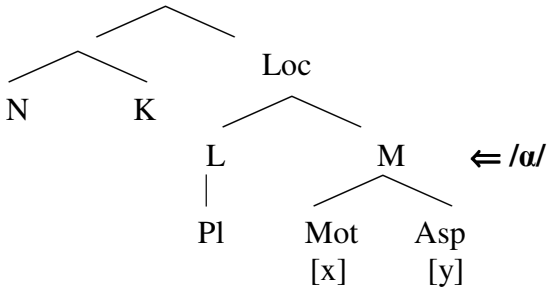
(8) /α/ ⇔ [x, y]
/β/ ⇔ [y]

In chapter 2 I have shown how the VIP works in the case of local case portmanteaus: it explains the derivation (or generation) of portmanteaus without the structure changing operation of Fusion. As a reminder, I will present here two configurations in which the VIP allows insertion at non-terminal nodes. In the first case, a

[4] Recall that in the discussion of the VIP, I assume that vocabulary insertion proceeds bottom-up and vocabulary items can be overwritten or 'wiped out' if there is a portmanteau morpheme which includes the features of the vocabulary item that has been already inserted in the structure: in (8) if both nodes are specified for the features [x] and [y], first, the vocabulary item /β/ gets inserted in the structure, but since there is a portmanteau exponent specified for the two features [x] and [y], the results of vocabulary insertion, i.e., the vocabulary item /β/ is overwritten or wiped out and the portmanteau morpheme /α/ is inserted at the non-terminal node C which dominates both feature [x] and [y]. an alternative to over-writing/wipe-out would be to have vocabulary insertion apply top-down or all-at-once.

vocabulary item /α/ is inserted at the non-terminal node M since it dominates all the features /α/ is specified for, as shown in (9)[5].

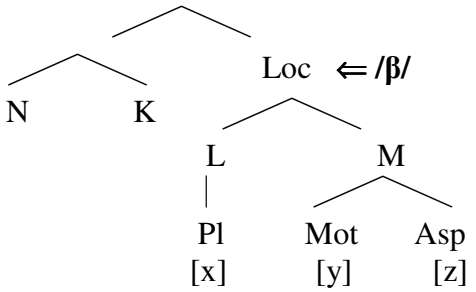
(9) /α/ ⇔ [x, y]
/β/ ⇔ [x]



The second configuration involves three terminal nodes Pl, Mot, Asp and a vocabulary item /β/ which is specified for three features [x, y, z], which correspond to the three nodes respectively. The VIP enables us to avoid double fusion of terminal nodes (first, in an analysis relying on Fusion Mot and Asp would undergo Fusion to yield a terminal node M, and then M and L would undergo Fusion to create a terminal node Loc, which would inherit all the features of the original terminal nodes). According to the VIP, a vocabulary item can be inserted at the minimal node which dominates all the features it is specified for. In our case, the vocabulary item /β/ is specified for the three features [x, y, z]. The minimal node that dominates all these features is Loc, therefore, /β/ can be inserted in Loc, as shown in (10).

(10) /β/ ⇔ [x, y, z]

[5] A similar case was discussed in chapter 2 (see examples (49)-(50)).

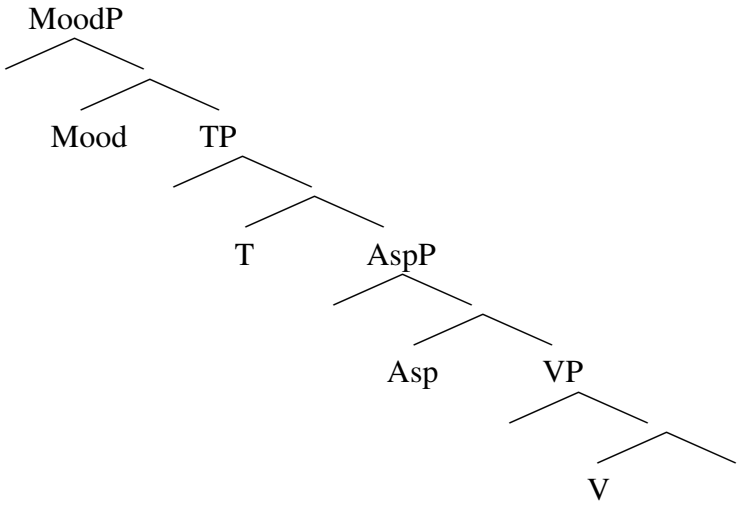


If the VIP is the correct characterization regarding how vocabulary insertion is constrained by UG, then its effects should surface in other domains, just as they surface in local case portmanteaus. There are several areas which are well-known for their abundance of portmanteaus. However, I will confine my attention to two of them: tense-aspect-mood (TAM) and subject-object agreement morphology to test if the VIP can explain the distribution of portmanteau morphemes in these two areas.

2.2. The Vocabulary Insertion Principle and TAM portmanteaus: predictions

Tense-Aspect-Mood morphology, well-known for its richness in portmanteau morphemes, serves a perfect ground for testing predictions of the VIP regarding possible and impossible portmanteau morphemes. In the previous section, I have shown that under the VIP, whether or not portmanteaus are possible or not depends on hierarchical structure, rather than on linear adjacency of relevant terminal elements. Although the literature has various proposals regarding the structure of the TAM domain, I will assume the structure in (11) (see Cinque 1999, Julien 2002, among others).

(11)



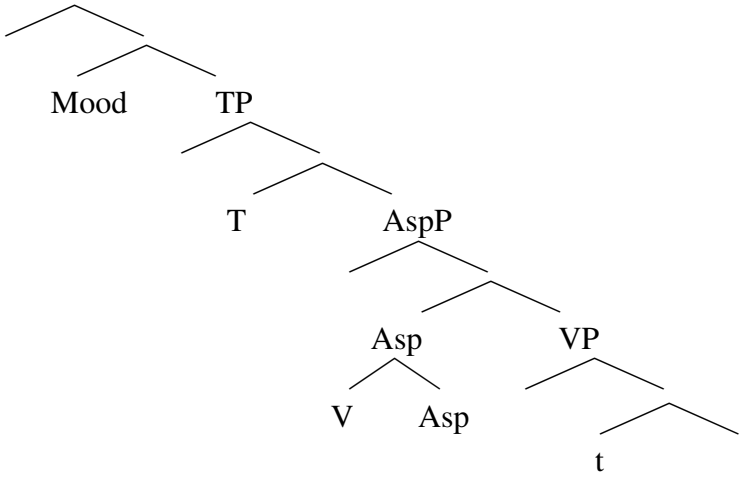
Recall that the VIP predicts that portmanteau morphemes are possible in the contexts when nodes are sisters. The three relevant heads in (11) are not sisters, thus there are no contexts suitable for vocabulary insertion at non-terminal nodes. The traditional way to derive complex heads is to apply head movement which yields a hierarchical structure within the inflected verb that mirrors the syntactic structure, as in (12) below.

In the remainder of section 2 I will discuss a morphological (post-syntactic) operation of rebracketing of adjacent heads. I will apply it to the structure in (12) and then examine the predictions that rebracketing along with the VIP makes with respect to possible and impossible TAM portmanteau morphemes. Below I will illustrate how a complex head can be derived via successive cyclic head movement. First, the V head undergoes movement to Asp, as in (12)a, then this complex head Asp+V moves up to T to form a new complex head T+Asp+V, as in (12)b, and, finally, this complex head raises up to Mood to yield a complex head Mood+T+Asp+V, as in (12)c. For ease of exposition, (12) is presented as if head movement consistently generates suffixing configurations (with head movement involving left adjunction), but the basic results to be

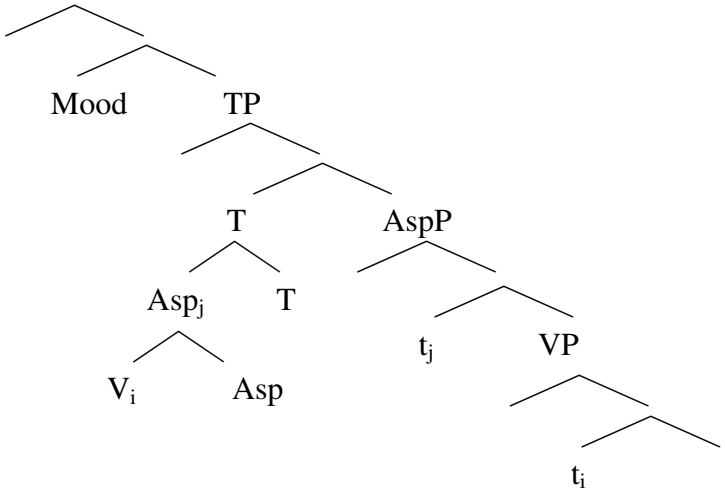
presented here abstract away from linear order and are consistent across prefixing and suffixing structures.

(12)

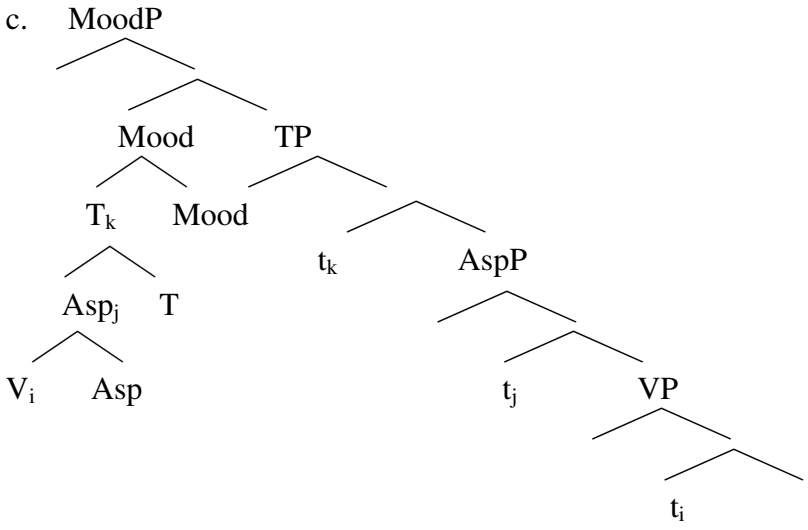
a. MoodP



b. MoodP



c.



Beginning with the syntactic structure in (12)a, successive cyclic movement yields a complex X° node, as in (12)c. This tree is sufficient for describing the attested cases of suppletion, i.e., portmanteaus involving the verb root, as in (13).

(13)

- V+ Asp
- V+Asp+T
- V+Asp+T+Mood

However, this structure is not sufficient for describing portmanteau affixes, i.e., the configuration in (12)c is not enough to capture portmanteaus which do not involve the verb root. In (12)c, there is no node that dominates just the heads/ features [Tense] and [Aspect], excluding the verb, yet there is ample evidence that these may form a portmanteau. Similarly, T +Mood and T+Asp+Mood portmanteaus are impossible in the structure in (12)c, though attested.

If the structure in (12)c was the only one to consider, these would be the only portmanteaus predicted: the verb is the most deeply embedded constituent and there are no other constituents that would allow portmanteau affixes that do not contain the verb stem. These cases are traditionally described as verbal suppletion, which I will discuss in section 3.1 in more detail. I will now discuss one type of the portmanteaus in (13), namely V+Asp portmanteaus. The example comes from Wichita, a Caddoan language, spoken in Oklahoma.

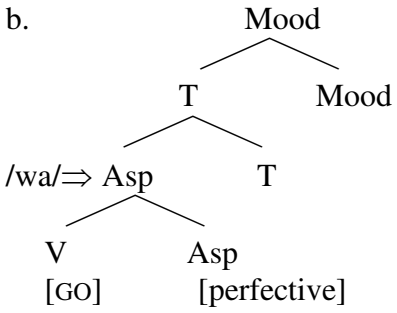
Wichita distinguishes four aspects: perfective, imperfective, intentive, and habitual (Rood 1976). Wichita has suppletive forms of the verb 'to go' in perfective and imperfective aspects, where one vocabulary exponent realizes two features: [GO] and [aspect]. Under the VIP, the node at which a vocabulary item characterized by the two feature [GO] and [aspect] can be inserted is the node that dominates these features in (12)c, namely Asp. Consider the data in (14): (14)a gives the vocabulary insertion rules for Wichita, where two vocabulary items are specified for the feature [GO] and [aspect]. Given the vocabulary insertion rules in (14)a and the structure in (12)c, the vocabulary item *wa* 'go.perfective' can only be inserted at the node dominating both features, namely Asp, as shown in (14)b.

