

Abstract composite possessor case in Udmurt*

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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, an analysis of the case alternation in Udmurt within a strictly derivational framework runs into a look-ahead problem. 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. Importantly, we argue that there is no evidence for a possessor raising analysis in Udmurt. We present an analysis according to which the possessor always bears genitive but may be assigned another structural case by an external head. Due to a morphological constraint, stacked case features fuse into a single feature set in the postsyntactic morphological component. If accusative and genitive stack on the possessor, only the default semantic case marker, i.e., 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.

1. Introduction

In Udmurt, a Uralic language spoken in the Udmurt Republic in Russia, possession can be expressed in a number of ways (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

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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 and Hännikäinen 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 serves as the direct object of the transitive verb *ažžyni* 'to see', and the possessor must bear ablative.¹

(1) *Possessor cases in Udmurt:*²

- 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-*len / leš eš-s-e ažži-ško*
 he-GEN/ABL 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: a DP functions as the direct object if it is selected by V.

Similar possessor case splits 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)).³ 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 as in Udmurt. In what follows, we concentrate on the case split in Udmurt.

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

- a. *abo-s is*
 father-GEN_{dir} brother.NOM
 'father's brother'
- b. *abo-la is-t'i-l*
 father-GEN_{obl} brother-OBL-DAT
 'to father's brother'

¹Diachronically, as discussed by Edygarova (2009), the most plausible explanation for the emergence of this pattern is that it arose from so-called *expropriate-constructions* such as 'take the knife from x' which is in some sense equivalent to 'take x's knife'. Since x is interpreted as the source or point of origin of the knife in this construction, it naturally appears in the ablative. However, even though this is probably the correct analysis from a diachronic perspective, it seems highly implausible to apply the analysis synchronically because the expropriate reading only makes sense for a few transitive verbs such as 'take' or 'steal' but not for verbs like 'see' or 'beat' (cf. examples in (1-b) and (16-a)). However, ablative possessors are found across the board with all transitive verbs which assign accusative, cf. Section 3.3 for defense of this generalization.

²Unless references are provided, the Udmurt data in this paper are due to Svetlana Edygarova, a native speaker of Udmurt. The following abbreviations are used: 1, 2, 3 — person; ABL — ablative; ACC — accusative; ALL — allative; AUG — augmentative; AUX — auxiliary; DAT — dative; DEM — demonstrative; DIR — direct; ELA — elative; FUT — future; GEN — genitive; IMP — imperative; INES — inessive; INSTR — instrumental; LIG — ligative; LOC — locative; NEG — negation; NOM — nominative; OBL — oblique; PARTC — participle; PL — plural; POSS — possessive; PRES — present; PROP — proprietive; PST — past; SG — singular;

³Other 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). We will ultimately propose that Udmurt behaves exactly like these languages in that it is also the case of the possessum that is the decisive factor for the split.

- c. *is-t'i-la* *biLo-ʔ*
 brother-OBL-GEN_{obl} house-INES
 'in the brother's house'

From a theoretical perspective, the case split in Udmurt is challenging 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. Against this background, the case split in Udmurt raises two immediate questions:

1. Is there a way to reconcile 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 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:

(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 neither requires 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 in the syntax. 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, fusion of the two case features into a single case feature set has to apply in the postsyntactic morphological component. The combination of genitive and accusative on the possessor yields the abstract representation of a semantic case, which is realized by 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. 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 cyclicity problem that case assignment in Udmurt seems to pose in more detail. In Section 3 it is argued that the case split is not related to movement of the possessor. Furthermore, 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 take a closer look at why the case split in Udmurt is a challenge from a theoretical perspective.

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 takes VP as a complement. There are two more functional projections above vP, headed by T and C. In 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.

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

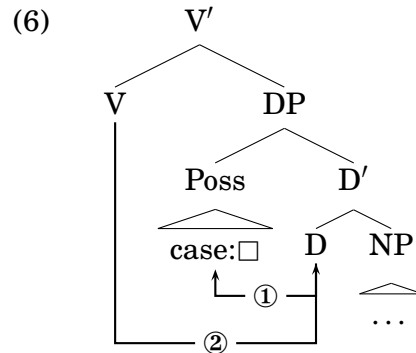
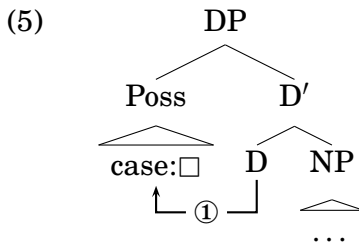
Case is assigned by functional heads to DPs under Agree (Chomsky 2000, 2001); in languages like Udmurt, v assigns accusative to DP_{int} and T assigns nominative to DP_{ext} ; D assigns abstract case to the possessor. We take Agree to involve valuation of case on a DP. Prior to case Agree, DPs do not bear a case value ([case:□]).

