

# Possessor Case in Udmurt: Multiple Case Assignment Feeds Postsyntactic Fusion

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## Abstract

In this paper we investigate the case split on the possessor in Udmurt: traditionally, the choice between ablative and genitive possessor case is said to be driven by the grammatical function (GF) of the XP containing the possessor. Given this generalization, the case alternation in Udmurt seems to require look-ahead or counter-cyclic operations, which constitutes a problem for a strictly derivational model of syntax. We argue that the case split is not driven by GFs; rather, it is determined by the case value of the XP that contains the possessor. Under the new generalization, a local reanalysis of the case split is possible. We present a case stacking analysis according to which the possessor always bears genitive but may be assigned another structural case by an external head. Stacking of genitive and a semantic case is *bled* due to the different complexity of semantic and structural cases, a restriction on the number of case slots and the different timing of case assignment from DP-internal vs. DP-external heads that is due to cyclicity. If case stacking applies in the syntax, it *feeds* fusion of the structural case values into a single case feature set in the postsyntactic morphological component. If accusative and genitive stack on the possessor, only the default semantic case marker (the ablative marker) can realize the resulting feature set. In any other context the genitive marker is chosen. We thus claim that there is no abstract ablative on the possessor; instead, the morphological ablative marker realizes a combination of two abstract structural cases.

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## 1. Introduction

In Udmurt, a Uralic language spoken in the Udmurt Republic in Russia, possession can be expressed in a number of ways, with minor semantic differences (see Edygarova 2009 for an overview). The primary possessive construction, which is the focus of this paper, has the following properties: (i) the possessor precedes the possessum, (ii) the possessor bears a case suffix and (iii) the possessum agrees in person and number with the possessor, indicated by a suffix on the possessum (cf. (1)). The interesting fact about this construction is that the case of the possessor varies between genitive and ablative, that is, Udmurt exhibits a case split on the possessor. The possessor cases are in complementary distribution. According to the literature, the grammatical function (GF) of the possessum determines which case value the possessor bears: genitive is the default possessor case; ablative occurs if the DP containing the possessor functions as a direct object (Csúcs 1988, Vilkuna 1997, Kel'makov 1999, Winkler 2001, Nikolaeva 2002, Koptjevskaja-Tamm 2003, Suihkonen 2005, Edygarova 2009). In example (1-a) the DP that contains the possessor is the subject of the verb *ugni* 'to dress' and the possessor can thus only bear genitive; in (1-b), however, the DP that contains the possessor functions as the direct object of the transitive verb 'to see' and the possessor must bear ablative.

(1) *Possessor cases in Udmurt:*

- a. so-len/\*leš anaj-ez siče ug dišaški  
 he-GEN/ABL mother-3SG such NEG.PRES.3 dress  
 'His mother does not dress such a way.' (Edygarova 2009: 105)
- b. so-leš/\*-len eš-s-e ažži-ško  
 he-ABL/GEN friend-3SG-ACC see-PRES.1SG  
 'I see his friend.' (Edygarova 2009: 101)

Under the assumption that the GF of a DP is determined by its location in the syntactic structure, the case value of the possessor in Udmurt seems to depend on the nature of the external head that selects the DP containing the possessor.

Similar case splits on the possessor exist in other languages as well, e.g. in Bezhta (Daghestanian): the possessor bears the so-called *direct genitive* if the entire DP is assigned nominative case; if the DP bears any other case, the

possessor gets the so-called *oblique genitive* (cf. (2)).<sup>1</sup> Assuming that case is assigned by functional heads to certain positions in the tree, the position of the DP containing the possessor matters for the case of the possessor in Bezhta as well, just like in Udmurt. In what follows, we concentrate on the case split in Udmurt.

(2) *Bezhta* (Kibrik 1995: 20):

- a. abo-s            is  
father-GEN<sub>dir</sub> brother.NOM  
'father's brother'
- b. abo-la            is-t'i-l  
father-GEN<sub>obl</sub> brother-OBL-DAT  
'to father's brother'
- c. is-t'i-la            biLo-ʔ  
brother-OBL-GEN<sub>obl</sub> house-INNESS  
'in the brother's house'

From a theoretical perspective, the case split in Udmurt is puzzling for the following reason: given a strictly derivational model of syntax in which the structure unfolds in a bottom-up fashion (cf. Chomsky 1995 et seq.), the relevant information about the GF of the DP containing the possessor is not available at the point of case assignment to the possessor. The possessor is assigned case within the DP; later the entire DP is merged with an external head. However, the nature of the external head is already relevant at the point of DP-internal case assignment. The decision which case to assign to the possessor thus seems to require look-ahead. On this background, the case split in Udmurt raises two immediate questions:

1. Is there a way to reconcile the apparent non-local nature of the Udmurt case split with a strictly derivational model of syntax that neither allows for look-ahead nor for counter-cyclic operations?
2. Why is the alternative possessor case the ablative and not one of the various other cases in Udmurt?

According to the literature, it is the GF of the DP containing the possessor that is decisive for the case split. However, the term "direct object" is never

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<sup>1</sup>Other Daghestanian languages with a case split on the possessor that depends on the case of the possessum include Tsez, Khvarh and Hinugh (cf. Kibrik 1995).

precisely defined. By testing several possible interpretations of this term, we argue that the case split in Udmurt does not depend on GFs; we will show that it is driven by the case value that the dominating DP is assigned, just like in Bezhta:

(3) *Empirical generalization:*

The possessor in Udmurt bears ablative if the XP immediately dominating the possessor bears the accusative marker. The possessor bears genitive elsewhere.

This new generalization facilitates a reanalysis of the case split that does neither require look-ahead nor counter-cyclic case assignment. We will propose a case stacking analysis according to which a DP in Udmurt can receive up to two structural cases. Possessor DPs are always assigned genitive, but may receive another structural case in addition (nominative, genitive, accusative). Morphologically, there is only a single case slot. Hence, if case stacking takes place in the syntax, it will feed fusion of the two case values into a single case feature set in the postsyntactic morphological component. This set is realized by the most specific matching case marker. The combination of genitive and accusative on the possessor yields the abstract representation of a semantic case. The most specific matching marker is the ablative exponent because it is the default semantic case marker in Udmurt. We thus claim that the possessor never bears *abstract* ablative case in Udmurt; it sometimes bears an ablative *marker*, however, this marker realizes the combination of two abstract structural cases and not of abstract ablative case. The postsyntactic manipulation of abstract case features results in the illusion that two different abstract cases (genitive or ablative) can be assigned to the possessor, although ablative is never assigned to it in the syntax. The distinction between abstract and morphological case (cf. Legate 2008) is thus crucial for the analysis.

The paper is structured as follows: Section 2 discusses the locality problem that case assignment in Udmurt seems to pose in more detail. In section 3 the exact distribution of the ablative case is determined by testing the correct meaning of the term “direct object”. Section 4 presents the analysis that derives the generalization gained from the preceding section. Afterwards, empirical and theoretical consequences of the analysis are discussed in section 5. Section 6 concludes.

## 2. A Look-Ahead Problem

In this section, we will have a closer look at why the case split in Udmurt is interesting from a locality perspective. We will see that case assignment in Udmurt is a challenge for standard assumptions about locality. This is not because case assignment applies over a very long distance; rather, it is the timing of operations that causes problems.

We assume the standard minimalist phrase structure in (4): the internal argument of a transitive verb ( $DP_{int}$ , the direct object) is merged as the sister of  $V$  and the external argument of a transitive verb ( $DP_{ext}$ , the subject) is merged in the specifier of the functional head  $v$  which itself takes VP as a complement. There are two more functional projections above  $vP$ , headed by  $T$  and  $C$ . Under a strictly derivational model of syntax (e.g. minimalism, cf. Chomsky 1995 et seq.), this clause structure unfolds step by step in a bottom-up fashion by successive Merge operations. Merge takes two syntactic objects  $\alpha$  and  $\beta$  and creates a new syntactic object  $[_y \alpha \beta]$ .

(4)  $[_{CP} C [_{TP} T [_{vP} DP_{ext} [_{v'} v [_{VP} V DP_{int} ] ] ] ] ]$

Case is assigned by functional heads to DPs under Agree (Chomsky 2000, 2001); in languages like Udmurt, with a nominative-accusative pattern of case assignment,  $v$  assigns accusative to  $DP_{int}$  and  $T$  assigns nominative to  $DP_{ext}$ ;  $D$  assigns abstract case to the possessor. We take Agree to involve valuation of case on a DP. Prior to case Agree, DPs do not bear a case value, which is represented in what follows by an empty box after the case feature: [case:□].

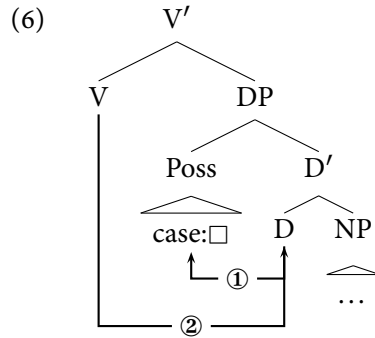
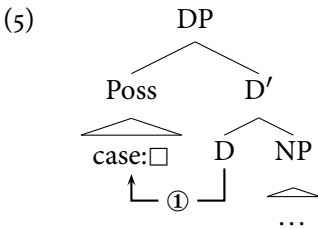
For the moment, we also adopt two main assumptions that are usually (even though not always explicitly) made about case assignment:

1. All syntactic dependencies (including case assignment) are local, that is, they neither involve look-ahead nor counter-cyclic operations.
2. The case values are only manipulated at the point of case assignment.