(14) Wichita

a.

/wa/	⇔	[GO; perfective]
/hisha/	⇔	[GO]
/s/	⇔	[perfective]
∅	⇔	[imperfective]

b.



In chapter 2 I argued that UG includes morphological operations that alter in limited ways the hierarchical relations among morphemes provided by the syntax. In particular, I invoked the operation of rebracketing. This process allows for additional portmanteau morphemes, beyond the ones in (13), which express more than one TAM head but exclude the verb stem. Since rebracketing affects constituency but not linear order, the theory involving the VIP and rebracketing derives one prediction from the hierarchy in (11): only portmanteaus of adjacent heads are possible, disallowing skipping intermediate heads.

Morphological rebracketing involves post-syntactic and pre-phonological rebracketing of two adjacent head nodes. The definition of rebracketing is given in:

(15) …] X] Y]… → …] [X Y]]… where X and Y are any nodes[6]

This operation was proposed by Williams (2003), who calls it 'reassociate'. The basic case of reassociation/ rebracketing is given in (16) (Williams 2003: 189), [7] where

[6] In all the cases I will be concerned with rebracketing involves heads. We can build this into (15) by assuming that X and Y cannot be just any nodes but only heads. Also, in the examples I will be concerned with rebracketing only involves heads within a complex head, which could also be built into (15) by requiring that]s between X and Y in (15) cannot have a bar-level higher than zero.

X, Y, and Z are t adjacent heads that can be affected by rebracketing. Their constituency can change as a result of rebracketing: in (16) Y and Z form a constituent after rebracketing.

(16) a. [X>] Y>] Z] ⇔ [X > [Y > Z]]

b. X> Y> Z → [X Y]> Z

The operation of rebracketing, along with the VIP, predicts that there are 6 possible portmanteau morphemes in the TAM domain:

1) a portmanteau realizing heads Mood and Tense: Mood> Tense> Asp> V→ [Mood Tense]> Asp> V;
2) a portmanteau realizing heads Asp and Tense: Mood> Tense> Asp> V → Mood> [Tense Asp]> V;
3) a portmanteau realizing heads Mood, Asp and Tense: Mood> Tense> Asp> V → Mood> [Tense> Asp]> V → [Mood>[Tense Asp]]> V;
4) a portmanteau realizing heads V and Asp: Mood> Tense> Asp> V → Mood> Tense> [Asp V];
5) a portmanteau realizing heads V, Asp, and Tense: Mood> Tense> Asp> V → Mood> Tense> [Asp V] → Mood> [Tense> [Asp V]];

[7] In (16) I use two types of notation: in (16)a I use the notation from Williams (2003), whereas in (16)b I use the notation adopted in this dissertation.

6) a portmanteau realizing heads V, Asp, Tense, and Mood: Mood> Tense> Asp> V → Mood> Tense> [Asp> V] → Mood> [Tense> [Asp> V]]→ [Mood> [Tense> [Asp V]]]

The results of application of rebracketing to the base morpheme order Mood> Tense> Aspect> V are given in Table 1.

Table 1: morphological rebracketing

Types of portmanteaus	Morpheme order (head final)	Morpheme order (head initial)
[Mood +T]	[Mood T]> Asp> V	V> Asp> [T Mood]
[T+ Asp]	Mood> [T Asp]> V	V> [Asp T]> Mood
[Mood+ T+ Asp]	[Mood> [T Asp]]> V	V>[[Asp T]> Mood]

It is necessary to point out another assumption I make about the operation of rebracketing. I assume that rebracketing does not depend on vocabulary items and that an element that is affected by rebracketing cannot be affected by rebracketing again. It is crucial to point out that rebracketing precedes vocabulary insertion. Vocabulary items do not trigger rebracketing, it is the other way round: portmanteau vocabulary items arise due to the structures that are available in a language. The assumption that vocabulary items do not affect rebracketing, i.e., they do not trigger it, constitutes an important difference between rebracketing and the effects formally characterized by Fusion. This assumption predicts that overlapping portmanteaus are impossible in a single language, e.g., Asp+T and T+Mood, whereas both Fusion and Spanning/Contiguity approaches fail to rule overlapping portmanteaus out. (Recall that by overlapping portmanteaus I

understand two vocabulary items which realize features of one head: if there are three heads X, Y, and Z in the structure, overlapping portmanteaus in this structure would be vocabulary items realizing X+ Y and Y+Z heads.)

Having shown the predictions made by the VIP and the operation of rebracketing with respect to possible and impossible portmanteaus, I would like to present the results of a cross-linguistic survey of TAM morphology.

3. Results of the survey

To test the predictions of the VIP, I conducted my own survey of TAM morphology of 200 languages. The sample of languages is based on the WALS-200 sample, which covers all major language families and is geographically unbiased: the survey covers 200 languages (59 language families and 18 language isolates). The list of languages is given in Appendix 2. In my survey I looked at three types of affixes: Tense, Aspect, and Mood. It is important to point out what I considered to be the cases of portmanteaus: a situation in which a language has independent exponents for heads X and Y and the language has a vocabulary item combining the features of X and Y in some contexts. I did not consider cases where a language never has exponents of either X or Y, where they are always expressed by a single vocabulary item to be instances of portmanteau morphemes. I treat such cases as involving pre-syntactic bundling (Bobaljik and Thráinsson 1998). The attested types of portmanteau morphemes are given in (17).

(17)

- Asp+T
- T+Mood
- Asp+T+Mood
- V+Asp
- V+T (in the absence of Asp)
- V+Mood (in the absence of T and Asp)

Before continuing the discussion, an explanation is in order regarding what I consider to be Tense, Aspect, and Mood. The case of Tense is fairly straightforward: tense morphemes are morphemes expressing 'location in time' (Comrie 1985: 9). The next group of affixes is more problematic to define since it includes both inflectional and derivational aspects, which can also be referred to as grammatical and lexical aspects respectively (Cinque 1999: 83). Bybee (1985) points out that it is very often hard to draw the line between inflectional and derivational aspects. Cinque (1999) considers a variety of aspects with respect to aspectual adverb hierarchy distinguishing perfect, celerative, habitual, retrospective, durative, progressive, prospective, completive, repetitive, and iterative. In my survey I followed Comrie's definition and classification (Comrie 1976). Comrie (1976: 3) defines aspect as a way of "viewing the internal temporal constituency of a situation". Comrie proposes the following aspectual opposition, shown in the diagram below. I adopt his aspectual distinctions in my survey, as in (18).[8].

[8] For a critical review of the aspectual opposition proposed by Comrie (1976), see Bybee, Perkins, and Pagliuca (1994).

(18)

Aspect:

- Perfective
- Imperfective:

  Habitual

  Continuous:

  Non-progressive

  Progressive

The last type of morphemes under investigation is Mood. Mood usually refers to expressions of speaker's intentions and attitudes in a particular situation. In this respect, I follow Bybee (1985: 22), who considers the following meaning to be expressions of Mood: assertion (indicative/ realis), non-assertion (subjunctive/ irrealis), command (imperative), warning (admonitive), the source of information (evidentials).

I used the definitions discussed above to conduct a cross-linguistic study of the verbal inflectional morphology. Having investigated data from 200 languages, I found only three types of portmanteaus where a single vocabulary item lexicalizes two or more TAM heads, as in (19).[9,10] Furthermore, I found three types of portmanteaus involving the verbal root, as shown in (20). I have not come across a single language which would have a morpheme lexically realizing Asp and Mood and a separate morpheme for Tense.

[9] Bybee (1985) presents the results of the cross-linguistic (50 languages) survey of fusional verbal morphology. She investigates portmanteau morphemes which involve verbal roots. This type of verbal portmanteaus will be discussed later in this chapter.

[10] It is important to point out that I did not consider languages which express either Tense or Aspect, but never both simultaneously, as languages with portmanteau morphemes. I assume that in such cases we are dealing with just a single node, which can express either Tense or Aspect as a result of pre-syntactic bundling (see Bobaljik 1995, 1997, 1998 for discussion of pre-syntactic bundling in Germanic)

(19)

1) T and Asp (14 languages);
2) T and Mood (5 languages);
3) Asp, T and Mood (3 languages).

(20)

1) V+Asp;
2) V+T;
3) V+Asp+T;
4) V+Mood.

Below I will illustrate the types of portmanteaus attested in the world's languages. I will begin the discussion of the results of the survey with the portmanteaus involving the verbal root.

3.1. Portmanteau morphemes and verbal suppletion

The third type of predicted portmanteaus involves cumulative exponents realizing at least one of the features of TAM heads and the verb roots. Such cases are traditionally described by the term suppletion. Suppletion is "the phenomenon whereby regular semantic relations are encoded by unpredictable formal patterns" (Veselinova 2006). A textbook example of verbal suppletion comes from English past tense irregular forms,

e.g. '*go*' (present) vs. '*went*' (past) (Spencer 1991: 8). For the purpose of this work, I distinguish two types of suppletion involving verbal roots: (a) one portmanteau exponent expresses both the root and the inflectional features (TAM heads); (b) the use of a non-canonical exponent is found in some particular morphological context; e.g. a non-canonical plural marker in English is found in very limited contexts –'*ox*' vs. '*oxen*' vs. '**oxes*' or a non-canonical form of the root is determined by a morphological feature; e.g. in Jarawara some verbs have suppletive alternation of roots which depends on the number of Object: '*-iti-*' 'to take out' (with a singular object) vs. '*-jaba-*' (with a plural object) (Dixon 2004: 545). Below I will describe the two types of suppletion.

The traditional cases of suppletion can be divided into two main groups: contextual allomorphy and portmanteau suppletion (cf. Mel'čuk 2006 for a detailed discussion of different types of suppletion). The first type of suppletion, contextual allomorphy, involves an irregular exponent in the presence of another exponent. A canonical example of contextual allomorphy is the case of irregular comparative degree adjectives in English. (21) shows that in the case of the comparative degree of the adjective 'good' an irregular stem */bett/* is used. However, there is still the regular comparative morpheme */er/*, i.e., the use of the irregular (suppletive) stem is conditioned by the comparative morpheme (for more discussion see Bobaljik 2007).

(21) good –*bett***er**

The second type of suppletion is presented by portmanteau morphemes, which realize both the root and a particular morpheme as a single exponent. Some languages use a

single cumulative exponent which realizes both the root and the comparative morpheme. Consider the following example from Ket. The plural form of nouns is formed by adding a suffix /-n/ to the singular form of nouns. In the case of the noun 'child', the situation is different: the plural form of the noun has no connection with the singular form of this noun, moreover, the plural marker is not used to form the plural noun 'children', as shown in (22).

(22) *dyl'* 'child' – *kat* 'children'

The primary interest of this chapter is portmanteau suppletion, which involves expression of both [verb] and TAM features with a single exponent. In the following discussion of verbal portmanteau suppletion I use data from my survey, as well as data from typological studies on suppletion conducted by Veselinova (2006) and the Surrey Morphology Group.[11] All the cases of suppletion of this type found in the literature can be divided into four groups, as in (23):

(23)

1) a verb has a suppletive form in one of the Aspects;
2) a verb has a suppletive form in one of the Tenses;
3) a verb has a suppletive form in a combination of Tense and Aspect;
4) a verb has a suppletive form in one of the Moods.

[11] Corbett (2007) analyzes results of the study of suppletion conducted by the Surrey Morphology Group to provide a typology of suppletion based on twelve criteria.

The first group of portmanteau verbs expresses features of the nodes V and Asp. For the VIP to apply, V and Asp must be sister terminal nodes, which is not the case, given the structure in (12)c.

Archi, a Nakh-Daghestanian language, is one of the languages which have V+Asp portmanteaus. Archi has several cases of portmanteau suppletion: the verbs 'come', and 'become' have irregular forms for some of the aspectual forms, as shown in (24). The verb 'come' has a portmanteau exponent in the terminative aspect /*q'a*/, which is normally formed by adding a terminative suffix /*–ti*/ to the verb root. In (24), the root of the verb 'to become' has an irregular form in the terminative aspect, which is an example of suppletive allomorphy discussed above. I also give a regular verb 'to die' to illustrate how verbs are inflected for different aspects in Archi.