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

1. All syntactic dependencies (including case assignment) 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 it can additionally assign ablative to the possessor, depending on the GF of 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 ablative) 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 DP containing the possessor, that is, by the position of this DP (e.g. a DP is a direct object if it is the sister of V). However, this information is not available at the point of case assignment to the possessor within the DP; the dominating 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 (SCC):

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

- a. No operation can apply to a domain dominated by a cyclic node α in such a way as to affect solely a proper subdomain of α dominated by a node β 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.

There are two solutions to that problem. First, the assumption that all syntactic dependencies apply in accordance with the SCC and that they do not require look-ahead (assumption 1) is wrong: at least possessor case assignment in Udmurt can violate these constraints. Second, 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 the second solution since we do not want to give up standard syntactic restrictions like the SCC. This decision is supported by the results that are 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. 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 broaden the empirical basis for the analysis of the case split in Udmurt. In Section 3.1, it is shown that the genitive and the ablative possessor occupy the same structural position and that the split does not arise as a consequence of possessor raising. In Section 3.2, the functions of the ablative outside of the possessor construction are examined in comparison with the other cases. Finally, we run a number of tests in Section 3.3 in order to disambiguate the term *direct object* and to arrive at a more accurate generalization about the distribution of the ablative on the possessor.

3.1. *The structural position of the possessor*

It has been argued for a number of languages with a case split on the possessor that the split arises as a consequence of the fact that the possessor may occupy different structural positions. Depending on its exact position, it bears the default possessor case or an exceptional, more marked case. In one type of approach that is particularly prominent for Uralic languages, the possessor can optionally move to a peripheral position *within the DP* that is associated with the marked case. In the other type of approach, the possessor moves *out of the DP* to a position within the vP where it is assigned case by a functional head in the extended projection of the verb. We argue that none of these movement approaches carries over to Udmurt, and that the split in this language must thus have a different source.

We start with the first type of approach according to which the possessor may occupy different positions in the DP. A number of Uralic languages beside Udmurt 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, and Komi (cf. König and

Haspelmath 1998; Nikolaeva 2002). 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'

Szabolcsi (1984, 1994) has convincingly argued for Hungarian that the nominative and the dative possessor occupy different structural positions in the DP. 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, as shown in (9) for topicalization. Furthermore, wh-possessors must be in the dative and precede the determiner, cf. (10).

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

- a. *Mari-nak nem ismert-em* [*t'* *t* *növér-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* *növér-é-t*]
Mari.NOM not knew-1SG sister-POSS.3SG-ACC
'I never knew any sister of Mari.'

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

- a. **ki kalap-ja*
who.NOM hat-POSS.3SG
'whose hat?'
- b. *ki-nek a 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 possessor optionally moves to this position from a lower position that is 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. This is not the case. First of all, 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 and in (12) for topicalization. That extraposition of the possessor has taken place in (11) is evident because Udmurt is an SOV language, but in the examples the possessor follows the verb. In (12) the possessor has moved out of the DP to the sentence-initial position; material from the verbal domain (negation, adverbs) intervenes between the surface position and the base position of the possessor; (12-a) and (12-c) contain the baseline sentences and (12-b) and (12-d) illustrate extraction.

- (11) *Extraposition of the genitive and ablative possessor in Udmurt (Vilkuna 1997: 224):*
- a. *man'eryz sytše pereš Mikta-len*
 manner.3SG such old Mikta-GEN
 'Such is old Mikta's style.' *Poss with gen*
- b. *valze jusky so-leš*
 horse.ACC.3SG unharness.IMP.2SG s/he.ABL
 'Unharness his horse!' *Poss with abl*
- (12) *Topicalization of the genitive and ablative possessor:*
- a. *Mon Masha-leš apaj-z-e noku no öj na pumital'l'a.*
 1SG Masha-ABL sister-3SG-ACC never NEG.PST.1SG yet meet
 'I never met Masha's sister.'
- b. *Masha-leš noku no öj na pumital'l'a apaj-z-e.*
 Masha-ABL never NEG.PST.1SG yet met sister-3SG-ACC
 Lit: 'Masha's I never met sister.' *Poss with abl*
- c. *Masha-len puny-jez zhug-em-yn val.*
 Masha-GEN dog-3SG beat-PARTC-INES AUX.PST.SG
 'Masha's dog was beaten.'
- d. *Masha-len body-jen puny-jez zhug-em-yn val.*
 Masha-GEN club-INSTR dog-3SG beat-PARTC-INES AUX.PST.SG
 Lit: 'Masha's was dog beaten with a club.' *Poss with gen*

Furthermore, *wh*-possessors can bear any of the two possessor cases, in contrast to Hungarian.