When looking at the case split in Udmurt, a plausible analysis could be that the  $D$  head in Udmurt is special in that it cannot only assign genitive but that, in addition, it can also assign ablative to the possessor, depending on the GF on the DP containing the possessor.

Given these assumptions, case assignment to the possessor in Udmurt faces a look-ahead problem: the possessor is assigned a case value (genitive or ab-

lative) by the D head of the DP containing the possessor and the possessum (= step ① in (5)). The choice of the concrete case value seems to depend on the GF of the containing DP. GFs are determined by the position of that DP in the structure; for example, a DP is a direct object if it is the sister of V. However, the information about the structural position of the entire DP is not available at the point of case assignment to the possessor within the DP; the containing DP is merged into the structure only *after* case assignment to the possessor took place (= step ② in (6)).



It does not help to reverse the order of operations and to assign case to the possessor *after* the information about the grammatical function of the containing DP is available: if the DP is merged with its selecting head *before* the possessor is assigned case, the relevant information about the category of the selecting head is available. However, case assignment then involves two elements (the DP internal case assigner D and the possessor) that are contained in the DP cycle, but the DP is already dominated by another cycle, i.e. the VP/V' cycle. This dependency thus violates the Strict Cycle Condition, cf. (7).

(7) *Strict Cycle Condition (based on Chomsky 1973):*

- a. No operation can apply to a domain dominated by a cyclic node  $\alpha$  in such a way as to affect solely a proper subdomain of  $\alpha$  dominated by a node  $\beta$  which is also a cyclic node.
- b. Every projection is a cyclic node.

Hence, the dependency of the Udmurt case split on the GF of the DP dominating the possessor inevitably poses a problem for a strictly derivational model of syntax. At the point of case assignment to the possessor, either the relevant

information about the GF is not yet available or if it is, it is too late to assign case DP-internally. Theoretically, there are two solutions to that problem. (i) The assumption that all syntactic dependencies apply in accordance with the SCC (cf. (7)) and that they do not require look-ahead (assumption 1) must be wrong: at least possessor case assignment in Udmurt must be non-local in that sense. (ii) The assumption that case is only manipulated at the point when the case value is assigned (assumption 2) is wrong: case values can additionally be manipulated in a postsyntactic component.

In what follows, we pursue solution (ii) since we do not want to give up standard syntactic locality restrictions like the SCC. This decision is supported by the results that will be presented in the following section: the distribution of the ablative does *not* depend on the GF of the DP dominating the possessor, but rather on its case value. And this information can be made locally available on the possessor without look-ahead under a case stacking analysis and given a postsyntactic realizational morphology.

### 3. Empirical Background

In this section, we will broaden the empirical basis for the analysis of the case split in Udmurt. In section 3.1, it will be shown that the genitive and the ablative possessor occupy the same structural position; in section 3.2, the functions of the ablative outside of the possessor construction are examined in comparison with the other cases. Finally, we will run a number of tests in section 3.3 in order to disambiguate the term “direct object” and to gain a more accurate generalization about the distribution of the ablative on the possessor.

#### 3.1. The Structural Position of the Possessor

A number of other Uralic languages also show a case split on the possessor, although the factors conditioning the split are different from those found in Udmurt. These languages are, e.g., Hungarian, Finnish, Estonian, Komi (cf. König and Haspelmath 1998, Nikolaeva 2002; see also Deal to appear about a similar alternation in Nez Perce). The alternation is best studied in Hungarian in which nominative and dative possessors alternate:

(8) *Two possessor cases in Hungarian (Szabolcsi 1994):*

- a. (a) Mari kalap-ja  
 (the) Mari.NOM hat-POSS.3SG  
 ‘Mari’s hat’
- b. Mari-nak a kalap-ja  
 Mari.DAT the hat-POSS.3SG  
 ‘Mari’s hat’

What is important for the present discussion is that it has been convincingly argued for Hungarian that the nominative and the dative possessor occupy different structural positions in the DP (cf. Szabolcsi 1984, 1994). There are two types of evidence for this conclusion. (i) Linear order: the determiner *a(z)* obligatorily follows the dative possessor but precedes the nominative possessor, cf. (8). (ii) Extraction asymmetries: only the dative possessor can be extracted from the DP, cf. (9).

(9) *Possessor extraction in Hungarian (Szabolcsi 1984):*

- a. Mari-nak nem ismert-em [t' t nővér-é-t]  
 Mari-DAT not knew-1SG sister-POSS.3SG-ACC  
 ‘I never knew any sister of Mari.’
- b. \*Mari nem ismert-em [t' t nővér-é-t]  
 Mari.NOM not knew-1SG sister-POSS.3SG-ACC  
 ‘I never knew any sister of Mari.’

*Wh*-possessors must be in the dative and precede the determiner, see (10):

(10) *Wh-possessors in Hungarian (Szabolcsi 1994):*

- a. \*ki kalap-ja  
 who.NOM hat-POSS.3SG  
 ‘whose hat?’
- b. ki-nek a t kalap-ja  
 who-DAT the hat-POSS.3SG  
 ‘whose hat?’

Szabolcsi (1994) takes this as evidence that the dative possessor is in a derived position, viz. SpecD, the DP-counterpart of SpecC (an operator position that serves as an escape hatch for movement out of DP). It moves to this position from a position lower down in the structure associated with nominative case.



The question that arises is whether there is also evidence for two different positions of genitive and ablative possessors in Udmurt. Linear order is not a viable test for Udmurt: there is no element like the Hungarian determiner relative to which the two possessors align differently. However, the extraction test suggests that the genitive and the ablative possessor occupy the same structural position: in contrast to Hungarian, the possessor can always be extracted, regardless of its case value. This is illustrated in (11) for extraposition. Usually, the possessor precedes the possessum, but the possessor can also be extraposed to the right edge of the clause. That extraposition of the possessor has taken place is evident because Udmurt is an SOV language but in (11) the possessor follows the verb.

- (11) *Extraposition of the genitive and ablative possessor in Udmurt:*
- a. man'eryz sytše peres' Mikta-len  
manner.3SG such old Mikta-GEN  
'Such is old Mikta's style.' (Vilkuna 1997: 224)
  - b. valze jusky so-les'  
horse.ACC.3SG unharness.IMP.2SG s/he.ABL  
'Unharness his horse!' (Vilkuna 1997: 224)

There is also no evidence from other factors such as word order and/or agreement that genitive and ablative possessors pattern differently and thus that they occupy different structural positions in Udmurt. We therefore assume that the case split does not arise from a difference in positions of the possessor in the DP.

### 3.2. Functions of the Ablative

Udmurt has altogether 15 cases, as shown in (12). We divide the cases into two groups: structural and semantic cases. Structural case is assigned to a certain position in the syntactic structure; it is neither tied to specific theta-roles of the elements that receive them (like inherent case) nor to a specific class of verbs that exceptionally assign them to their arguments (like lexical case). We use the term “semantic case” for any non-structural case. This distinction will play an important role in the analysis and we will come back to it in more detail in section 4. For the moment, it suffices to keep in mind the term “semantic case”.

(12) *Case system in Udmurt:*

STRUCTURAL CASES	SEMANTIC CASES	
nominative	dative	inessive
accusative	ablative	elative
genitive	abessive	illative
	adverbial	egressive
	instrumental	transitive
	approximative	terminative

Let us concentrate first on the semantic case ablative. In addition to encoding possessors, the ablative marker has a number of other functions in Udmurt: according to Edygarova (2009) and Winkler (2001), it is used to express comparison (cf. (13-a)), the cause of an action (cf. (13-b)), the material something is made of (cf. (13-c)), and it marks adjuncts expressing origin and source (cf. (13-d)). Furthermore, the ablative is governed by some postpositions (cf. (13-e)) and by verbs of asking.

(13) *Uses of the ablative (Edygarova 2009: 108, Winkler 2001: 22-23):*

- a. viʹton-leš uno  
fifty-ABL more  
'more than fifty' *comparison*
- b. so-leš žad'-em  
he/she-ABL be tired-2.PST/3SG  
'(he) got tired with him' *cause*
- c. basma-leš lešt-em arberi-os  
cloth-ABL make-PART thing-PL  
'things which are made from cloth' *material*
- d. mon so-leš gožtet bašt-i  
I he-ABL letter.ACC get-1.PST  
'I got a letter from him.' *source*
- e. ta-leš ažlo  
DEM-ABL before  
'before this' (temporal) *postposition*

Thus, the ablative appears in a variety of contexts. What is remarkable is that these contexts do not seem to form a natural class. This becomes even more obvious when looking at the distribution of the other semantic cases: they are much more restricted in their applicability (see Winkler 2001: 16ff. for an

overview). We conclude from these facts that the ablative suffix is the default semantic case marker in Udmurt. This means that it could potentially encode any DP that does not bear a structural case, but it is often blocked by the other semantic case markers with a more specific meaning. The ablative as a default semantic case marker will be important for the analysis of the ablative case on the possessor and will be formally implemented in section 4.