(24) Archi verbal suppletion (Surrey Morphology Database; Khaidakov 1967: 618)

Verb	Finalis	Durative	Terminative
'come'	aLi-s	a-r-Li-r[12]	q'a
'become'	ke-s	ke-r	e-ti
'die'	ati-s	art-ar	at-ti

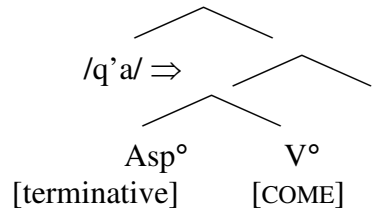
The verb 'come' has an irregular form in terminative aspect:[13] this form is a cumulative exponent of two heads V and Asp. Under the VIP, the portmanteau exponent can be inserted at the node which dominates both features [verb] and [terminative]. As has been discussed previously, the structure in (12)c is the right context for the V+Asp

[12] The durative forms of the verbs 'come' and 'die' have an epenthetic consonant /r/, which is a regular process in Archi.
[13] Terminative aspect in Archi corresponds to completive aspect.

portmanteaus, with the nodes V and Asp being sisters, as a result of successive cyclic head movement. Then, the portmanteau morpheme can be inserted at the non-terminal node, as shown in (25).

(25)

/q'a/ ⇔ [COME; terminative]
/aLi/ ⇔ [COME]
/s/ ⇔ [finalis]
/r/ ⇔ [durative]
/ti/ ⇔ [terminative]



The second type of portmanteau suppletive forms involves two features [verb] and [tense]. It might look problematic for my system, since, as I have shown in section 2, T and V cannot be sisters because there is an intervening head Asp. However, the languages that have T+V suppletive portmanteaus do not lexically realize Asp, i.e., they lack AspP. Consequently, there is no violation, since V and T can be sisters as a result of successive cyclic V movement in the absence of AspP. Below I illustrate this case with an example from Alamblak, an East Sepik language, spoken in Papua New Guinea.

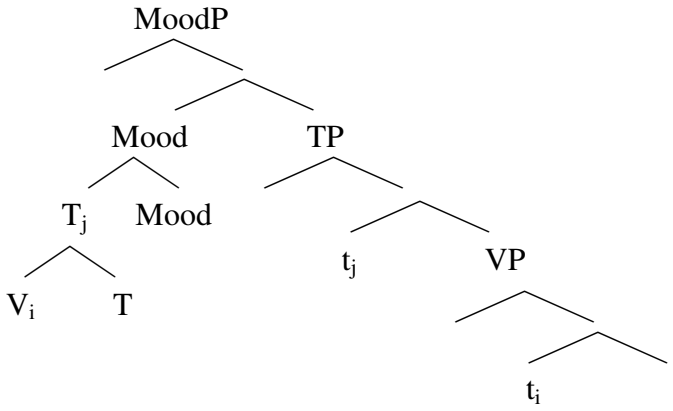
Alamblak marks verbs for Tense and Agreement. The verb 'go' has an irregular form for Future tense: it uses one morpheme that realizes features [GO] and [future], as shown in (26). The complex head T+V is formed as a result of head movement of V to T, as illustrated in (12)c, though there is one significant difference: there is no Asp head in the language. Successive cyclic head movement thus results in the structure in (27),

where V and T are sisters. Then, the vocabulary item specified for [GO; future] can be inserted at the node which dominates both features, as in (28).

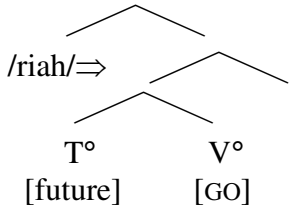
(26) Alamblak

/riah/ ⇔ [GO; future]
/wë/ ⇔ [present]
/kit/ ⇔ [GO]

(27)



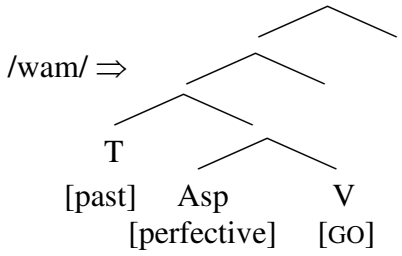
(28)



The third type of portmanteau suppletion has cumulative exponents realizing features of three heads V, Asp, and T. For such portmanteaus to be possible, the three nodes must be in a particular configuration which would allow insertion at a non-terminal node, which would dominate only these nodes. This configuration is exactly the one in (12)c, where there is a single node dominating T, Asp and V. I have found only one example of this kind. Mayali, a non-Pama-Nyungan language of Australia, has a

portmanteau form of the verb 'go', which expresses features [GO], [perfective], and [past], whereas other forms are not suppletive (Evans 2001: 413). The portmanteau exponent in Mayali is inserted at a non-terminal node, which minimally dominates T, Asp, and V, as shown in (29).

(29)



The last type of suppletive portmanteaus has morphemes specified for [verb] and [mood]. Interestingly, the mood that has a suppletive form in my sample is always Imperative[14]. It is traditionally assumed that the imperative form realizes two features [mood] and [verb]. Going back to the structure in (12)c, the configuration where Mood and V are sisters can be an outcome of head movement if there are not Asp and T heads. Another way to approach this situation is to say that Mood and V become sisters as a result of rebracketing in the absence of Asp and T, which otherwise would be interveners for rebracketing, as in (30).

(30) Mood> V → [Mood V]

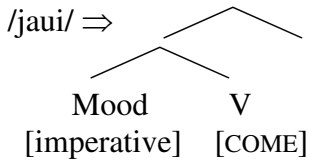
[14] I do not have an account why it is the case that the only Mood type involved in this type of portmanteau is Imperative. I leave this interesting question for future research.

An example of V+ Mood portmanteau comes from Arapesh, a Toricelli language, spoken in Papua New Guinea (Fortune 1942). The verb in Arapesh does not inflect for Tense and Aspect; it has inflection only for Mood. Some verbs have suppletive forms for imperative mood, as shown in (31). (32) illustrates vocabulary insertion of the portmanteau morpheme in Arapesh.

(31) Arapesh

/jaui/ ⇔ [COME; imperative]
/nakih/ ⇔ [COME]

(32) V+Mood portmanteaus in Arapesh



All the cases of portmanteau suppletion discussed in this section are heavily dependent on locality restrictions: only particular configurations of heads can be eligible for generation of portmanteaus, i.e., the locality plays a very important role. What about the second type of suppletion, where language uses an irregular root and regular affix?

It has been proposed by Embick (2009) that morphologically conditioned contextual allomorphy is possible only in certain configurations. Embick argues that allomorphic relations between two morphemes are possible if the morphemes are linearly adjacent and they are in the same spell-out cycle. It is crucial to point out that Embick relies on the understanding of phases suggested in Chomsky (2001). Consider the structure in (33), where x and y are cyclic heads, while W and Z are non-cyclic heads. In

Embick's theory, Root and x can be allomorphic under adjacency. Moreover, Root and W can be in an allomorphic relationship if *x* is not overt. Finally, Root and Z can also be in an allomorphic relationship if both x and W are not overt. However, Root and *y*, which is a cyclic head of the second cycle, cannot be in allomorphic relationship. In other words, allomorphy is determined locally.

(33) [[[[[√Root *x*] W] Z] *y*]

If we replace the heads in (33) with the verbal inflectional heads, we get the structure in (34). In (34) there are two cyclic heads (*v* and *C*). The √Root in (34) can only be sensitive to the cyclic head of the first cycle (*v*), but not *C*. However, the root allomorphy can be triggered by non-cyclic heads Asp, T, and Mood.

(34) [[[[[√Root *v*] Asp] T] Mood] *C*][15]

Embick predicts the following allomorphic relations to be possible, as in (35):

[15] An interesting question arises regarding the structure in (34) and suppletive allomorphy of verbal roots in Imperative Mood, as in (i).

(i) gu-n 'to give' (infinitive) (Lezgian 1993: 128)
ce 'give!' (imperative)

For the theory of allomorphy in Embick (2009), it is crucial to have the Mood head lower than C, i.e., in the phase which is still accessible. If Mood is actually in C, the theory needs some adjustments to work: one can speculate that there is an independent V movement to C in such languages, which results in a complex head V+Mood/C and avoids locality violations for allomorphy.

(35)

- √Root and Asp (if no overt *v*)
- √Root and T (if no overt *v* and Asp)
- √Root and Mood (if no overt *v*, T and Asp)

It would be interesting to check if the locality restrictions indeed hold for suppletive allomorphy in verbal domain. I did not find any counterexamples to the Embick's predictions, besides the Korean allomorphy discussed in Chung (2007). An investigation of this area could be an interesting project which, unfortunately, goes beyond the scope of this dissertation. In the next section I will discuss attested patterns of portmanteau morphemes which do involve the verb root.

3.2. Tense and Aspect portmanteau morphemes

A number of languages in the survey (7%) are characterized by having morphemes lexicalizing two features [tense] and [aspect]. A list of languages with portmanteaus lexicalizing features of Tense and Aspect is given in the table below.

Table 2: Languages with T+ Asp portmanteaus

Language	Morpheme order
Alabama	AgrS-V-Asp-T
Mona	V-Asp-T-Mood
Betta Kurumba	V-Asp-T-Mood-SAgr
Nar Phu	V-Asp-T-Mood
Mollala	V-Asp-T-Mood
Menya	V-Asp-T-Mood
Waimiri Atroari	S/O Agr-V-Asp-T
Luvale	SAgr-T-Asp-V
Akan	V-Asp-T
Mizo	SAgr-V-Asp-T
Ocuilteco	T-Asp-SAgr-V
Usarufa	V-Asp-T-Mood
Warao	V-Asp-T-Mood
Jingulu	V-Asp-T-Mood

As I noted earlier, there is inconsistency among descriptive grammars regarding what terms are used for the same phenomenon. In the following example from Nar Phu, a Sino-Tibetan language, spoken in Western Nepal, the Durative Tense/Aspect actually refers to Present Continuous Tense. Nar Phu has a set of tense/aspect morphemes, some of which realize just one feature [tense], while others are cumulative exponents of the two features [tense] and [aspect], as shown in (36).

(36) Nar Phu (Noonan 2003: 345)

Past	-čun
Present Perfect	-se
Present	-mû
Present Continuous	-pɛ-mû

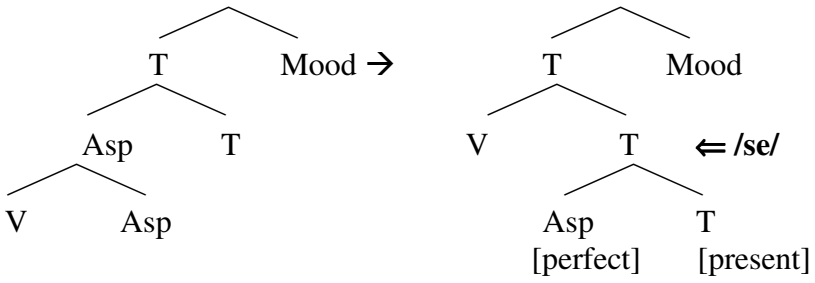
As shown in (36), Nar Phu has one exponent which lexically realizes two features [perfect] and [present], while all others correspond to individual heads. Since the

exponent of Present Perfect tense is a portmanteau, it gets inserted at the minimal node dominating both features T: this node dominates the [present] feature of Tense and the [perfect] of Aspect, as illustrated in (37). Nar Phu is one of the few languages which have all three TAM exponents. Besides Tense and Aspect, this language has two Moods: eye-witness (∅) and non-eyewitness (*/mû/*). The Mood exponent follows the Aspect and Tense morphemes: V-Asp-T-Mood. Recall that in the structure (12)c, Asp and T are not sisters; in other words, this not a suitable configuration for vocabulary insertion of a portmanteau morpheme realizing features of these two heads. To form a configuration suitable for portmanteaus under the VIP, Asp and T must undergo morphological rebracketing, as shown in (38). As a result of morphological rebracketing, the heads T and Asp are sisters and the vocabulary item /se/ can be inserted at the minimal node dominating features [present] and [perfect], as in (38).