- (13) *Wh-possessors in Udmurt:*
- a. *Mon Masha-leš apaj-z-e jarat-is'ko.*
 1SG Masha-ABL sister-3SG-ACC love-PRES.1SG
 'I love Masha's sister.'
- b. *Kin-leš apaj-z-e jarat-is'ko-d?*
 who-ABL sister-3SG-ACC love-PRES.2SG
 'Whose sister do you love?' *wh-Poss with abl*
- c. *Masha-len apaj-ez Petyr-ez jarat-e.*
 Masha-GEN sister-3SG Peter-ACC love-PRES.3SG
 'Masha's sister loves Peter.'
- d. *Kin-len apaj-ez Petyr-ez jarat-e?*
 who-GEN sister-3SG Peter-ACC love-PRES.3SG?
 'Whose sister loves Peter?' *wh-Poss with gen*

To conclude, we do not have any evidence from extraction that genitive and ablative possessors in Udmurt occupy different structural positions in the DP.

Another analysis that comes to mind when looking at the case split in Udmurt is a possessor raising analysis. In some languages possessors seem to be dependent of the verb instead of the possessum noun (*external possession*, see König and Haspelmath 1998 and Deal 2013 for an overview). External possessors are often taken to be moved from a DP-internal position into the vP domain; they receive an external case in this domain, i.e., a case that is not assigned to the possessor DP-internally (see e.g. Munro 1984; Allen et al. 1990; Landau 1999; Kishimoto 2013 and references cited there). Hence, the different structural position (DP-internal vs. DP-external) is argued to be responsible for the case split. A recent proposal along these lines has been put forward in Deal (to appear) for Nez Perce. In this language, the possessor usually bears genitive, but if the possessum is the direct object, it bears the objective case (the case assigned to the internal argument of a transitive verb). Hence, there is a case split in Nez Perce that seems to be conditioned by the same factor as the split in Udmurt (but see Section

3.3 for refinements of the generalization in Udmurt). Deal (to appear) argues for Nez Perce that a possessor of an NP that is the direct object of a verb obligatorily undergoes movement out of the DP into a non-thematic A-position in the vP where it is assigned the objective case.

The following arguments for possessor raising have been given in the literature (see Stump and Yadav 1988 for an overview): (i) The raised possessor triggers the agreement on the verb; the possessum ceases to do so. (ii) The raised possessor bears the prototypical case of a core argument; the possessum ceases to bear this case. (iii) If a language exhibits agreement between the possessor and the possessum, a raised possessor ceases to trigger agreement on the possessum. (iv) The possessor with the properties in (i), (ii), and (iii) can be freely separated from the possessum. That a possessor sometimes behaves like a dependent of the verb follows under a raising analysis.

Concerning Udmurt, test (i) is not applicable since Udmurt does not have object agreement. With respect to test (ii), the result is negative: the exceptional possessor case (ablative) is not identical to the prototypical internal argument case, which is (usually) accusative. Furthermore, the possessum continues to bear accusative if the possessor has the ablative (cf. e.g. (1-b)). As is also evident in (1-b) and a number of other examples in this paper, agreement between the ablative possessor and the possessum is not suppressed. Thus, test (iii) also fails. With respect to test (iv) we have already shown in (11), (12), and (13) that there are no extraction asymmetries in Udmurt between genitive and ablative possessors. We therefore conclude that there is no (obligatory) possessor raising of ablative possessors out of the DP either.

In general, there is no evidence for raising of the ablative possessor, neither to a DP-internal nor DP-external position. The case split on Udmurt possessors must thus have a different source than the well-known cases of possessor case splits in the literature.⁴

Finally, it should be noted that there is in principle an alternative analysis according to which the ablative is directly governed by the verb (for an example of a verb governing the ablative, see (15-f)). This alternative cannot be maintained because the ablative on the possessor only occurs with verbs that assign accusative and never with verbs that assign ablative (see Section 3.3 for arguments); hence, the ablative on the possessor cannot simply be assigned by V.

3.2. *Functions of the ablative*

Udmurt has 15 cases altogether, as shown in (14). We divide them into two groups: structural and semantic cases. Structural case is assigned to a DP in a certain position in the syntactic structure independent of the theta-role of the DP in that position. The group of structural cases comprises nominative, accusative, and genitive. Semantic case encodes a semantic relation (involving theta-role assignment) between the DP and the governing head. Semantic cases are typical adjunct cases (Wunderlich and Lakämper 2001; cf. theta-related case in Řezáč 2008). This distinction plays an important role in the analysis in Section 4.