### 3.3. Distribution of the Ablative: Finding the Correct Generalization

We concluded in section 3.1 that there is no asymmetry between the ablative and the genitive possessor with respect to their structural position. Under these circumstances, the question arises as to what the correct generalization is that predicts which of the two cases is used in which context. Traditionally, the generalization is that a possessor gets ablative if the DP which contains the possessor has the GF direct object; the genitive is used elsewhere. However, the term “direct object” is ambiguous and it is never precisely defined in any of the descriptive works on the possessor cases in Udmurt. There are basically three possible interpretations of “direct object”:

1. *Thematic role:*

The possessor gets ablative if the XP immediately dominating the possessor DP has the macro-role patient.<sup>2</sup>

2. *Position in the tree:*

The possessor gets ablative if the XP immediately dominating the possessor DP is selected by V.

3. *Case:*

The possessor gets ablative if the XP immediately dominating the possessor DP is assigned accusative.

The occurrence of the ablative in example (1-b) is compatible with each of these interpretations. Therefore, it is necessary to find contexts in which the interpretations make different predictions in order to find out which of them is the correct one. The question is whether in a given context the possessor must get genitive or ablative.<sup>3</sup>

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<sup>2</sup>Dominance is to be understood non-reflexively in these definitions.

<sup>3</sup>Unless references are indicated, the following Udmurt data are due to Svetlana Edygarova, a native speaker of Udmurt.

We start with interpretation 1 according to which the possessor of a DP with the macro-role patient gets ablative; in a DP with any other theta-role it should get genitive. A relevant test case for that hypothesis is the active-passive alternation. Take as a starting point a transitive verb that has a DP with a possessor as its internal argument and assigns the patient role to that DP, cf. (14-a). If this verb is passivized, the DP with the possessor becomes the sole argument of the passivized verb. Since passivization only changes GFs but does not change theta-roles, the DP containing the possessor still bears the patient role and should thus get ablative according to hypothesis 1. However, as (14-b) shows, this prediction is not borne out. The possessor in the sole argument DP of a passivized verb receives genitive even if this DP bears the patient role. Interpretation 1 is thus falsified.

(14) *Possessor case in active-passive alternation:*

- a. Petyr Masha-leš puny-z-e zhug-i-z  
 Peter Masha-ABL dog-3SG-ACC beat-1PST-3SG  
 ‘Peter beat Masha’s dog.’
- b. Masha-len/\*-leš puny-jez zhug-em-yn val  
 Masha-GEN/-ABL dog-3SG beat-PART-INES AUX.1PST  
 ‘Masha’s dog was beaten.’

Next, we test whether interpretation 2 makes the correct predictions: only if the DP containing (i.e., immediately dominating) the possessor remains in its VP-internal base position can the possessor receive ablative. Since Udmurt is a head-final language with predominant SOV order, it cannot be read off of the surface position of the internal argument relative to the verb whether the argument DP is still in the VP or whether it is moved out of the VP; it will precede the verb in any case. We therefore need other means to make sure that the DP with the possessor is indeed in the VP. First, we can control for the VP-internal position of the DP by means of adverbs that mark the VP-boundary. Example (15) is based on the passivized sentence in (14-b). In addition, it contains a temporal adverb that marks the VP-boundary. Since the DP with the possessor is to the right of that adverb, it must be in the VP. As is shown in (15), the possessor still gets genitive case. If, however, hypothesis 2

was on the right track, the possessor should get ablative, contrary to fact. This falsifies interpretation 2.<sup>4</sup>

- (15) *Adverb 'yesterday':*  
 tolon Masha-len puny-jez zhug-em-yn val  
 yesterday Masha-GEN dog-3SG beat-PART-INES AUX.1PST  
 'Yesterday Masha's dog was beaten.'

Thus, only interpretation 3 remains: the possessor gets ablative if the DP containing it receives accusative case. This hypothesis predicts that a possessor contained in a DP that bears a case different from accusative receives genitive case. This was shown in (1-a) for nominative case. (16) shows this for dative case (a semantic case). There are a number of transitive verbs in Udmurt that lexically govern a case different from accusative. The verb *akyltni* 'to bother' is one that assigns dative to its internal argument. If the dative marked argument contains a possessor, this possessor must not bear ablative but genitive instead, cf. (16). This is correctly predicted by hypothesis 3. In addition, this example also falsifies interpretations 1 and 2: the DP containing the possessor is probably in a VP internal position and has the patient role, but the possessor bears the genitive. Another example that supports interpretation 3 will be presented in (21) for a genitive DP containing a genitive possessor.

- (16) *Dative assigning verb:*  
 Petyr [Masha-len suzer-ez-ly] akylt-e  
 Peter Masha-GEN sister-3SG-DAT bother-PRES.3SG  
 'Peter is bothering Masha's sister.'

So far, the conclusion is that only interpretation 3 is compatible with the empirical facts. Thus, the following generalization about the distribution of the ablative and genitive case on the possessor arises:

- (17) *Empirical generalization:*  
 The possessor in Udmurt bears ablative if the XP immediately dominating the possessor bears the accusative marker. The possessor bears genitive elsewhere.

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<sup>4</sup>We are currently running a number of other tests to show that the DP containing the possessor can remain inside the VP and nevertheless bears genitive (VP ellipsis, VP topicalization, VP coordination). Unfortunately, the results are not yet available to us.

This generalization is also in accordance with a number of other facts. If the relevant factor that triggers ablative marking on the possessor is accusative marking of the containing DP, it is predicted that the source of the accusative should not play a role, i.e., that the possessor bears ablative also if the accusative is not assigned by *v* to the internal argument of *V* as in (1-b). That this prediction is borne out can be shown with ECM constructions.<sup>5</sup> There are two types of ECM constructions in Udmurt. One is very similar to the English ECM in that the matrix ECM verb embeds a clause and assigns accusative to the subject (the external argument) of that clause. If the embedded subject contains a possessor, this possessor must bear ablative and the possessum bears accusative (cf. (18)) as predicted by the generalization in (17).

(18) *ECM construction in Udmurt:*

Petyr Masha-leš puny-z-e tyloburdo-os-ty kutyl-e  
 Peter Masha-ABL dog-3SG-ACC bird-PL-ACC.PL catch-PRES.3SG  
 malpa  
 think.PRES.3SG  
 ‘Peter believes Masha’s dog to catch birds.’

Note that this example also falsifies interpretation 2: the DP containing the possessor (the subject of the embedded clause) is not the sister of the matrix *V* (it is included in the sister of *V*). If one assumes that ECM subjects only receive a thematic role from the embedded verb, this example also falsifies interpretation 1: the subject DP containing the possessor bears the agent role of the verb *kutylni* ‘to catch’.

In the second and more widespread ECM construction in Udmurt, the embedded clause is nominalized. The subject of the embedded transitive verb is in a sense the possessor of that derived noun and it is consequently marked genitive instead of nominative. This can be seen if a nominalized clause is not embedded under an ECM verb but is rather used as the sentential subject of a verb, cf. (19). Here, the subject of the nominalized clause, *Peter*, bears genitive:

<sup>5</sup>Another potential test case for the generalization in (17) would be one in which a DP with a possessor is selected by an accusative assigning postposition (Udmurt is head-final outside of the DP). The majority of postpositions governs nominative in Udmurt; there are also some postpositions that assign semantic cases such as ablative or dative. There is, however, not a single postposition that governs accusative (Winkler 2001: 19, S. Edygarova, p.c.). Hence, the prediction that there should be ablative on the possessor of the DP selected by an accusative assigning postposition cannot be tested.

- (19) Petyr-len Masha-leš pyny-z-e vi-em-ez myn-ym  
 Peter-GEN Masha-ABL dog-3SG-ACC kill-PART-3SG 1SG-DAT  
 ug jara  
 NEG.PRES.3 please.SG  
 ‘[Peter’s killing Masha’s dog] does not please me.’

If, however, the nominalized clause is embedded under an accusative assigning ECM verb, the subject of the nominalized verb must bear ablative instead of genitive, cf. (20). This is expected given the generalization in (17): the subject of a nominalized clause that behaves like a possessor in that it is usually assigned genitive shows ablative marking if the XP containing it (probably vP or TP) is assigned accusative by the external head (the ECM verb assigning accusative to its sister node). Example (20) also shows that the case split not only concerns prototypical possessors as in *Peter’s head* but that possessor is to be understood more abstractly; in Udmurt the relevant factor seems to be genitive marking (outside of the special accusative environments where ablative replaces genitive). In any case, the two ECM constructions behave alike with respect to the case split: accusative assignment into the embedded clause triggers ablative marking on usually genitive marked DPs in the embedded subject, as predicted by the generalization in (17).

- (20) mon Petyr-leš Masha-leš puny-z-e vi-em-z-e  
 1SG Peter-ABL Masha-ABL dog-3SG-ACC kill-PART-3SG-ACC  
 adzdz-i  
 see-1PST.1SG  
 Lit. ‘I saw Peter’s killing Masha’s dog.’

Finally, consider what happens if there are recursive possessors: if a DP that contains multiple possessors is not assigned accusative, as e.g. in (21) where it is the sole argument of an intransitive verb that bears nominative zero marker, all possessors in that DP bear genitive, as expected. If, however, a DP that contains multiple possessors is assigned accusative, only the structurally highest possessor gets ablative; the possessors that are embedded more deeply in the structure still get genitive marking, cf. (22) (see also Edygarova 2010: 177).