(37)

/čun / ⇔ [past]
/mû/ ⇔ [present]
/pɛ/ ⇔ [continuous]
/se/ ⇔ [present, perfect]

(38)



Another example of the portmanteau vocabulary exponent realizing features of Tense and Aspect heads comes from Menya, a Papuan language of New Guinea. Menya verbs can be marked for Tense, Asp, and Mood. There are three tenses: present, past, and remote past. These three tenses can be used in combination with perfective or imperfective aspects, as shown in the table in (39) below.

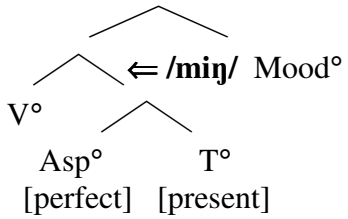
(39) Menya Tense/Aspect markers

Tense/Aspect	Perfective	Imperfective
Present	∅-q	-ät-q
Past	∅-k	-miŋ
Remote Past	∅-ääŋ	- miŋ

The past imperfective marker is a portmanteau morpheme, which realizes two heads Tense [past] and Aspect [imperfective], which form a constituent as a result of morphological rebracketing. The vocabulary insertion rules and derivation for Past Imperfective in Menya are given in (40).

(40)

/miŋ/ ⇔ [past; imperfective]
/ääŋ/ ⇔ [remote past]
/k/ ⇔ [past]
/q/ ⇔ [present]
/ät/ ⇔ [imperfective]
∅ ⇔ [perfective]



3.3. Tense and mood portmanteau morphemes

Cumulative exponents realizing features [tense] and [mood] are extremely rare: there are only a handful of languages that might have Tense-Mood portmanteaus (2.5%). One of the examples of the Tense and Mood portmanteaus comes from Dzongkha, a Bodic language, spoken in Bhutan (van Driem 1998). This language morphologically distinguishes present and past tenses. Moreover, it also draws a distinction between two types of past: witnessed past (/*yi*/ ~/*ci*/) and non-eyewitnessed past (/*nu*/). Dzongkha also marks verbs for Aspect. The linear order of TAM morphemes is given in (41).

(41) Dzongkha morpheme order

Verb-Aspect-Tense-Mood/ Tense –Mood

A list of languages with Tense+ Mood portmanteau morphemes is given in table 4.

Table 3: Languages with T+Mood portmanteaus

Languages with T+ Mood portmanteaus

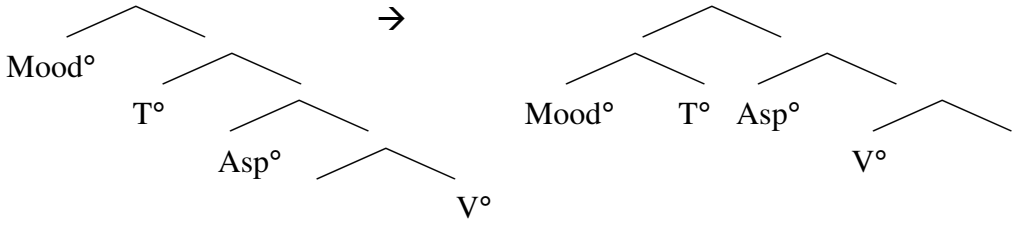
Dzongka	V-Asp-T-Mood
Selkup	V-Asp-T-Mood
Zuni	OAgr-V-SAgr-T-Mood
Udeghe	V-Asp-T-Mood
Pendau	Mood-Tense-V

Another example of T+Mood portmanteaus comes Pendau, a language of the Sulawesi language group, spoken in Indonesia. Pendau (Quick 2007) makes a distinction between two Moods (Realis and Irrealis). The Realis morpheme is characterized by two features [past] and [realis], whereas the Irrealis exponent is specified for two features [non-past] and [irrealis]. Furthermore, Pendau has two morphemes lexicalizing [aspect] features: completive and continuative. The morpheme order in this language is Mood/Tense-Verb-Aspect. Below I provide a set of rules of vocabulary insertion for the Pendau TAM morphology.

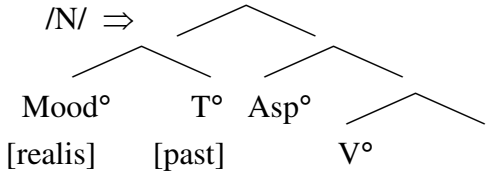
(42) Pendau
/N/ ⇔ [realis, past]
/M/ ⇔ [irrealis, non-past]
/mo/ ⇔ [completive]
/po/ ⇔ [continuative]

For the two portmanteau morphemes in (42) to be possible, the heads they are realizing must be sisters, since a vocabulary item can only be inserted at the node which minimally dominates all the features the vocabulary item is specified for. In the structure in (12)c, it would be impossible, because there is no node that dominates both Mood and T heads. The operation of rebracketing applies to the nodes Mood and T to yield a complex head, as shown in (43) below. In this case, this minimal node is the one above T and Mood, which are put together, as a result of rebracketing, as shown on the example from Pendau in (44).

(43)



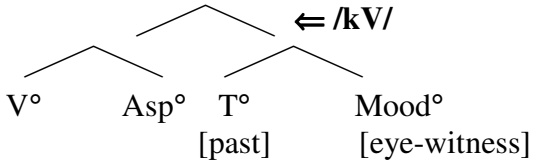
(44) Pendau portmanteaus



A similar situation is found in Udeghe, a Manchu-Tungusic language, spoken in the southern part of the Russian Far East. Unlike languages that are closely related to it, Udeghe has developed an eye-witness mood (Girfanova 2002). This language morphologically marks three tenses: past, present, and future. Udeghe also has several moods: eye-witness, conditional, imperative, subjunctive, permissive. Interestingly, the past tense morphemes can have two exponents which differ with respect to the [eye-witness] feature: one of them is used when the speaker has witnessed some event, whereas the other one is the general past tense marker, which does not express any [eye-witness] features. The eye-witness past exponent is a portmanteau morpheme, realizing features [past] and [eye-witness]. For this portmanteau to be possible, the two heads Mood and Tense must be sisters, which can be achieved by rebracketing. The final morphological structure for Udeghe is given in (45).

(45) Udeghe portmanteau

/kV/⇔ [past; eye-witness]
/hV ⇔ [past]



3.4. Tense, Aspect and Mood portmanteaus

Similarly to the Tense+Mood portmanteaus, Tense-Aspect-Mood portmanteaus are very rare (1.5%). A list of languages that have this type of portmanteau morphemes is given in the table 4 below.

Table 4: languages with Asp+T+Mood portmanteaus

Turkish	V-Asp-T-Mood
Southeastern Pomo	V-Asp-T-Mood
Kiowa	V-Asp-T-Mood

An example of a portmanteau morpheme expressing the three features [aspect], [tense], and [mood] is found in Kiowa, a Kiowa-Tanoan language, spoken in the states of Kansas and Oklahoma (Watkins 1984). This language has fused markers for Tense and Aspect; moreover, it also has morphemes which express the three features simultaneously. One of such examples is Imperfective Hearsay (*/dêl*), which can be characterized by the following three features [present], [imperfective], and [hearsay]. However, Kiowa does not distinguish between Aspect and Tense, i.e. it is not 100% clear

if they are fused or the language simply does not have a morphological realization of Tense on the verb itself.

Another example of this kind is Southeastern Pomo, a Hokan language, spoken in northern California. Southeastern Pomo has a number of Aspects, which also have temporal specifications (present and past). Moreover, it distinguishes one Tense –Future. This language also has several cumulative exponents of, at least, [aspect] and [mood], e.g., Perfective Optative and Imperfective Optative, which are both portmanteau morphemes. According to the description of the two aspects (Moshinsky 1974), Perfective Aspect is always translated as Past tense, while Imperfective is translated as either Future or Present. It might be the case that these two morphemes actually realize two features [aspect] and [tense]. Furthermore, Perfective Optative also always refers to Past, Imperfective Optative, on the other hand, refers to Non-Past. Based on these observations, I propose the following vocabulary insertion rules for Southeastern Pomo.

(46) Southeastern Pomo[16]

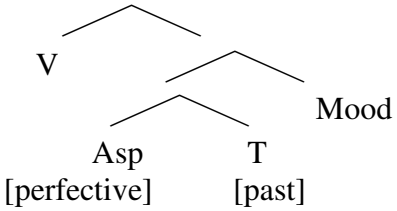
/hine/ ⇔ [imperfective, non-past, optative]
/y/ ⇔ [perfective, past, optative]
/t/ ⇔ [imperfective, non-past]
/ya/ ⇔ [perfective, past]

In this case we have two sets of portmanteau morphemes. One set realizes two features: [tense] and [aspect]. As has been discussed earlier in the chapter, these two nodes have to be sisters to form a node which dominates both features, so that the relevant exponent can be inserted at this non-terminal node. Then, the second set of portmanteaus is specified for three features [aspect], [tense], and [mood]. In other words, the minimal node at

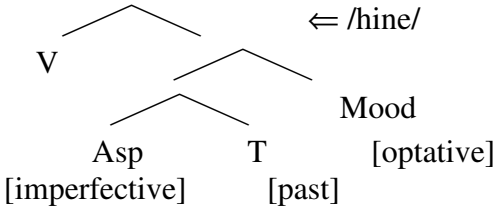
[16] I provide only the rules of vocabulary insertion rules that are relevant to the discussion of Tense+Aspect+ Mood portmanteaus.

which the portmanteaus of this type can be inserted must dominate the three heads Asp, Tense, and Mood. This configuration can be derived by application of rebracketing: first, T and Asp are combined, then Mood is combined with [T Asp]. In (47) I show where Tense+ Aspect portmanteaus are inserted, while in (48) I provide a derivation for Tense+Aspect+Mood portmanteaus.

(47) Tense+ Aspect +Mood portmanteaus



(48) Tense +Aspect portmanteaus in Southeastern Pomo[17]



[17] Southeastern Pomo is a head-final language.

3.5. Attested and unattested morpheme orders

The discussion of attested and unattested portmanteau morphemes is directly connected to the issue of morpheme order in the verbal inflectional domain. These facts will become important in the discussion of possible alternatives to rebracketing in section 4. An extensive typological study is presented in Julien (2002), who surveyed over 500 languages. It is important to point out some of Julien's assumptions, which are different from the ones adopted in this dissertation. First, she adopts Kayne's (1994) views on syntax which postulate that syntactic structures are uniformly left-branching, all movements are only to the left and adjunctions are always to the left. As a result, Julien does not distinguish languages with respect to the headedness parameter, deriving the difference with the help of head movement which results in formation of complex heads and (remnant) phrasal movement. She points out that in some cases it is not very clear what word and morpheme orders a certain language has. Nevertheless, she presents her results which show that some morpheme orders are unattested. It should be mentioned that she does not include Mood as one of the morphemes in her findings on attested and unattested morpheme orders, which are given in (49) (Julien 2002: 235).

(49) a. possible morpheme orders

1) (S) T A V (O);

2) (S) T V+A[18] (O);

3) (S) (O) V+A+T (O);

[18] Julien (2002) uses "+" to describe cases in which a morpheme is a part of the verb, as opposed to particles.

4) S A V O T

b. impossible morpheme orders

1) * (S) A T V (O)

2) * (S) A V+T (O)

3) * (S) V+T+A (O)

4) * S A V T O

The results of my survey are similar to the ones of Julien presented above. There are only four types of morpheme orders attested, as shown in the table below. The attested morpheme orders comply with the structure in (12) and the outputs of rebracketing.

Table 5: attested and unattested morpheme orders

Head initial	Head final
Mood-T-Asp-V	V-Asp-T-Mood
Mood-T-V	V-T-Mood
Mood-Asp-V	V-Asp-Mood
T-Asp-V	V-Asp-T
Mood-T-V	V-T-Mood

3.6. Conclusion

In this section I have presented the results of a cross-linguistic survey of TAM morphology which fully conform to the predictions made by the VIP in combination with the post-syntactic operation of rebracketing. In the next section I will discuss alternatives to the generation of complex heads and portmanteau morphemes.

4. Alternative approaches to complex heads and portmanteaus

In section 3 I showed that the distribution of TAM portmanteau morphemes can be captured by head movement which creates complex head, as in (12)c, and rebracketing, which applies to the output of head movement. There is a variety of alternatives (other than head movement+rebracketing) in the literature that would yield complex heads for the insertion of portmanteaus that would be consistent with the VIP. However, all of the alternatives are based on mechanisms that have the potential to change the morpheme order, and thus all of them overgenerate (admit unattested morpheme orders) without further assumptions. In this section I will consider the following approaches to complex head formation: 1) a syntactic approach of head movement[19]; 2) a morphological operation of Merger under adjacency; 3) rebracketing+ Flip. Then, I will discuss the predictions of the Spanning/ Contiguity approach regarding possible and impossible TAM portmanteaus and conclude that the VIP (along with rebracketing) makes more accurate predictions.

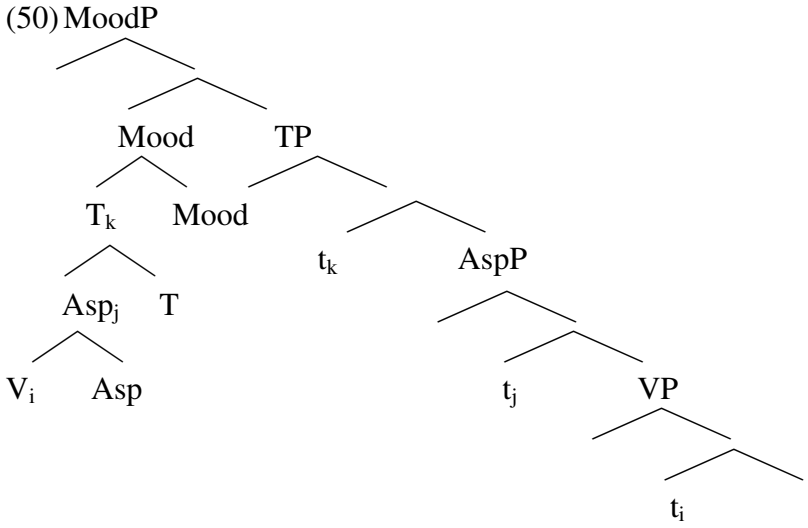
4.1. Head movement and TAM portmanteaus

In this section, I examine ways in which proposals about head movement, without rebracketing, might be called upon to derive the kinds of complex nodes that are needed to allow vocabulary insertion to generate the attested TAM portmanteau morphemes, while the analysis I argued for relies on rebracketing and head movement. I will now

[19] It is a topic of much discussion whether head movement is indeed a syntactic phenomenon or whether it is a part of PF.

examine if head movement alone can capture the TAM portmanteau morphemes discussed in section 3. Recall that the problem is as follows. Beginning with the structure in (12), successive cyclic movement yields a complex X° node, as in (50).

(50)

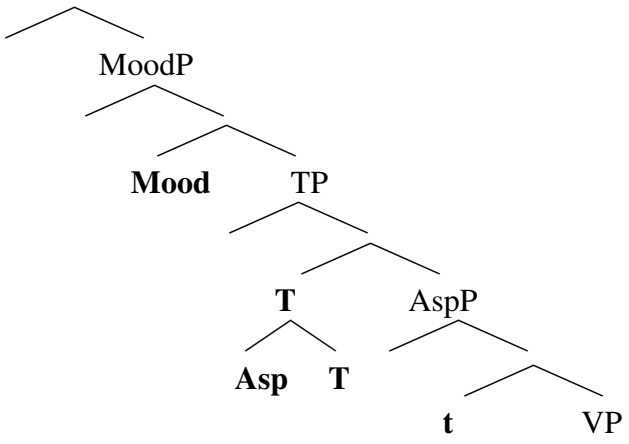


However, as mentioned above, while this tree is sufficient for describing the attested cases of suppletion, i.e., portmanteau involving the verb root, it is not sufficient for describing portmanteau affixes. In (50), there is no node that dominates just the heads/ features [Tense] and [Aspect], excluding the verb, yet there is ample evidence that these may form a portmanteau, as discussed above. Similarly, T +Mood and T+Asp+Mood portmanteaus are impossible in the structure in (50), though attested.

Above, I showed that allowing for rebracketing, which applies to the output of successive provided a sufficient account, admitting all and only the attested portmanteau affixes in the survey. For example, rebracketing under adjacency can take (50) as its input and yield a structure, where Asp and T are sisters, hence can be the locus of portmanteaus.

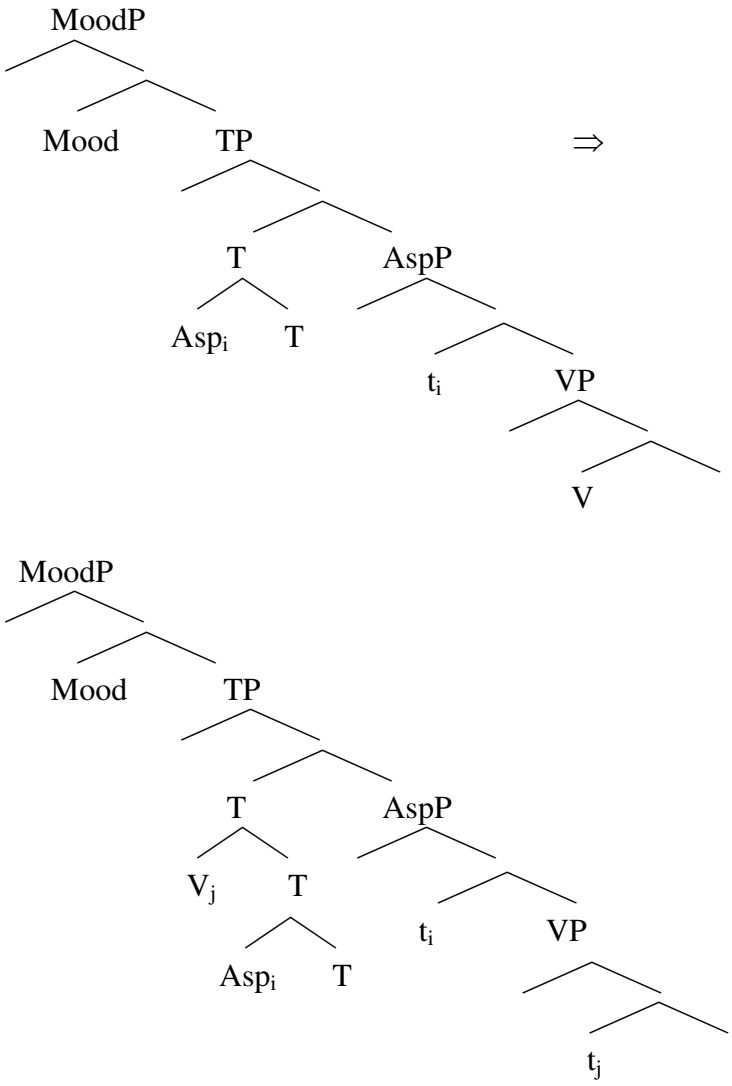
Returning to the head movement analysis that does not rely on rebracketing, a complex Asp+ T head can also be generated by head movement, if head movement need not involve the verb, as shown in (51). Under this assumption, we would need to come up with some reason, e.g., feature checking, to motivate the head movement of Asp to T.

(51)



The structure in (51) would allow for complex T+ Asp portmanteau morphemes, however, these morphemes in (51) are not part of the X° structure containing the verb. There are at least two ways the Asp+T node in (51) could combine with the verb. One is by "independent" verb movement. It has been proposed (Bobaljik 1995) that the verb can undergo independent raising to T after Asp has moved to T (52). The structure in (52) and the VIP predict the following portmanteau vocabulary exponents to be possible: T+Asp, T+Asp+V. The other way to combine the verb and the complex head (T+ Asp) is by assuming that the complex node Asp+T simply merges with the verb post-syntactically (e.g., by the operation of Merger, as in DM, or by a process such as cliticization. I will informally refer to these options as "glomming", which would yield [[Asp+T] V] output (Julien 2002).

(52)



Keeping a condition like HMC (Travis 1984), whereby head movement may not skip any overt (non-trace) heads, head movement derivations along the lines in (52) will generate the same inventory of hierarchical structures as rebracketing. Therefore, to obtain the same results as the head movement+rebracketing analysis, argued for in section 3, by head movement alone, we need to assume either glomming or head movement independent of V. I will refer to these "additions", which are not necessary under the

rebracketing+head movement analysis, as the extended head movement analysis. There is, however, a key difference between the extended head movement analysis and the head movement+rebracketing proposal. Since rebracketing by definition affects constituency, but not linear order, the rebracketing analysis admits additional portmanteaus possibilities beyond (50), but it does not derive any linear orders beyond those derived by (50). The predictions regarding possible portmanteau made by rebracketing and the VIP are summarized below. Note that Tense is always peripheral to Asp, which has been noted by Julien (2002) in her 500-language survey of verbal morphology.

(53) Possible portmanteaus (with Mood-T-Asp-V morpheme order)

a. V+ Asp

b. V+Asp+T

c. V+Asp+T+Mood

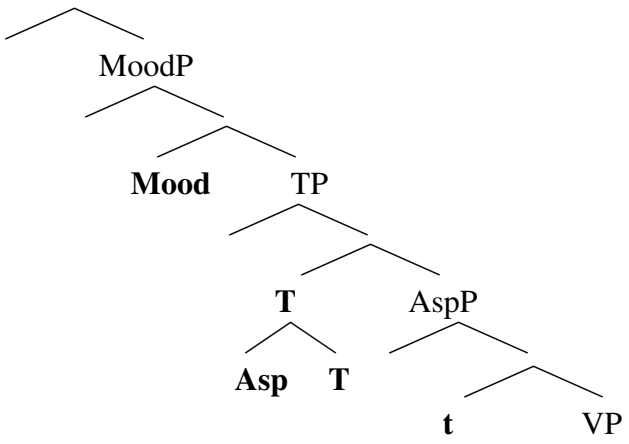
d. T+Asp

e. T+Asp+Mood

f. T+Mood

On the other hand, the extended head movement analysis clearly has the power to generate morpheme orders beyond those in (53). Consider the structure in (54), which is derived by the head movement of Asp to T to yield the morpheme order Mood-Asp-T-V. While the structural relationship between heads in (54) makes the same (correct) predictions about possible portmanteau exponents, the morpheme order in (52) is unattested both in my survey and in Julien's survey.

(54)



Likewise, independent V movement also has the potential to derive the unattested morpheme orders. I refer the reader to the structure in (52), derived by head movement of Asp to T and independent V movement to T. Although (52) makes correct predictions regarding possible portmanteaus, it yields a morpheme order Mood-V-T-Asp, which is unattested.

The extended head movement analysis discussed in this section results in various morpheme orders and various possibilities of portmanteau morphemes, as summarized in table 6. It is important to point out that even though head movement under this analysis can create contexts eligible for portmanteau morphemes under the VIP, it generates morpheme orders which are unattested.

Table 6: types of head movement and portmanteau morphemes[20]

Morpheme order	Type of head movement	Predicted portmanteaus
(1) M-T-A-V// V-A-T-M	successive cyclic movement	successive cyclic movement
(2) M-A-T-V// V-T-A-M	A to T	A+T
(3) T-M-A-V// V-A-M-T	T to M	T+M
(4) A-T-M-V// V-M-T-A	A to T to M	A+T, A+T+M
(5) M-T-V-A// A-V-T-M	V to A	V+A
(6) M-V-A-T// T-A-V-M	V to A to T	V+A, V+A+T
(7) V-A-T-M// M-T-A-V	V to A to T to M	V+A, V+A+T, V+A+T+M
(8) M-V-A-T// T-A-V-M	A to T & V to T	A+T, A+T+V
(9) V-A-T-M// M-T-A-V	A to T to M & V to M	A+T, A+T+M, A+T+M+V

I conclude therefore that if I try to eliminate rebracketing and do everything by head movement alone in order to capture all attested portmanteaus, we need to adopt additional assumptions that turn out to overgenerate. On the other hand, in the case of rebracketing is adopted and applied to the output of head movement in (50), the overgeneration problem does not arise.