- (21) Masha-len apaj-ez-len puny-jez iz’-e  
 Masha-GEN sister-3SG-GEN dog-3SG sleep-PRES.3SG  
 ‘Masha’s sister’s dog is sleeping.’

- (22) Petyr Masha-len apaj-ez-leš puny-z-e zhug-i-z  
 Peter Masha-GEN sister-3SG-ABL dog-3SG-ACC beat-1PST-3SG  
 ‘Peter has beaten Masha’s sister’s dog.’

This pattern is predicted by the generalization in (17): the lower possessor *Masha* is immediately dominated by the DP *Masha’s sister* that bears ablative. But since it is accusative marking of the dominating DP that is a prerequisite for ablative marking on the possessor, the lower possessor must bear genitive. The highest possessor receives ablative marking because the possessum gets hier accusative case.

To conclude, hypothesis 1 is falsified by the data from the active-passive alternation in (14) and hypothesis 2 can be rejected on the basis of the placement of low adverbs before a DP with a genitive possessor in (15). In addition, both hypotheses can be refuted by the ECM constructions in (18) and (20).

In this section, we have provided evidence that (i) the ablative and the genitive possessor occupy the same structural position (which we take to be SpecD), (ii) the ablative is the default semantic case marker in Udmurt, and (iii) the decisive factor that governs the distribution of the ablative on the possessor is not the GF but rather the case value of the immediately dominating XP. In the next section, we present a local and cyclic derivation of (iii) that crucially relies on case stacking and (ii), the default nature of the ablative marker.

#### 4. Deriving the New Generalization

The generalization in (17), with the case marker of the DP immediately dominating the possessor as the decisive factor for the Udmurt case split, facilitates a reanalysis of the phenomenon that is in accordance with the Strict Cycle Condition and does not require look-ahead. We propose that the possessor is assigned the prototypical possessor case (abstract genitive) in the DP *plus* the case value of the external head – an instance of syntactic case stacking.<sup>6</sup> In this way, all the relevant information necessary to decide between the genitive and the ablative marker is locally available on the possessor in the postsyntactic morphological component. The derivation of the generalization in (17) is

<sup>6</sup>Diachronic facts of the Finno-Ugric language family corroborate this analysis. For Finnish, e.g., it has been argued, that the local cases, among them the ablative, is a combination of two case markers. See Abondolo (1998: 167) and Suhonen (1988: 302) for details. Thanks to András Bárány for pointing these facts out to us.



divided into three subparts that contain assumptions about the lexicon, the syntax of case assignment and the morphological realization of abstract case.

4.1. The Lexicon

As has already been introduced in section 3.2, Udmurt exhibits a rich case system (cf. Winkler 2001). We divide the cases into groups of structural and semantic cases, cf. (23); the defining property of the former group is that these cases are assigned to specific positions in the syntactic structure, independently of the thematic role assigned to those positions.

(23) *Case system in Udmurt:*

STRUCTURAL CASES	SEMANTIC CASES	
nominative	dative	inessive
accusative	ablative	elative
genitive	abessive	illative
	adverbial	egressive
	instrumental	transitive
	approximative	terminative

We assume that abstract cases are decomposed into the binary features [ $\pm$ obl(ique)] and [ $\pm$ obj(ect)] (cf. Bierwisch 1967). A case is [+obj] if it is a case that a verb assigns to its complement (maybe lexically). Prototypically, this is the accusative, but we have already seen that verbs in Udmurt may also assign other cases to their complement, e.g. ablative or dative. [+obl] characterizes those cases that are not standardly assigned to the core arguments of a verb in a given argument encoding pattern. In a language like Udmurt with an accusative alignment pattern, the cases standardly assigned to the core arguments, i.e., the [-obl] cases, are nominative and accusative; all remaining cases are [+obl].<sup>7</sup> As a consequence, all semantic cases are represented as [+obl, +obj]. The structural cases are negatively valued for at least one of the two binary features. The decomposition for the three structural cases nominative, accusative and genitive is shown in (24-a); the decomposition for the semantic cases is given in (24-b).

<sup>7</sup>In this system, genitive is classified as a structural case but at the same time it is represented as an oblique case. See also Halle (1997) for a case decomposition that characterizes genitive as oblique and structural.

- (24) a. *Structural cases:*
- |     |             |
|-----|-------------|
| NOM | [-obl,-obj] |
| ACC | [-obl,+obj] |
| GEN | [+obl,-obj] |
- b. *Semantic cases:*
- |       |                          |
|-------|--------------------------|
| ABL   | [+obl,+obj], [-f,-g,...] |
| DAT   | [+obl,+obj], [+f,-g,...] |
| INSTR | [+obl,+obj], [-f,+g,...] |
| ...   |                          |

Since the semantic cases are all specified as [+obl, +obj], further features are necessary to distinguish between them. We assume that this is done by a set of semantic features which are abstractly represented as [ $\pm f$ ], [ $\pm g$ ], ... in (24); their exact meaning does not matter for our purposes. As a consequence, the semantic cases are more complex than the structural cases (cf. Béjar and Mas-sam 1999). They consist of two case feature sets: like the structural cases they have a feature set that contains values for [ $\pm obl$ ] and [ $\pm obj$ ], but unlike the structural cases they have a second set of semantic features.

The assumption that semantic cases are more complex than structural cases is independently motivated by the fact that in various non-related languages, the markers of the semantic cases are built upon a structural case marker, exemplified by the paradigms in (25) (Arkadiev 2006).<sup>8</sup> In Romani for example, the semantic cases are built on the basis of the structural case accusative.

- (25) a. *Case in Romani:*
- |     |               |
|-----|---------------|
|     | ‘pigeon’      |
| Nom | golumbo       |
| Acc | golumbo-s     |
| Loc | golumbo-s-te  |
| Dat | golumbo-s-ke  |
| Abl | golumbo-s-tyr |
| Ins | golumbo-s-a   |
- b. *Case in Naukan Eskimo:*
- |         |           |
|---------|-----------|
|         | ‘dog’     |
| Nom     | ayna-q    |
| Erg/Gen | ayna-m    |
| Ins     | ayna-m-iŋ |
| All     | ayna-m-un |
| Loc1    | ayna-m-i  |
| Loc2    | ayna-kun  |

With this background, we turn to our assumptions about the lexical properties of relevant items. First, we assume that all case bearing elements in Udmurt have exactly two case slots; more precisely, they have a lexical property allowing them to receive up to two case feature sets; see (26-a) for D and (26-b) for N.

<sup>8</sup>In Nanosyntax, semantic cases are also more complex than structural cases: privative case features are represented in a hierarchy in which the semantic cases dominate the structural cases, cf. Caha (2008, 2009).

- (26) a. D {[case:□], [case:□]}                      b. N {[case:□], [case:□]}

Each of these unvalued “slots” can be valued by a syntactic or a semantic case feature set, each of which is a bundle of binary case features. Consequently, D and N heads (as any other case bearing elements) can be assigned up to two abstract case feature sets. This is to say that Udmurt exhibits syntactic case stacking (see section 5 and footnote 6 for further discussion). A number of languages can overtly stack cases on the possessor: it carries the genitive marker plus the case marker realizing the case assigned to the DP containing it. An example from Huallaga Quechua is given in (27). What we assume is that this stacking happens in Udmurt syntax as well (stacking of abstract cases), although the cases cannot be stacked overtly in Udmurt (stacking of case exponents). We will come back to that issue in section 4.3.

- (27) *Case stacking in Huallaga Quechua (Pylkkänen 2002):*

Hipash-nin-ta                      kuya-ɿ Hwan-pa-ta  
 daughter-3POSS-ACC love-1 Juan-GEN-ACC  
 ‘I love Juan’s daughter.

Since there are two case slots on D and N heads in Udmurt, a comment on the Case filter is necessary: in order to fulfill the Case filter, every DP, i.e., its D head and the head of the NP selected by D, must receive at least one abstract case, i.e., one case feature set; it is not necessary for the derivation to converge that both case slots on D and N are valued by an abstract case. An unvalued case slot does not violate Full Interpretation as long as there is a valued case slot on the same head.<sup>9</sup> Only if none of the case slots of a head is valued, a fatal violation of the Case filter obtains.

The second assumption concerns the valuation potential of structural and semantic cases: we assume that semantic cases fill two case slots on a head rather than one like structural cases (similar ideas have been put forward by Béjar and Massam 1999, Richards 2008). The reason for this is that semantic cases are more complex than structural cases: they consist of a syntactic and a semantic case feature set. If a semantic case is valued on D (or N), one of D’s case slots is filled by the syntactic case feature set [ $\pm$ obl,  $\pm$ obj]; the second

<sup>9</sup>Alternatively, one might assume that unvalued case features can be deleted by default at the end of the derivation if there is a valued case slot on the same head. The decision between the two options does not have any crucial impact on the analysis of the case split in Udmurt and we continue to adopt the solution without deletion of unvalued case slots in what follows.

slot is filled by the semantic case feature set. It is not possible to value only one of the two sets of the semantic case on D; both of them must be copied under Agree with D, they form a unity. An important consequence of this assumption is that only two structural cases can stack. A structural and a semantic or two semantic cases cannot stack because one semantic case alone already fills the two case slots on D (or N) and no further valuation is then possible. In what follows, the relevant configuration will be one in which the head of the possessor DP has been assigned genitive case and is to receive a semantic case from an external head: the prior assignment of the genitive blocks valuation of the semantic case because there are only two case slots on the D head and genitive+semantic case would need three slots.<sup>10</sup>

#### 4.2. The Syntax

As indicated before, we assume that abstract case, represented by decomposed case features, is assigned by functional heads to arguments under Agree. D assigns abstract genitive case to a possessor in SpecD; v assigns abstract accusative case to the internal argument, and T assigns abstract nominative case to the external argument under c-command.<sup>11</sup>

In order to model case concord, we assume that abstract cases are assigned to all case-bearing elements in the DP via *Multiple Agree* (Hiraiwa 2001), i.e. to D and N heads (and other DP-internal heads such as heads of number and adjectival projections if they are present). That means that the case of a func-

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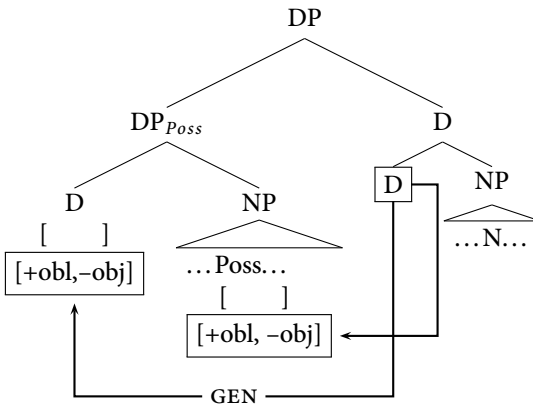
<sup>10</sup>The fact that the possessum can bear a semantic case motivates that N and D heads must have at least two case slots because a semantic case needs to value two case slots. That these heads have *exactly* two case slots and not more is motivated by the distribution of genitive and ablative in multiple possessor constructions. See section 5.2 on cross-linguistic variation concerning the number of cases that can stack and the derivation of multiple possessor constructions in (32) below for motivation on this upper boundary of the number of case slots on D and N: if D and N heads had more than two case slots, the analysis in section 4 would wrongly predict that not only the structurally highest possessor but also more deeply embedded possessors should get ablative marking in recursive possessor constructions.

<sup>11</sup>Under the assumption that the case assigner must c-command the DP, a problem with genitive case assignment arises: we assume that possessor DPs are specifiers within DP. Consequently, they are not in the c-command domain of the D head which assigns genitive case. In order to solve this problem one could adopt the search algorithm in Řezáč (2004). In this approach, the search space of Agree can be expanded “upward” if and only if there is no suitable goal in the c-command domain of the probe. Assuming that the complement NP of D does not constitute a suitable goal, the search space of D is expanded to include the specifier.

tional head can be assigned to more than one element.<sup>12</sup> Only those elements that have an unvalued case feature can receive a value. In this system, case assignment for abstract structural and semantic cases is identical, i.e., both are assigned in the syntax. For the sake of concreteness, we assume that semantic cases are assigned to their complements by zero adpositions (cf. Pyllkkänen 2002, Hole 2008, among others).

Given these assumptions, case assignment in clauses with a possessor proceeds as follows. We start with genitive assignment in the DP. As shown in (28), the possessor is merged as the specifier of the D head of the possessum. D assigns genitive [+obl, -obj] to its specifier. More precisely, it assigns it to the N head of the possessor and thereby values one of its two case slots; in addition, given the possibility of Multiple Agree, the D head in the box assigns genitive to the D head that selects the possessor NP, filling one of its two case slots, too. The second case slot on the D and the N head in the possessor DP remains unvalued.

(28) *Genitive case assignment in the DP:*

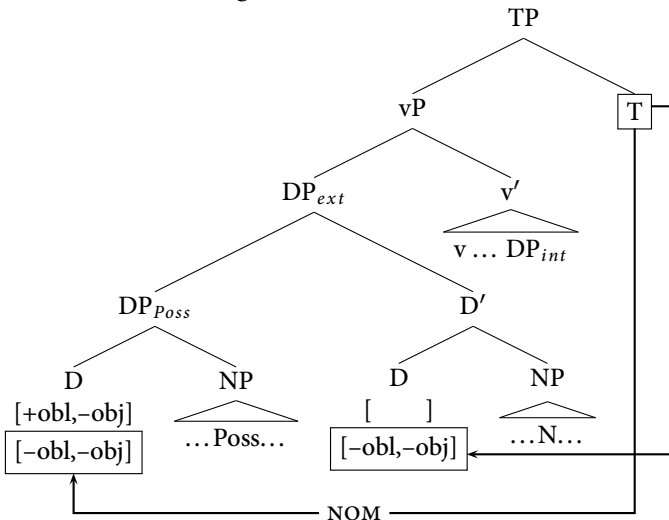


<sup>12</sup>There are two related proposals on concord that would also be compatible with our analysis. (i) Case is assigned to the sister node  $\delta$  of a case assigner and, unless blocked by independent principles, the case value on  $\delta$  spreads downward in the domain dominated by  $\delta$  (see Matushansky 2008, Bjorkman to appear, Erlewine 2012). This mechanism is, however, counter-cyclic (cf. the SCC in (7)). (ii) Concord can also be modeled as feature-sharing (cf. Frampton and Gutman 2006, Schoorlemmer 2009). But then two different mechanisms are applied to model agreement and concord. Multiple Agree handles both phenomena in a uniform way.

In the following derivations, the entire DP in (28) is merged into different positions in the clausal spine. The initial step of DP-internal genitive assignment to the D and N head in the possessor DP always takes place, but for the sake of clarity we do not indicate it anymore in the following trees. For the same reason, we will only indicate case assignment to D heads in what follows; we omit case assignment to N heads (the possessum), but the reader may verify that no complications arise for case assignment to them; the N head will always show the same case as the D head that selects the NP projected by N.

First, the DP containing a possessor is merged as the external argument of a transitive verb in Specv. This DP is assigned nominative by the c-commanding T head, cf. (29). T values nominative [-obj, -obl] on the D head of the possessor DP contained in the external argument DP. The head of the possessor already bears genitive, but the second slot is still available for nominative from T; genitive and nominative thus stack on this D head. In addition, T assigns nominative to the D head of the external argument, filling one of the two case slots on this D head.

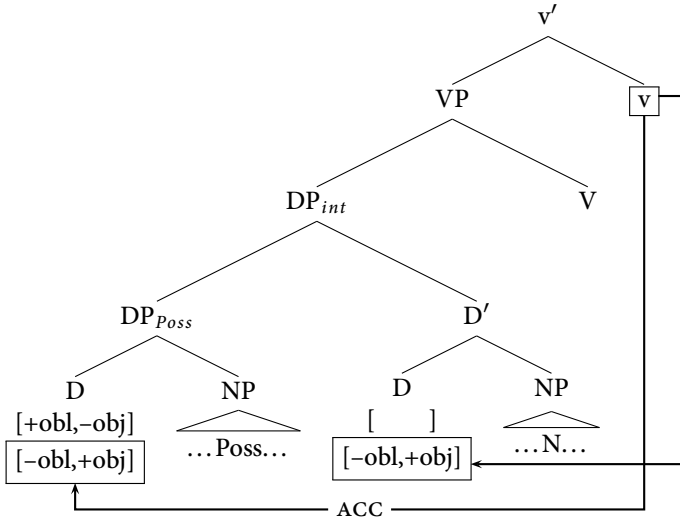
(29) *Nominative case assignment:*



Virtually the same happens if the DP in (28) is merged as the internal argument of a transitive verb. In that position, it is assigned accusative [-obl, +obj] by v, cf. (30). Just as T, v assigns accusative to the D head of the internal ar-

gument, filling one of its two case slots, and to the D head of the possessor contained in the internal argument, filling its remaining case slot. The result is stacking of genitive and accusative on the possessor's D head.

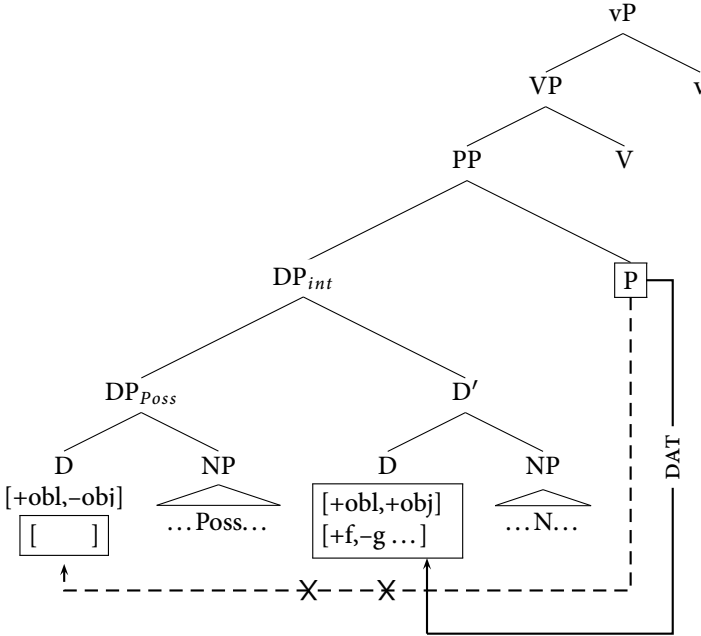
(30) *Accusative case assignment:*



The DP in (31) is assigned a semantic case. This happens if the DP is the sister of a (phonologically empty) zero postposition. This PP may, for example, be merged as the internal argument of V, cf. (31). For concreteness, we illustrate semantic case assignment with dative, but the derivation would be the same with any other semantic case value. The only thing that varies between them is the semantic features  $[\pm f, \pm g, \dots]$ . In (31), P assigns dative  $[+obl, +obj]$ ,  $[+f, -g, \dots]$  to the D head of the internal argument. Since semantic cases are complex, they value both case slots of this D head: one with the syntactic features  $[+obl, +obj]$  and the other one with the semantic case feature set  $[+f, -g, \dots]$ . Crucially, however, P cannot assign dative to the D head of the possessor (see the crossed out arrow in (31)). The reason is that this head already bears genitive which, due to cyclicity, has been valued on D *before* the entire DP is merged as the complement of P. But since semantic cases need to fill two case slots, there is not enough “space” left on the D head of the possessor for the dative case: prior assignment of the genitive (or any other case) thus *bleeds* assignment of a semantic case in the syntax. As a consequence,

there is no case stacking on the possessor if the case assigned to the dominating DP is a semantic case. The possessor D head thus ends up only bearing genitive in these contexts.<sup>13</sup>