4.2. Rebracketing+Flip and TAM portmanteaus

As noted earlier, there are two additional ways to affect structural relationships between heads: morphological merger (Marantz 1984, Halle and Marantz 1993, Bobaljik 1995, whose predecessor was Chomsky's (1957) affix hopping), and an operation

[20] I use A for Aspect, M for Mood for space reasons. In the left column I give two possible morpheme orders: the first one is for head initial languages, whereas the second one is for head final languages.

Reassociate+Flip (Williams 2003). First, I will discuss possible outcomes of the operation Reassociate+Flip and then move to morphological merger.

Williams (2003) uses an operation of 'reassociation' which is basically a rebracketing operation, therefore I will be using the term rebracketing in the discussion of Williams' system. Recall that the basic case of rebracketing is as given in (55) (Williams 2003: 189).

(55) [X>] Y>] Z] ⇔ [X > [Y > Z]]

I want to remind the reader that 'rebracketing' is a structure changing operation which preserves the base morpheme order and creates structural configurations appropriate for portmanteau morphemes. It is necessary to point out that I assume that rebracketing is not allowed to undo the effects of rebracketing, i.e., it is disallowed to split a previously rebracketed constituent, e.g., rebracketing of [[[Mood [T Asp]]] into [[Mood T] Asp is not allowed. The VIP operating on the basic complex head M T Asp V allows three types of portmanteaus, all including the verb ((13) above). If rebracketing is the only operation allowed, then an additional three types of portmanteau affix are permitted (first three lines of Table 7).

Table 7: morphological rebracketing (=Williams' reassociate)

Types of portmanteaus	Morpheme order (head final)	Morpheme order (head initial)
[Mood +T]	[Mood T]> Asp> V	V> Asp> [T Mood]
[T+ Asp]	Mood> [T Asp]> V	V> [Asp T]> Mood
[Mood+ T+ Asp]	[Mood>[T Asp]] > V	V> [[Asp T]> Mood]
[Asp+ V]	Mood> T> [Asp V]	[V Asp]> T> Mood
[T+ Asp+ V]	Mood> [T> [Asp V]]	[[V Asp]> T]> Mood
[Mood+ T+ Asp+ V]	[Mood> [T> [Asp V]]]	[[[V Asp]> T]> Mood]

As mentioned before, Williams' system consists of two operations: rebracketing and Flip, which applies to the output of rebracketing. The definition of Flip is in (56) (Williams 2003: 207).

(56) If X= [A B], and A and B terminal or non-terminal,

Flip (X)= [B < A]

Flip is an operation which can change the order of elements, even if they are not adjacent in their base-generated position[21]. Rebracketing and flip can apply to the same structure. Consider the following example. (57)a is the final result of syntactic derivations. Then, rebracketing applies and changes the structural relations of nodes B and C (57)b. After than, Flip applies and changes the order of elements by moving H up, as in (57)c.

[21] Flip can target originally non-adjacent nodes: the adjacency requirement can be achieved via multiple applications of rebracketing, as illustrated in (i).

(i) a. [A>[B>[C>[D>[E>[F>[G>[H>[I J]]]]]]]]] base structure
b. [A>[[[[[[B>]C>]D>]E>]F>]G>]H]>[I J]] multiple application of rebracketing
c. [A>[H < [[[[[B>]C>]D>]E>]F>]G]]>[I J]] application of Flip

(57) a. [A> B>C> [H]]

b. [A> [B> C]> [H]] rebracketing

c. [A> [H < [B >C]]] flip

However, it is not always the case that both Flip and rebracketing apply. Now I would like to apply them to the TAM heads to see what predictions they make. First, I will consider only morphological derivations in which only rebracketing applies. In (58), I show that T and Asp (58)b, Mood and T (58)c, and Asp, T and Mood (58)d.

(58) a. Mood >T >Asp

b. Mood] > [T Asp]

c. [Mood T] >Asp

d. [Mood>[T Asp]

If we apply Flip to the outcomes of rebracketing in (58), we will get the following structures.

(59) a. Mood] > [T >Asp] → [T> Asp] >Mood

b. [Mood> T] >Asp → Asp> [Mood> T]

c. [Mood>T> Asp] → Flip cannot apply

In (60) I give the results of Flip applied to the base order of TAM morphemes (59)a.

(60) a. Mood] >T] >Asp → Mood] > Asp] > T]

b. Mood] >T] >Asp → T] > Mood] > Asp]

It is important to point out that Williams (2003: 208) disallows the application of rebracketing to the output of Flip. The application of Flip gives us two possible morpheme orders, to which rebracketing can not apply, since its application would result in the violation under the Williams' system, as shown in (61). (61)a is correctly predicted to be impossible: this type of portmanteau (Mood+ Asp) is unattested cross-linguistically.

(61) a. Mood] >T] >Asp → Mood] > Asp] < T] → *[Mood> Asp] > T

b. Mood] >T] >Asp → Mood] > Asp] < T] →*Mood] > [Asp > T]

c. Mood] >T] >Asp → Mood] > Asp] > T] → *[Mood> Asp> T]

The same holds for the case in (60)b: if we applied rebracketing to (60)b, we would get three impossible (unattested) outputs, as illustrated in (62).

(62) a. Mood] >T] >Asp → T] > Mood] > Asp] → *[T> Mood] >Asp

b. Mood] >T] >Asp → T] > Mood] > Asp] → *T> [Mood > Asp]

c. Mood] >T] >Asp → T] > Mood] > Asp] → *[T > Mood> Asp]

If we expand the array of heads to include V, Williams' theory makes the following predictions. First, we can apply rebracketing, which gives us the following

contexts appropriate for portmanteaus under the VIP: [Asp V], [T Asp V], and [Mood, T, Asp, V].

(63) a. Mood] > T] > Asp] >V → [Mood > T] > Asp] >V

b. Mood] > T] > Asp] >V] → Mood] > [T > Asp] >V

c. Mood] > T]> Asp] >V → Mood] > T] > [Asp >V]

d. Mood] > T] > Asp] >V → Mood] > [T > [Asp >V]]

e. Mood] > T] > Asp] >V → [[Mood] > [T > Asp]] >V

If the operation Flip applies, it will not affect predictions with respect to portmanteaus, but the morpheme order. In (64) I give possible morpheme orders, which are results of application of Flip to outputs of rebracketing in (63). The application of Flip in (64) results in unattested morpheme orders: all the morpheme orders in (64) are unattested cross-linguistically.

(64) a. Mood] > T] > Asp] >V → [Mood > T] > Asp] >V → Asp< [Mood> T] >V

b. Mood] > T] > Asp] >V] → Mood] > [T > Asp] >V → [T> Asp] < Mood]> V
→ Mood]> V] < [T> Asp]

c. Mood] > T]> Asp] >V → Mood] > T] > [Asp >V] → T] < Mood]> [Asp> V]
→ Mood]> [Asp> V] < T

d. Mood] > T] > Asp] >V → Mood] > [T > [Asp >V]] → [T> [Asp> V]]< Mood

e. Mood] > T] > Asp] >V → [[Mood] > [T > Asp]] >V → V< [[Mood> [T> Asp]]

The last option in Williams' theory is to apply Flip without the operation rebracketing, which cannot apply to the output of Flip, as mentioned above. The operation of Flip does not make any predictions with respect to possible portmanteau morphemes, as Flip affects only the morpheme order, as shown in (65).

(65) a. Mood] > T> Asp]> V → T] < Mood]> Asp> V

b. Mood] > T> Asp]> V → Mood]> Asp] < T]> V

c. Mood] > T> Asp]> V → Mood]> T]> V] < Asp

The application of rebracketing and Flip predicts a limited number of possible portmanteaus ([Mood> Tense], [Tense> Asp], [Mood> [Tense> Asp], [Asp>V], [Tense> [Asp> V]]. The application of Flip to the outputs of rebracketing results in a large number of morpheme orders, as shown in Table 8 below.[22] The application of rebracketing and Flip generate several morpheme orders, as shown in (64), which are unattested both in my survey and Julien's (2002) survey.

Table 8. Rebracketing and Flip and the VIP predictions

Type of Portmanteau	Morpheme order
[T >Asp]	*[T> Asp] <Mood> V
[T> Asp]	*Mood]> V] < [T> Asp]
[Mood> T]	*Asp<[Mood> T]> V
[Asp> V]	*Mood> [Asp> V]< T
[Asp> V]	*T< Mood> [Asp> V]
[T>[Asp> V]]	*[T> [Asp > V]]< Mood

[22] The unattested morpheme orders are marked with *.

[Mood> [T> Asp]]	*V< [Mood> [T> Asp]]
None	Mood]> T]> V]<Asp
None	*Mood]> Asp]< T]> V
None	*T]< Mood]> Asp] >V
None	*Mood]> Asp]< T]> V
None	Mood]> T]> V]< Asp

However, as discussed above, if only rebracketing applies it limits the morpheme orders and possible portmanteaus to few options.

4.3. Morphological merger and TAM portmanteaus

As has been pointed out earlier in this chapter, morphological merger (Marantz 1984) can be responsible for different affix ordering and creating structures suitable for portmanteau vocabulary exponents under the VIP. The definition of morphological merger is given in (66).

(66) Morphological merger (Marantz 1988: 261)

> At any level of syntactic analysis (D-structure, S-structure, phonological structure), a relation between X and Y may be replaced by (expressed by) the affixation of the lexical head of X to the lexical head of Y.

The application of morphological merger heavily depends on the notion of adjacency,[23] which has to be defined in this section to avoid unnecessary confusion. The operation of merger, though being post-syntactic, does not rely purely on linear or

[23] The importance of adjacency in application of morphological merger has first been discussed and proposed by Bobaljik (1995), whereas the original proposal by Marantz (1988) does not restrict the application of morphological merger to adjacent elements.

phonological adjacency, as has been argued by Bobaljik (1995), who showed that not all linearly adjacent elements are subject to morphological merger, in particular adverbs are stipulated not to be relevant for PF adjacency. Ochi (1999) deduces this stipulation by showing that adjuncts can be added acyclically after merger under adjacency applies, given multiple spell-out (see also Lasnik in press, Bošković 2004c for argument that there may actually be no adverb invisibility problem). A later proposal by Bobaljik (2002), who develops a different account of the special nature of adverbs for PF-adjacency: adverbs get linearized in a position which is more peripheral to the one they have in the syntactic structure.

The application of morphological merger creates structures which are eligible for the generation of portmanteau morphemes: morphological merger combines two adjacent nodes to make them sister terminal nodes, as in (67).

(67) [Y [X [Z → [Y [[Z X

The morphological merger can apply more than once, as in (59).

(68) [Y [X [Z → [Y [[Z X → [[[Z X Y

Crucially, morphological merger may involve the re-ordering of elements, as can be seen in (67). Marantz (1988: 266) gives an example of this type of re-ordering, which comes from Latin. Latin had a conjunction morpheme /-que/ which could follow a modifier of the noun of the second conjunct, as in (69).

(69) boni pueri bellae- que puellae
good boys beautiful- and girls
'good boys and beautiful girls'

The explanation of the unusual position of the conjunction morpheme relies on assumptions that it is left-adjoined to the last conjunct and then it undergoes merger with an adjacent element, as schematically shown in (70).

(70) a. [[boni pueri] [que bellae] [puella]
b. [[boni pueri] [bellae que] [puellae]

The next question to address is what types of configurations can result from morphological merger of adjacent heads. First, I will consider application of morphological merger to TAM heads. If the merger applies to the adjacent T and Asp, it creates a structure in which T and Asp are sister terminal nodes, as shown below. The structure in (71), the output of morphological merger of the T and Asp heads, is suitable for T+Asp portmanteaus, but the application of morphological merger results in the unattested morpheme order (Mood-Asp-T-V).

(71) [Mood [T [Asp [V→ [Mood [[Asp T [V

Similarly to the case of application of morphological merger discussed above in (71), the result of merging of TAM heads and V is the same: the morphological merger creates environments eligible for generation of portmanteau morphemes under the VIP, but morphological merger leads to overgeneration with respect to possible morpheme

orders.[24] The summary of portmanteaus (TAM and TAM+V) predicted by the VIP and morphological merger is given in table 9 below.