(31) *Dative case assignment:*



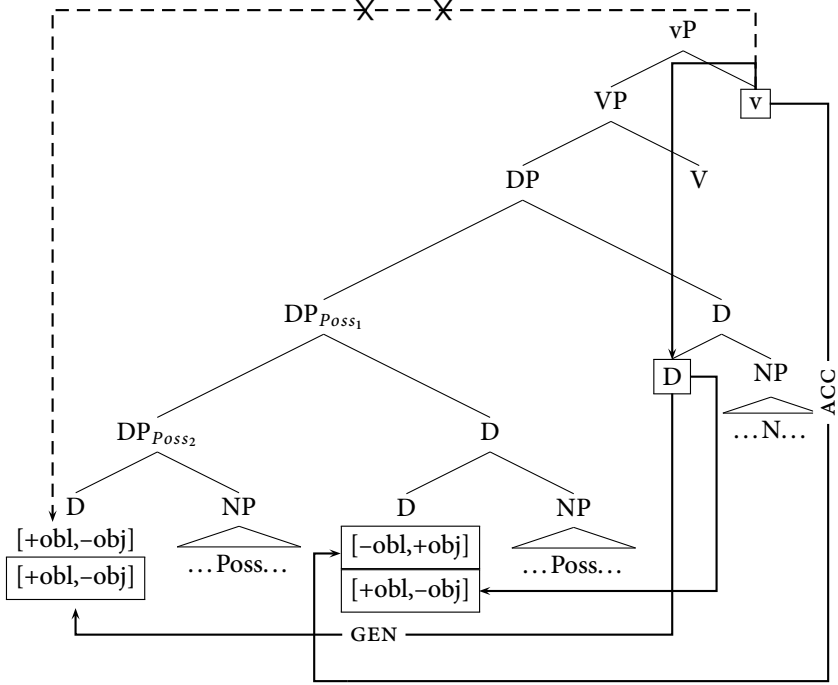
Finally, consider a case of double possessors with double genitive assignment to the most deeply embedded possessor. In (32), the structurally highest DP contains a possessor DP ( $DP_{Poss_1}$ ) in its specifier which in turn contains a possessor ( $DP_{Poss_2}$ ). The lowest possessor ( $DP_{Poss_2}$ ) gets genitive [+obl, -obj] from the D head that selects it, as illustrated in (28). This first step is not indicated in (32). Next,  $DP_{Poss_1}$  is merged in the specifier of the D head in the box (the head of the structurally higher possessum). This D head also assigns genitive to its specifier ( $DP_{Poss_1}$ ). More precisely, it assigns it to all elements in its specifier with an empty case slot (see the arrows starting from the boxed D in (32)). This is the case for the D head of  $DP_{Poss_2}$  and the D head of  $DP_{Poss_1}$ . As a result, the D head of  $DP_{Poss_2}$  bears genitive twice and the D head of  $DP_{Poss_1}$  bears it once, its second case slot is yet unvalued.

<sup>13</sup>The second case slot of D can remain unvalued. Recall that it is sufficient for the Case filter if one of the two case slots is valued, see the discussion in section 4.1.



The complex DP containing the two possessors can now be merged with another head, e.g. in the specifier of T, *v* or as the complement of P. The interesting case is the one in which this DP is merged as the sister of a transitive verb such that it gets accusative case from the closest *c*-commanding case assigner *v*. Recall that, empirically, it is the case that in such a configuration only the structurally highest possessor ends up with ablative, which depends on having received accusative (cf. (22)); the most deeply embedded possessor must bear genitive, which means that it does not receive accusative. The tree in (32) with the complex DP merged as the sister of V illustrates why this is the case: *v* assigns accusative [-obl, +obj] to all elements in its *c*-command domain that have unvalued case slots. Accusative can thus be assigned to the D head of the structurally higher possessor (DP<sub>POSS1</sub>) and to the D head selecting DP<sub>POSS1</sub> (see the arrows starting from *v* in (32)). The former received genitive case before but still has an empty case slot for another structural case; the latter still has two empty case slots of which the accusative values one. Since the D head of the structurally higher possessor is assigned accusative in addition to genitive, we will find ablative marking on this possessor. Now consider the D head of the lower possessor DP<sub>POSS2</sub>. It cannot receive accusative from *v* because its two case slots are already filled, each of them is valued by the genitive. Hence, there is no unvalued case feature left for the accusative (see the crossed out arrow in (32)). And since accusative marking of the possessor's D head is a prerequisite for its occurrence with ablative marking, DP<sub>POSS2</sub> will bear the genitive suffix. The different morphological marking of the two possessors in a multiple possessor construction thus follows from the restriction of the number of case slots in Udmurt (an assumption that will be further discussed in section 5) and their structural position: due to its deeply embedded position in the tree, the lower possessor gets genitive twice and is then not able to get accusative; the higher possessor does not get the first genitive value because it is not in the domain of case assignment of the relevant head, and it can thus receive accusative from the external head. This mechanism also works if more than two possessors occur. Only the highest will be able to carry the ablative marker.

(32) Double possessors: genitive case assignment:



In the next subsection, we will show how exactly a D head with the accusative value stacked on the genitive value ends up with the ablative case morpheme.

4.3. The Morphology

We assume a postsyntactic realizational morphology. The syntax only operates with abstract feature bundles that are realized by exponents in the morphological component. For concreteness, we adopt the framework of Distributed Morphology (DM, Halle and Marantz 1993, 1994, Harley and Noyer 1999): vocabulary items (VIs) that are pairings of morphosyntactic features with phonological information are inserted into terminal nodes in the syntactic structure. VIs can be underspecified with respect to their morphosyntactic features which leads to competition for insertion between them. This competition is resolved by the Subset Principle and Specificity: only the most specific

matching VI can be inserted into a terminal node, i.e., the VI that has the largest subset of the morphosyntactic features of the terminal.

In the present discussion, the question is how the abstract binary case features are realized by case exponents. We assume that case VIs in Udmurt are exclusively specified for positive features, cf. (33) (see Zwicky 1977, Wunderlich 1996, Harley and Ritter 2002, Nevins 2003, among others).

- (33) *Case vocabulary items in Udmurt:*
- |                |   |       |       |
|----------------|---|-------|-------|
| [+obl,+obj,+f] | ↔ | /li/  | (DAT) |
| [+obl,+obj]    | ↔ | /leš/ | (ABL) |
| [+obl]         | ↔ | /len/ | (GEN) |
| [+obj]         | ↔ | /e/   | (ACC) |
| [ ]            | ↔ | /Ø/   | (NOM) |

The nominative exponent is the completely underspecified elsewhere marker. The genitive and the accusative exponent are underspecified: they are only specified for one of the two syntactic case features [+obl] and [+obj], respectively. All semantic case exponents are fully specified for the structural case features. In order to distinguish between the various semantic cases, the relevant VIs are specified for some of the semantic features [ $\pm f$ ,  $\pm g$ , ...]. In (33), the dative VI, for example, is specified for the semantic feature [+f] in addition to being specified as [+obl, +obj]. Another semantic case VI may instead be specified as [+g] or [+f, +g]. How exactly the semantic case features are distributed over the semantic case VIs is of no importance and we thus only indicated the specification for the dative in (33). What is of central importance, however, is the specification of the ablative exponent: crucially, this semantic VI is fully specified for [+obl, +obj], as all the semantic case VIs; however, if it is completely underspecified for the semantic case features, in contrast to all remaining semantic case VIs. This encodes the default character of the ablative; recall the conclusion from section 3.2 that the ablative marker is the default semantic case exponent in Udmurt. It occurs in a variety of contexts that do not form a natural class. The representation in (33) reflects this fact: the underspecified ablative exponent is in principle compatible with *every* syntactic context that is specified as [+obl, +obj]; it is, however, often blocked by a more specific semantic case VI.

We can now have a look at the operations that happen in the morphological component. In the last section we assumed that Udmurt has case stacking

in the syntax. However, Udmurt obviously does not exhibit overt case stacking, i.e., stacking of case exponents on the possessor as, for example, Huallaga Quechua in (27) does. To implement this, we assume that Udmurt has a filter which excludes the co-occurrence of two case exponents. As a consequence, a problem arises if case stacking took place in the syntax because only a single case exponent can be realized but two abstract case values are present on a terminal. In order to obey the filter, a repair operation applies in the morphological component prior to vocabulary insertion: the two case features sets on the terminal node (D or N) have to fuse into a single feature set (see Noyer 1992, Halle and Marantz 1993 for the concept of fusion). Fusion is a set-building operation which unifies the features of the two case slots into one.<sup>14</sup> Several instances of identical values are reduced to a single instance of that value. The results of fusion are shown in (34). To the left of the fusion arrow, it is shown which abstract cases (are supposed to) stack; to the right, the resulting feature set is indicated. The VI from (33) that realizes this fused feature structure is given in brackets.

- (34) a. *genitive + dative:*  
 [+obl,-obj] + [ ]  $\xrightarrow{\text{fusion}}$  [+obl,-obj] (=gen. VI)
- b. *genitive + nominative:*  
 [+obl,-obj] + [-obl,-obj]  $\xrightarrow{\text{fusion}}$  [+obl,-obl,-obj] (=gen. VI)
- c. *genitive + genitive:*  
 [+obl,-obj] + [+obl,-obj]  $\xrightarrow{\text{fusion}}$  [+obl,-obj] (=gen. VI)
- d. *genitive + accusative:*  
 [+obl,-obj] + [-obl,+obj]  $\xrightarrow{\text{fusion}}$  [+obl,-obl,+obj,-obj] (=abl. VI)
- e. *nominative + accusative:*  
 [-obl,-obj] + [-obl,+obj]  $\xrightarrow{\text{fusion}}$  [-obl,-obj,+obj] (=acc. VI)

<sup>14</sup>Note that fusion as we use it here is a bit different from the concept in the literature. Fusion is standardly applied to two terminal nodes (that are sister nodes) and fuses them into a single node which contains all the features of the two original nodes. As a consequence, only a single VI can be inserted into the newly created terminal. In the present analysis, two feature sets on a *single* terminal node fuse into one feature set. In contrast to the standard definition, we take fusion to be a set-building operation. Therefore, not all the features of the two sets are part of the fused set; identical features are reduced to a single instance of that feature.

We begin with the trivial case in which the D head of a possessor that has been assigned genitive in the DP is to be assigned an abstract semantic case from an external head in addition; this semantic case is the dative in (34-a), but the result would be the same for any other semantic case. Recall that only structural cases can stack in the syntax and thus fuse in the morphological component. Any stacking of an abstract semantic case and the genitive is excluded already in the syntax (cf. the derivation in (31)). The D head of the possessor has only one valued case slot in such a context. Thus, fusion of the genitive feature set with an empty set trivially results in the feature structure of the genitive [+obl, -obj]. The most specific matching VI for this feature set is the genitive VI.

Next, consider the fusion of abstract nominative and abstract genitive in (34-b). This happens, for example, if a DP that contains a possessor is merged as the external argument of a transitive verb and is assigned nominative from T (cf. the derivation in (29)). Since the nominative contributes only negative feature values to the fused feature set, and since VIs only spell out positive feature values, the nominative will never have an impact on the realization of the case features. The most specific matching VI for the fused set [+obl, -obj, -obj] is thus determined by the positive feature from the abstract genitive alone; it is again the genitive VI.

In the case of multiple possessors, all possessors except for the structurally highest one end up with genitive-genitive stacking (cf. (32)). Since fusion is a set-building operation, fusion of the representation of the genitive with an identical feature set results in a single instance of the representation of the genitive, which is of course also realized by the genitive VI, cf. (34-c).

So far, the possessor always bears the genitive case marker. The interesting context is the one shown in (34-d): abstract accusative and abstract genitive stack. This happens for example if a DP containing a possessor is merged as the internal argument of a transitive verb and thus receives accusative from *v* (cf. the derivations in (30) and in (32)). If the features of the accusative and the genitive case fuse, they create a new feature set which contains both [+obl] and [+obj]. Crucially, these features must be realized by a *semantic* case VI, since these VIs are specified for [+obl, +obj] and are thus the most specific matching VIs. The structural case VIs, including the genitive VI, would also match these features but they are less specific than the semantic case VIs. The question is now which of the semantic VIs realizes the fused feature set. The only matching semantic VI is the ablative VI, which is the most underspecified

semantic case marker. The reason is that since two abstract structural cases have been fused, there are no semantic features ( $[±f, ±g, \dots]$ ) in the newly created feature structure; structural cases simply do not bear these semantic features in the first place, they are less complex than the abstract semantic cases. All semantic case VIs except for the ablative are specified for semantic features and are thus not a subset of the fused feature set in (34-d). It is because of the underspecification of the ablative VI for these semantic features (which leads to its default nature) that it shows up in this context.

For the sake of completeness, there is another possible combination of abstract case features that does, however, not involve case stacking on a possessor: nominative and accusative, cf. (34-e). These could potentially stack on the subject DP of a clause embedded under an ECM verb (without nominalization) or on the head of an internal argument of a transitive verb. In the latter case, the internal argument receives accusative from *v*, filling one of its case slots, and nominative from *T*, filling the second case slot. As before, the nominative with its negative values does not have any influence on the realization of the accusative. The most specific matching item is the accusative VI, in accordance with the empirical facts.

To conclude, the possessor always bears a genitive marker unless it is assigned accusative in addition to genitive in the syntax; in this case, it bears the ablative marker. Crucially, this ablative marker does not realize the abstract semantic ablative case ( $[+obl, +obj]$ ,  $[-f, -g, \dots]$ ) on the possessor; rather, it realizes the combination  $[+obl, +obj]$  that arises due to fusion of abstract genitive and accusative.

Finally, note that the analysis presented above naturally accounts for the case pattern with multiple possessors where only the highest possessor can receive ablative case (cf. the derivation in (32)). Lower possessors will receive genitive twice which leaves no slot left for the accusative case to be assigned, which in turn does not create a context where the ablative marker can be inserted. This context only arises on the structurally highest possessor and thus only this possessor will bear the ablative marker. This analysis crucially relies on the restriction that *D* heads (and all other case bearing items) cannot have more than two case slots: if they had more, the abstract accusative could spread to more deeply embedded possessors in recursive possessor constructions and these possessors would then be wrongly predicted to bear the ablative marker (see section 5.2 for further discussion of this restriction).

#### 4.4. Interim Conclusion

Under the assumption that D and N heads in Udmurt bear two case slots, Udmurt (sometimes) allows for case stacking in the syntax. Postsyntactic morphological fusion unifies the two case slots (see (34)). If abstract genitive and accusative features are combined, the fused case feature set can only be realized by the ablative marker. In all other combinations of the genitive and another structural case, fusion results in a feature structure that must be realized by the genitive marker. The ablative case on possessors is not an abstract case assigned in the syntax (there are no semantic case features on the possessor that are part of the abstract ablative case). The analysis thus crucially relies on the distinction between abstract and morphological case.

In the present account, case assignment in the syntax is local. The look-ahead problem does not arise because under a case stacking analysis the relevant information about the cases assigned to the possessor DP-internally and DP-externally is present on the possessor; there, it is manipulated by fusion in the postsyntactic morphological component.

### 5. Discussion of the Consequences

This section provides a discussion of technical and empirical consequences. We start with a discussion of some theoretical issues, especially the cyclicity and locality of syntactic operations. Afterwards we will turn to a discussion of the typology of case stacking predicted by the present account.

#### 5.1. Theoretical Issues

##### 5.1.1. *Look-Ahead and Counter-Cyclicity Revisited*

In section 2 we have argued that under the two assumptions that (i) case of DPs is determined in syntax only and (ii) all operations apply locally, an analysis of the case split with possessors in Udmurt runs into the problem of look-ahead and counter-cyclicity.

The analysis developed in section 4 overcomes both problems. The problems were avoided by adopting the possibility of case stacking and the postsyntactic morphological operation fusion. Due to case stacking, the information which case the DP containing the possessor receives is available on the possessor as well, in addition to the genitive case. Postsyntactic fusion combined

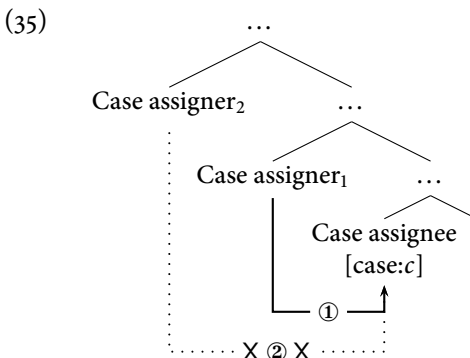
with specific vocabulary insertion rules ensured that the ablative case marker is used when the DP containing the possessor has been assigned accusative.

Since in the present approach all the relevant information is locally available on the possessor due to case stacking and since the final determination of the case marker is postponed to the morphological component, the analysis in section 4 does not encounter either look-ahead or counter-cyclicity.

### 5.1.2. Locality of Case Assignment without Locality Restrictions

One further interesting outcome of the analysis in section 4 is that the locality of case assignment is not the result of absolute locality domains, like e.g. phases (Chomsky 2001). Rather, the number of case slots restricts the locality of case assignment.