Table 9. Portmanteau morphemes under the VIP and Merger

Types of portmanteau	Type of merger	Morpheme order
T+Asp	[T Asp]	Mood-Asp-T-V
T+Mood	[Mood T]	T-Mood-Asp-V
Mood+T+Asp	[Mood [T Asp]	Asp-T-Mood-V
V+Asp	[Asp V]	Mood-T-V-Asp
V+Asp+T	[T [Asp V]	Mood-V-Asp-T
V+Asp+T+Mood	[Mood [T [Asp V]	V-Asp-T-Mood

As can be seen in the table above, morphological merger shares the same problem as rebracketing and Flip: the morpheme orders that are not attested cross-linguistically.[25]

As a short summary of the discussion in sections 4.2 and 4.3, I want to point out the problems of the approaches to complex head formation discussed here. All of the approaches (extended head movement, morphological merger and rebracketing+Flip) may result in unattested morpheme orders due to their ability to change word order.

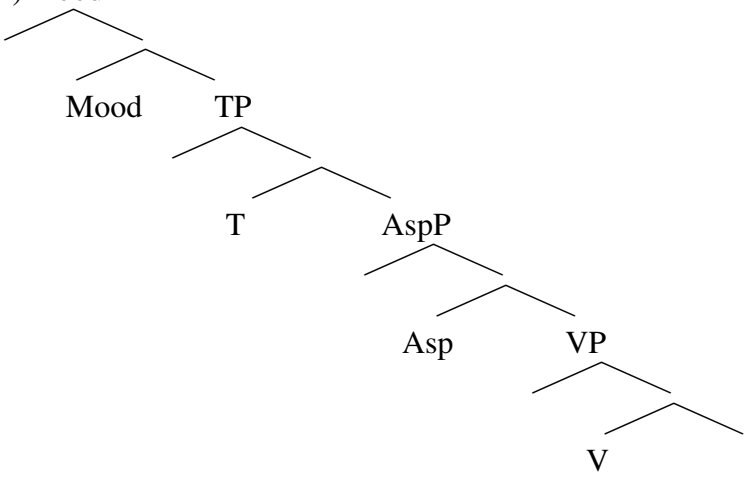
[24] Since the reason for this is the ability of morphological merger to change word order, it is worth noting here that there is another interpretation of merger, a PF merger proposed by Bošković (2004), where PF merger cannot change word order.

[25] An important question regarding the difference between morphological merger under adjacency and morphological rebracketing is why it is the morphological merger that is required for correct morpheme order in some cases, e.g., English affix hopping, where a tense morpheme follows the verb, as in *John worked*, whereas morphological rebracketing makes the right distinctions in other domains, e.g., TAM morphology . There are two main options to pursue: (i) morphological merger under adjacency is not a part of UG; (ii) morphological merger and rebracketing apply in different domains. The first option requires reanalysis of data accounted for by morphological merger, whereas the second option requires more thorough investigation of contexts in which these two operations apply to see if there are any similarities among domains/ environments in which rebracketing occurs.

4.3. Caha (2009)/ Williams (2003) and TAM portmanteaus

Caha (2009) and Williams (2003) propose an approach to portmanteau morphemes which heavily relies on the contiguity of functional projections. The gist of the approach is the following: a portmanteau morpheme can realize any contiguous spans of functional projections. Caha (2009) calls this approach 'A Universal Contiguity Principle', whereas Williams refers to it as 'Spanning vocabulary principle.' These two approaches make exactly the same predictions with respect to possible and impossible portmanteau morphemes, therefore, they will be discussed together. Consider the hierarchical representation of Tense, Aspect and Mood projections.

(72)



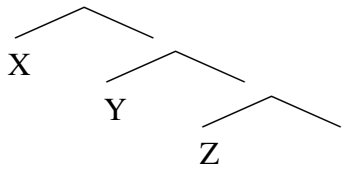
As I have mentioned above, any contiguous string of functional projections can be potentially realized by portmanteau vocabulary exponents. In the structure in (72), the following portmanteaus are possible, as in (73).

(73)

a. V+Asp
b. V+Asp+T
c. V+Asp+T+Mood
d. Asp+ T
e. Asp+T+Mood
f. T+Mood

At first glance, the Spanning/ Contiguity approach makes the same predictions about possible and impossible portmanteau as the VIP. This, however, is not correct. It is indeed the case that the VIP predicts the same portmanteaus, as listed above, but there is nothing in Caha and Williams' theories to block overlapping portmanteaus. Recall that by overlapping portmanteaus I understand cases where a language has two portmanteaus which have feature of at least one head, e.g. if a language has T+ Asp and T+ Mood, it means that this language has overlapping portmanteaus. The system in Caha (2009) permits various types of head movement to derive morpheme orders. However, the system cannot disallow overlapping portmanteaus, e.g., in the structure in (74), either the sequence X-Y or Y-Z can be realized as a portmanteau.

(74)



The same type of criticism holds for Williams (2003): the application of rebracketing and Flip results in unattested morpheme orders, as shown in (64) and summarized in table 8.

In this section I have demonstrated that both head movement and merger under adjacency approaches overgenerate with respect to possible morpheme orders. Moreover,

I have showed that the Spanning/ Contiguity approach also makes incorrect predictions; i.e., it does not rule out a possibility of overlapping portmanteaus, which are unattested. With that in mind, it is clear that we need an operation which can give us two things: attested morpheme orders and eligible configurations for portmanteau morphemes. Given these two requirements, this operation must be a part of the morphological component of the grammar: it is neither a part of syntax nor a part of phonology, since it affects the syntactic structure after the derivation has been done, but it must take place prior to the vocabulary insertion to allow generation of structural configurations for portmanteau morphemes.

5. Subject and Object Agreement Portmanteaus

Languages differ with respect to how they mark arguments on the verb. WALS 104 (Siewerska 2008) presents results of a survey of 379 languages, among which 187 (49%) do not mark arguments at all or only one of them, while the other half of the languages surveyed marks more than argument. In 96 languages (25.4%) agent markers precede patient markers, while in 57 (15.2%) languages the order of these morphemes is opposite. Then, there are 19 languages (5.1%) in which both orders are possible. Lastly, only 20 languages (5.3%) have two arguments (agent and patient) realized by one portmanteau morpheme. The last group of languages is of interest to this study. I also conducted a survey of 200 languages to see how many languages have cumulative exponents of agreement. In my sample of languages, 86 languages do not mark overt agreement at all,

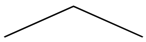
45 languages agree only with the subject, 69 languages agree both with subject and object, and, finally, 18 languages have portmanteau agreement morphemes expressing both agent and patient.

Subject and Object agreement morphemes are notorious for exhibiting various orders: subject and object agreement morphemes can be adjacent and can be found in either order, they also can be non-adjacent. Moreover, there can be variation in ordering even within one language: subject agreement morphemes precede object morphemes in some contexts, while in other context the order is the reverse. Dixon (2002: 442) discusses cases of different possibilities of agreement morpheme ordering in Australian languages and notes that in Ngalakan the order of subject and object agreement morphemes varies depending on what person the arguments are: if one argument is a non-third person, this argument precedes a third person argument. The order of argument agreement morphemes in Ngalakan is not determined by the type of argument, but rather is subject to the person hierarchy found in Ngalakan (non-third>> third). Some languages make even finer distinctions, e.g., Nunggubuyu has a finer hierarchy, which determines the order of subject and object: 3 non-sg>> 3sg animate >> 3sg inanimate (Dixon 2002: 442).

Without taking a stand on how this variation is to be theoretically modeled, there is one prediction the system proposed here makes regarding portmanteau affixes in this domain: under the VIP, agreement portmanteau affixes should be possible only where these morphemes can otherwise be shown to be adjacent in the language. The adjacency requirement is crucial for application of rebracketing that affects constituency relations

between two adjacent head. I assume that the outcome of rebracketing of two relevant heads yields a structure like (75).

(75)



If the hypothesis about structural configuration is correct, subject and object markers must be linearly adjacent in languages that have portmanteaus only for some subject-object combinations. It is impossible to test the system proposed here for languages which have portmanteaus for all subject-object configurations. Table 10 present results of the survey of subject-object portmanteaus, where only languages that have them are listed. Moreover, the last column has information about the morpheme order in these languages.

Table 11: Portmanteau morphemes and morpheme order[26]

Language	Affiliation	Morpheme Order
Acoma	Keresan	S/O -V-A
Akawaio	Cariban	S-O-V-T
Cherokee	Iroquoian	S/O-V/A-T-Mood
Diegueno (???)	Hokan	S-O-V
Euchee	Isolate	S/O-V-T/A
Gooniyandi	Banuban	V-M-T-S/O
Guarani	Tupi-Guarani	Neg/Imp-S/O-V
Jaqaru	Jaqaru	V-T-S/O
Jingulu	West Barkly	V-S-O-A-T

[26] Some clarification is necessary regarding the notation in the table: "/" means that a language always has just one exponent realizing two heads.

Kiowa	Kiowa-Tanoan	S/O Agr-V-T
Klamath	Penutian	?
Makah	Wakashan	V-A-T-Mood-S/O (?)
Kwaza	Isolate	V-T-O-S-Mood
North Alaskan Inupiaq	Eskimo-Aleut	V-Caus-Mood-T-S/O
Nez Perce (???)	Penutian	SAgr-OAgr-V
Onondaga	Iroquoian	T-S-O-V
Sierra Miwok	Penutian	V-Caus-T/A-O-S
Yimas	Lower Sepik	O-S-V-T/A

As can be seen from table 11, in all the cases where only some members of the subject-object agreement paradigm are portmanteau morphemes subject and object agreement morphemes are adjacent. In other words, the languages in question meet the requirement, schematically shown in (75): the two nodes (subject and object agreement) can potentially be sisters. Below I illustrate this phenomenon with examples from two languages Kwaza and Jingulu.

Kwaza is a language isolate of Amazonia (Brazil). Besides marking for tense and mood, Kwaza marks verbs for both arguments, as in (76).

(76) Kwaza (van der Voort 1994: 254)

ja wady-**ní'nã-** **da**-hỹ- tse
already give- 2O- 1S-Nom-RES
'I already gave to you!'

However, there is one morpheme that is a cumulative exponent of the third person subject and the second person object.

(77) Kwaza (van der Voort 1994: 253)

zjwãu ‘mɛ- hata- kixy itsɛ- ‘wã
João beat-3S.2O-DEC you.pl-ao
‘it was Joao who beat you.’

Another example of the same kind comes from Jingulu, a West Barkly language, spoken in Australia. This language marks verbs for T/Asp and Mood, as well as for two arguments.

(78) Jingulu (Pensalfini 2003: 217)

Miyi-wynya-ana-nuli lingbi
hit- 3dl- 1O-past hurt
‘Those two hit me and hurt me.’

Jingulu has three cumulative exponents realizing the features of subject and object: second person subject and first person object; third person subject and second person object, first singular subject and second person object, second singular subject and first person object. One of such cases is given below in (79).

(79) Jingulu (Pensalfini 2003: 218)

Dinia- nirni- nu nganka.
kiss- 3S.2O-past 2sg.ACC
‘He kissed you.’

The second group of languages with portmanteau agreement morphemes has languages which have portmanteau morphemes for all person combinations. One of such languages is Jaqaru, an Aymaran language, spoken in Peru. This language has a system of portmanteau agreement markers, as can be seen in (80).

(80) Jaqaru agreement portmanteau (Hardman 2000: 56)

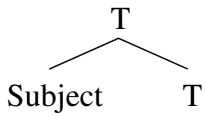
	2O	1O	4O	3O
2S		-uta	-ushta	-ta
1S	-ima			-t''a
4S				-tana
3S	-tama	-utu	--ushtu	-i

In this section I have discussed subject-object agreement portmanteau morphemes. I have shown that the VIP can also be used to predict (im)possible configurations of this type of portmanteaus: the subject and object agreement nodes must be sisters. The results of my survey indicate that the VIP makes correct predictions.

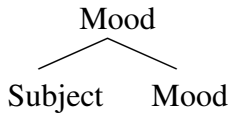
6. Other types of portmanteau morphemes

In addition to portmanteaus exclusively involving either TAM morphemes or subject and object agreement morphemes, there are cumulative exponents that lexicalize subject agreement and tense or mood. My survey has 17 examples of languages with Tense+subject and Mood+subject portmanteaus. Recall that under the VIP, portmanteau morphemes are only possible in particular configurations, namely, when terminal nodes they realize form a complex head. With this in mind, the relevant configurations for these two types of portmanteaus are given below in (81), where Subject and T and Subject and Mood are sisters.