More concretely, the locality between a case assigner and a case assignee comes about as follows: the case assignee enters the derivation and has a limited number of case slots. Case assigners that enter the derivation shortly after the case assignee – and are consequently representationally close to the case assignee – may enter into a case relation with the case assignee. Case assigners that enter the derivation much later than the case assignee – and are consequently not close to the case assignee – are likely *not* to be able to establish a relation with the case assignee since the case assignee's capacities of entering into case relations are exhausted as soon as all the case slots are filled, see (35).



Assuming that the case assignee in (35) bears only one case slot, only case assigner<sub>1</sub> can establish a case assigning relation with it, since it is the first case assigner to enter the derivation. Case assigner<sub>2</sub> comes to late and can therefore



not establish a long-distance case assignment relation with the case assignee (see the crossed out arrow in (35)).<sup>15</sup>

Finally, note that even though the present account derives the locality of case assignment without the concept of phases (Chomsky 2001), it is in principle compatible with it because the possessor being in SpecD is visible to the functional heads *v* and T at all time.<sup>16</sup>

### 5.1.3. Morphology as an Autonomous Component of Grammar

Finally, it should be noted that if the present approach is on the right track, it suggests that morphology has to be a component different from syntax. In the analysis in section 4, the syntax and the morphology have conflicting constraints concerning the number of case slots. While the syntax tolerates the two case slots coming from the lexicon, the morphology has a constraint that prohibits the occurrence of two case slots on one head. Fusion has to apply as a repair mechanism. Thus, it is plausible that the conflict of constraints arises because the syntax and the morphology are different components.

## 5.2. Cross-Linguistic Variation

In the analysis in section 4, it is assumed that Udmurt exhibits syntactic case stacking even though it does not exhibit overt case stacking like Huallaga Quechua in (27) does. Thus, we take syntactic case stacking to be a very widespread phenomenon that is, however, sometimes disguised by the way morphology realizes stacked abstract cases. In fact, a number of other phenomena have been treated as case stacking as well under the term *Suffixaufnahme*. *Suffixaufnahme* is the traditional label for case stacking on possessors (cf. Plank 1995 for an overview on *Suffixaufnahme*). The present analysis predicts a certain range of variation between languages along the following three

<sup>15</sup>This is a derivational re-interpretation of Relativized Minimality (Rizzi 1990).

<sup>16</sup>Note that in the present approach, DP cannot be a phase, at least not in Udmurt. If DP was a phase, the NP complement of the D head would already be transferred at the point when the functional heads *v* or T assign case to the DP. Assuming Multiple Agree, the case slots on the case bearing elements inside the NP could not be filled and the derivation would crash due to the Case Filter. Thus, the assumption of DP being a phase is incompatible with the assumption of case assignment as Multiple Agree. Note further that this is not only a problem of Multiple Agree, but a problem of case concord in general: assuming that DPs are phases and that case is assigned by a DP-external head, the elements in the complement of D should be able to receive case after they have been transferred, which is not possible.

parameters: (i) a language has syntactic case stacking or not; (ii) a language has overt (morphological) case stacking or not; (iii) there are (no) restrictions on the number of cases that can stack (syntactically or overtly). We will show that examples for all these language types exist and that, consequently, the pattern in Udmurt presents just one of various possible realization strategies. We take this state of affairs as indirect evidence for the case stacking analysis of the Udmurt case split.

Parameter (i) is trivial: a language may or may not have syntactic case stacking. If it does not, then there can of course be no overt case stacking. We simply expect the realization of the single case value on a terminal. What is of interest are languages with syntactic case stacking. The question is whether such languages can stack cases overtly, this is parameter (ii) on the morphological realization of case stacking:

- (36) *Parameter (ii) on the realization of abstract case values:*<sup>17</sup>
- a. Realization of all cases: overt *case stacking*; e.g. Huallaga Quechua.
  - b. Realization of only one case:
    - (i) *Case attraction*: the case value that is assigned last is realized; e.g. Rithangu.
    - (ii) *Allomorphy*: a portmanteau morpheme realizes all abstract cases at once; e.g. Udmurt, Beztha (and other Daghestanian languages).
    - (iii) *First case*: the case that is assigned first to an element is realized; e.g. languages without case stacking that do neither apply the allomorphy nor the case attraction strategy, e.g. German.
    - (iv) *Phonological repair*:  
Phonologically identical case markers are not tolerated; e.g. Jiwari, Old Georgian, Dyirbal.

If all of the abstract case values are realized by an overt case marker, a language is said to have case stacking or *Suffixaufnahme* (cf. the strategy in (36-a)). Huallaga Quechua (see (27)) is such a language. If, however, a language does not allow for the realization of more than one case marker, it can choose from

<sup>17</sup>See Corbett (1995), Moravcsik (1995) for a similar though not identical typology of case stacking in the DP.



egy can be described in this way, e.g. German. Note that an ambiguity arises: it cannot be detected on the surface that these languages have syntactic case stacking. All of these languages could also be described by saying that they do not have syntactic case stacking in the first place, i.e., that only a single case value can be assigned to an element.

Finally, there are languages that do not have a morphological restriction on the number of cases that can be realized but a phonological restriction (cf. strategy (36-b-iv)): in some languages, case stacking is possible, but if two stacked case morphemes on the possessor are phonologically identical, one of them is deleted. This is the case in Jiwari (Pama-Nyungan, Austin 1995), Old Georgian (Kartvelian, Boeder 1995:182) and Dyrbal (Pama-Nyungan, Schweiger 1995); see Dench and Evans 1988 for further examples.

The last parameter concerns the number of cases that can stack:

(38) *Parameter (iii) on the number of cases that can stack:*

a. *Number of cases limited:*

(i) *limited to one:*

no case stacking or allomorphy / case attraction strategy

(ii) *limited to two:*

in Kanyara and Mantharta languages (West Australia) only two cases can stack.

...

b. *Number of cases unlimited:* e.g. Martuthunira.

Recall that we assumed that in Udmurt only two cases can stack in the syntax (see footnote 10 for discussion.) This is a stipulation, but apart from the fact that it makes correct predictions about the distribution of the ablative marker in structures with recursive possessors, it can be justified by the following fact: languages with overt case stacking also have restrictions on the number of cases that can stack. In Kanyara and Mantharta languages (West Australia, Austin 1995), for example, the number of case markers that can stack overtly is limited to two. Hence, language-specific restrictions on the number of case slots seem to be unavoidable anyway. In Martuthunira (Pama-Nyungan, Corbett 2006:135), however, the number of cases that can stack is unlimited, cf. (39).

(39) *Case stacking in Martuthunira:*

Ngayu nhawu-lha [ngurnu tharnta-a [mirtily-marta-a

1SG.NOM see-PST that.ACC euro-ACC joey-PROP-ACC

[thara-ngka-marta-a]]]

pouch-LOC-PROP-ACC

‘I saw that euro (hill kangaroo) with a joey (young kangaroo) in (its) pouch.’

To summarize, linguistic variation reduces to (a) variation in the morphological realization of syntactic case stacking and (b) a lexical restriction on the number of cases that can stack (overtly or syntactically). Given these parameters, Udmurt exhibits just one of the expected repair strategies that apply when a language has syntactic case stacking but only a single morphological case slot. The present analysis is a formal implementation of the intuition found in the typological literature that the Udmurt pattern (the allomorphy strategy) is indeed a special case of case stacking in which the two cases are expressed by a single lexical item. This view seems to be on the right track given that in all the languages with the Udmurt pattern that we know of (in particular the Daghestanian languages like Bezhta in (2)) the case split depends on the case of the possessor (genitive) plus the case it is assigned by an external head.

## 6. Conclusion

Udmurt exhibits a case split: possessors bear either a genitive or an ablative case suffix. These cases are in complementary distribution. Traditionally, the case split in Udmurt is described as being driven by the GF of the XP containing the possessor, defined via its position in the syntactic structure in minimalism. The choice of the possessor case in the DP thus seems to require look-ahead: at the point of case assignment to the possessor in the DP this DP is not yet merged with an external head and therefore, its GF is not yet determinable. We have argued that the case split does not depend on GFs; rather, it is determined by the case value that the DP containing the possessor is assigned. This new generalization facilitates a local reanalysis in terms of case stacking: the possessor is always assigned genitive in the DP and it may in addition be assigned another structural case from the external head which selects the DP (assignment of a semantic case in addition to the genitive is *bled* by a restriction on the number of case slots on D and N heads and the

different timing of case assignment from DP-internal and DP-external heads that follows from cyclicity). Since there is only a single slot for a case marker in Udmurt, the two case features fuse into a single feature structure in the postsyntactic morphological component. Syntactic case stacking thus *feeds* postsyntactic fusion. Only in case of a combination of genitive and accusative does a feature structure arise which is realized by the default semantic VI, the ablative exponent. There is never abstract syntactic ablative case on the possessor. This analysis does neither require look-ahead nor counter-cyclic case assignment at any point of the derivation. Independent motivation for the case stacking analysis comes from cross-linguistic variation: Udmurt simply uses one of the various expected strategies to resolve the conflict that arises when several abstract cases ‘compete’ for a single morphological case slot. Some languages realize both cases (overt case stacking), some only one of them and others, like Udmurt, fuse the abstract cases. The resulting case feature is realized by an exponent that may be different from the exponents that would have realized each of the two original case values, thus creating the illusion that the possessor is sometimes assigned genitive and sometimes ablative in the syntax, although it is never assigned abstract ablative.

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