(81) Subject+ Tense portmanteaus



Mood+ Subject portmanteaus



Interestingly, there is no language in my survey that has portmanteau morphemes lexically realizing features of object and Tense or Mood. If we assume Agr phrases, the fact that the Object+T/Mood portmanteau are unattested, as opposed to Subject+T/Mood portmanteaus, may be due to the adjacency of AgrsP to both Tense and Mood, as schematically illustrated in (82).[27]

(82) [Mood [AgrsP [T [Asp [AgrO [V

I would like to briefly discuss the case of subject and tense portmanteaus. One of the examples comes from Dagur, a Mongolic language of China. As can be seen from the table below, all subject arguments are expressed simultaneously with tense. In Dagur, the subject node must be adjoined to T to yield a configuration in which Tense and SAgr are sisters, which can be easily accomplished with rebracketing, given the structure in (82).

[27] The only type of portmanteau morphemes involving Object features is Obj+V (Mel'čuk 2006: 433). One such example comes from Ainu, a language isolate. A regular way to mark plural object in Ainu is to add a suffix *pa* to the verb. However, this is not the case with the verb *rayke* 'to kill' Instead of the expected form '*rayke-pa'*, Ainu has a form *ronnu*, which realizes two sets of features: the verb 'kill' and the plural object. The fact that this is the only type of portmanteau is not surprising given the structure in (82) where AgrO is adjacent to V. The absence of Asp+O portmanteau may be due to some other factors.

(83) Dagur (Wang 1993: 99)

Person	PS (I)	PS (II)	Gloss
1s	-m	-w	'I'
1pe	-ma	-wa	'we (exl)'
1pi	-nan, -da	-wnan, -wda	'we (incl)'
2s	-śi	-śi	'you'
2pl	-ta	-ta	'you'
3s	∅	∅	'you'
3pl	-sul	-sul	'they'

Another group of languages has cumulative exponents realizing Mood and Subject as a single morpheme. One such language is Nuu-chah-nulth. This language has different mood/person combinations for each mood (10), as shown in (84).

(84) Nuu-chah-nulth (Wojdak 2005: 221)[28]

	1st singular	2nd singular	3rd	1st plural	2nd plural
Indicative	-siiš	-ʔiick	-ʔiiš	-niiš	-ʔiicuuš
Interrogative	-hs	-k	-h	-hin	-hsuu
Confirmation	-haas	-	-haa(č)	-	-
Quotative	-waaʔičas	- waaʔick	- waaʔiš	-waaʔičin	-waaʔcuus
Absolutive	-s	?	∅	-na	-suu
Subordinate	-qs	-k	-q	-qin	-qsuu
Dependent	-sa	-suuk	-huuk	-na	-suu
Relative	-qs	-ʔiitk	-ʔiitq	-qin	-ʔiitqsuu
Indef. Relative	-(y)iis	-(y)iik	-(y)ii	-(y)in	-(y)iisuu
Conditional	-quus	-quuk	-quu	-qwin	-quusuu

Conclusion

In this chapter I further tested two mechanisms argued for in chapter 2: the morphological operations of rebracketing and the VIP. I tested their predictions against the data from TAM morphology from 200 languages and found that the only types of portmanteaus that are attested are those that are predicted under the VIP+rebracketing analysis. I also showed that other competing theories do not make accurate predictions regarding possible and impossible portmanteaus: they fail to exclude overlapping portmanteaus from the range of possible morphemes.

[28] A closer examination of the morphemes in (84) reveals that not all of them are true portmanteaus, e.g. quatative mood morphemes can be desegmented into two parts, the first component / waaʔi/ corresponds to Moods, whereas the second component realizes features of subject. Nevertheless, there are many cases of true portmanteaus. For Mood+SAgr portmanteaus to be possible these two nodes must be sisters, which again can be easily accomplished, given (82).

Курс у нас один –правильный.
В.С. Черномырдин

CONCLUSION

In this dissertation I have explored two areas: the structure of spatial expressions and the nature of portmanteau morphemes in different domains. In chapter 2 I have proposed a hierarchical structure for local cases based on the results of a cross-linguistic survey of 111 languages. I have provided evidence from attested and unattested portmanteau morphemes and implicational universals. I have proposed a new approach to vocabulary insertion (the Vocabulary Insertion Principle), which allows vocabulary insertion at both terminal and non-terminal nodes. I have also shown that two components in the structure of all spatial expressions: locational and directional. I have also argued that local cases and adpositions are the two sides of the same coin.

In chapter 3 I have investigated the functional structure of adpositions and argued that languages vary with respect to how much functional structure they have in their PPs. I have used three diagnostics to determine the properties of PPs: the availability of measure phrase modification, the availability of pronominal coreference with the clause-mate subject, and the availability of quantifier float within PPs. I have applied these tests to test the functional structure of PPs in Slavic (Russian, Polish, Czech, Slovak, Serbo-Croatian) and Romance languages (French, Romanian, Spanish, Galician). The results of my test show that some languages have less structure than others (with Russian and French being on one extreme of the scale and Serbo-Croatian, Spanish and Galician on

the other): Russian, French>> Polish, Czech>> Slovak, Romanian>> Serbo-Croatian, Spanish, and Galician.

In chapter 4 I have further investigated the application of the Vocabulary Insertion Principle (VIP) in another domain of morphology- Tense-Aspect-Mood morphology. I have presented the results of a cross-linguistic survey (200 languages) of the TAM morphology. I have also proposed appealing to the morphological operation of rebracketing: it is a structure changing operation that does not affect morpheme order. I have shown that the VIP along with rebracketing correctly predicts the distribution of possible and impossible TAM portmanteau morphemes cross-linguistically.

There are a few issues that I have not been able to discuss in the dissertation but I would like to pursue them in my future research. First, it would be interesting to explore peculiarities of adjectival agreement with nouns inflected for local cases, given that in some languages adjectives agree with nouns, while in others they do not. Another interesting topic for investigation is the binding properties of languages which in some contexts allow pronouns inside PPs to corefer with the clause-mate subject.

APPENDIX 1: Definition of local cases (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

Elative 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'.

APPENDIX 2: Languages of the local case survey

Language family	Languages
Arawakan	Yanusha’
Australian	Mangarayi
Barbacoan	Awa Pit
Choco	Epena Pedee
Chukotko-Kamchatkan	Chuckchi, Koryak, Alyutor, Kerek, Itelment
Eskimo-Aleut	Aleut, Siberian Eskimo
Finno-Ugric	Estonian, Karelian, Veps, Ingrian, Votic, Livonian, Finnish, Saami, Erzya, Mokša, Mari, Komi, Hungarian, Khanty, Mansi
Hokan	Diegueño, Hualapai
Isolates	Savosavi, Mosetén, Ket, Yukaghir, Nivkh
Manchu-Tungusic	Even, Evenki, Neghidal, Nanay, Orok, Orochi, Udeghe, Manchu
Maran	Warndarang
Mongolic	Buryat, Kalmyk
Muskogean	Koasati
Nakh-Daghestanian	Chechen, Ingush, Batsbi, Avar, Andi, Botlikh, Godoberi, Karatin, Akhvakh, Bagvali, Tindin, Chamalin, Tsez, Khvarshi, Ginukh, Bezhta, Hunzib, Lak, Dargwa, Lezgian, Tabasaran, Agul, Rutul, Tsakhur, Archi, Kryz, Khinalug, Udi
Otomic	Central Dizin
Pama-Nyungan	Djinang, Arabana, Yanyuwa, Woimurrung, Danyjima, Djabugay, Ngiyambaa, Pintupi-Luritja, Wamkumara, Maruwari, Nhanda, Martuthunira, Yindjiabarndi
Penutian	Maidu
Samoyed	Nenets, Selkup, Nganasan, Enets
Sino-Tibetan	Kham, Limbu, Dolokhā Newār, Dumi
Tangkic	Kayardild
Turkic	Karachay-Balkar, Tuvin, Khakas, Turkish
Uto-Aztecan	Chemehuevi, Shoshone
West Barkely	Jingulu
Woroan	Ungarinjin

APPENDIX 3: Languages of the Tense-Aspect-Mood morphology survey

Language family	Languages
Afro-Asiatic	Harar Oromo, Hausa, Hebrew, Iraqw, Lele, Mina, Sidaama, Tomashek
Algic	Nishwabemwin, Wioyt, Yurok
Arauan	Jarawara, Paumari
Arawakan	Apurina, Piro
Austronesian	Atayal, Boumaa, Chamorro, Dehu, Indonesian, Loniu, Maori, Manam, Mono-Alu, Nalik, Pendau, Puyuma, Rapa Nui, Saa, Seediq, Semalai, Tagalog, Tukang Besi, Vietnamese
Aymaran	Aymara, Jaqaru
Barbacoan	Awa Pit
Caddoan	Caddo, Wichita
Cariban	Carib De'kwana, Hikxaryana, Macushi, Tiriyo, Wairimi Atroari
Chapacura-Wanhan	Wari'
Choco	Epena Pedee
Chuckotko-Kamchatkan	Chukchi
Creole	Sango
Dravidian	Bettea Kurumba, Kannada, Koya, Malayalam, Tamil
Eskimo-Aleut	Central Alaskan Yupik
Finno-Ugric	Hungarian, Udmurt
Guaicuruan	Pilaga
Hokan	Diegueño, Maricopa, Pomo
Indo-European	Africaans, Irish, Kashmiri, Marwari, Persian
Iroquoian	Oklakhoma Cherockee, Seneca
Jivaroan	Shuar
Kartvelian	Georgian
Keresan	Acoma
Khoisan	Nama
Kiowa-Tanoan	Kiowa
Kwadi-Khoe	Khwe
Macro-Ge	Canela-Kraho
Manchu-Tungusic	Evenki, Udeghe
Mayan	Chontal, Itzaj Maya, Jakaltec, Tzutuujil
Mongolic	Dagur, Mongolian
Mura	Piraha
Muskogean	Alabama, Choctaw, Cree, Koasati, Mikasuki
Na-Dene	Hupa, Navajo, Slave, Tanaina
Nakh-Daghestanian	Lak, Lezgian, Tabasaran
Niger-Congo	Akan, Dagaare, Diola-Fogny, Ebira, Ewe, Grebo, Haya, Ijo, Koromfe, Luvale, Mbilil, Supuire, Swahili, Zulu
Nilo-Saharan	Bagirmi, Kanuri, Koyarboro Senni, Lango, Songhai

Nootkan	Southern Wakashan
North-West Caucasian	Abkhaz
Oto-Maguean	Aytla Mixe, Chalcatongo Mixtec, Chimalapa Zoque, Ocuilteco, Quiotepec
Otomic	Central Dizin
Pama-Nyungan	Arabana-Wngkangurru, Bhandji, Mangarayi, Martuthunira,
Panoan	Matses
Penutian	Klamath, Maidu, Mollala, Sahaptin
Quechuan	Quechua
Salishan	Bella Coola, Shuswap, Thompson
Samoyed	Nenets, Taz Sel'kup
Sepik	Alamblak, Yimas
Sino-Tibetan	Burmese, Chantyal, Dolokha Newar, Dongwang Tibetan, Dumi, Dzhongka, Kham, Lahu. Lepcha, Chinese, Meithei, Mizo, Nar Phu, Rabha, Tamang, Tani, Tshangla
Siouan	Assingboine, Crow, Lakota, Osage
Skou	I'saka
Thai-Kadai	Thai
Totonacan	Misantla Totonac
Trans-New-Guinea	Dani, Kapau, Kewa, Klon, Menya, Usarufa
Tucanoan	Tukano
Tupian	Guarani
Turkic	Azerbajani, Bashkir, Chagatay, Turkish
Uto-Azteacan	Cahuilla, Chemehuevi, Comanche, Nahuatl, Paiute, River Warihio, Shoshone
West Barkely	Jingulu
West Papuan	Maybrat, Sinaugoro
Isolates	Ainu, Basque, Cayuvava, Coahuilteco, Gunya, Japanese, Ket, Karok, Korean, Kwaza, Lavukavele, Mona?, Moseten, Tarascan, Urarina, Yukaghir, Yuchi, Zuni

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