⁴Indeed, Baker (1988) proposes an analysis of a split in possessor encoding in Mohawk that does not involve movement of the possessor. Rather, V can enter into an Agree relation with the possessor in-situ (Deal 2013 refers to this type of analysis as the ‘classical possessor government analysis’). This becomes possible by incorporation of the N head (the possessum) into the governing V head, which breaks up the intervening NP barrier that usually blocks the Agree relation. The result is similar to what we find in Nez Perce: the possessor behaves exactly like a direct object of a verb with respect to case and/or agreement. In Section 4 we also assume for Udmurt that the possessor is assigned the case of the governing verbal head in its base position in addition to the prototypical possessor case genitive. This analysis is thus a special instance of the possessor government analysis.

(14) *Case system in Udmurt:*

<i>Structural cases</i>	<i>Semantic cases</i>	
nominative	dative	inessive
accusative	ablative	elative
genitive	abessive	illative
	adverbial	egressive
	instrumental	transitive
	approximative	terminative

Let us concentrate on the ablative. The core function of the ablative marker is to encode adjuncts expressing source and origin (cf. (15-a)). In addition, it has a number of other functions in Udmurt (cf. Edygarova 2009; Winkler 2001): it is used to express comparison (cf. (15-b)), the cause of an action (cf. (15-c)), the material something is made of (cf. (15-d)), and it encodes possessors. Furthermore, the ablative is governed by some postpositions (cf. (15-e)) and verbs (cf. (15-f)).

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

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

Thus, the ablative appears in a variety of contexts that are not reducible to its core function. 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): local cases only occur in their core function, other cases like e.g. the instrumental can additionally be governed by verbs and postpositions. We conclude from these facts that the ablative marker is the *default semantic case marker* in Udmurt. This assumption will be important for the analysis of the ablative case on the possessor and is formally implemented in Section 4.⁵

⁵Vainikka (1993) argues that the elative is the default semantic case for adjuncts in Finnish because it appears in a variety of contexts that are not related to its canonical locative function. This canonical function is similar to that of the ablative in Udmurt: both encode the relation 'from x'. In van Riemsdijk (1983, 2012), it is also argued that other cases besides the nominative can have a default character, e.g. the dative in German.

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. This begs the question 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 possessor case in Udmurt. There are basically three possible interpretations of this term:

1. *Thematic role:*

The possessor bears ablative if the XP immediately dominating the possessor DP has the macro-role patient.⁶

2. *Position in the tree:*

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

3. *Case:*

The possessor bears 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, we test the hypotheses against data for which they make different predictions.

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 bear 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. (16-a). If this verb is passivized, the DP with the possessor becomes the sole argument of the passivized verb. Since passivization 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 (16-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.

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

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

Next, we test whether interpretation 2 makes the correct predictions: only if the DP immediately dominating the possessor remains in its VP-internal base position does 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 has 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.

We control for the VP-internal position of the DP by means of adverbs that mark the VP-boundary. Example (17) is based on the passivized sentence in (16-b). In addition, it contains

⁶Dominance is to be understood non-reflexively in these definitions.

a manner adverb. There is evidence that manner adverbs are very low in the structure: in a sentence like (18) with a sentential adverb, a temporal adverb and a manner adverb, the manner adverb must be closest to the verb; none of the other adverbs can be placed after the manner adverb. We thus take the manner adverb to mark the VP boundary. With this in mind, look at the example in (17). Since the DP with the possessor is to the right of the manner adverb, it must be in the VP. The possessor in that DP still receives genitive case. This falsifies interpretation 2, since it would predict ablative case instead of genitive case on the possessor of a VP-internal possessum.

(17) *Manner adverb:*

Tuzh zol Masha-len puny-jez zhug-em-yn val.
 very strong Masha-GEN dog-3SG beat-PARTC-INES AUX.PST.SG
 ‘Masha’s dog was beaten brutally.’

(18) *Adverb placement:*

Zhaljasa verano, (tolon) Petyr (tolon) puny-jez zol zhug-i-z.
 unfortunately yesterday Peter yesterday dog-ACC strong beat-PST-3SG
 ‘Unfortunately, Peter brutally beat a dog yesterday.’

Further evidence that the sole argument of a passivized verb that contains a possessor can stay in its VP-internal base position comes from topicalization and coordination. In (19) the constituent consisting of the passivized verb and its sole argument is topicalized. The fact that the low manner adverb and the passive auxiliary (which realizes a functional head in the extended verbal projection) are stranded suggests that this is an instance of VP topicalization. Crucially, the possessor in the VP-internal DP gets genitive, which again falsifies interpretation 2.

(19) *VP topicalization:*

[*Masha-len puny-jez zhug-em-yn*] *tuzh zol val.*
 Masha-GEN dog-3SG beat-PARTC-INES very strong AUX.PST.SG
 Lit: ‘Masha’s dog beaten brutally was.’

Furthermore, the constituent consisting of the passivized verb and its sole argument can be conjoined with an equivalent constituent to the exclusion of the preceding manner adverb and the passive auxiliary, cf. (20). Importantly, the adverb and the auxiliary can have scope over both conjuncts as indicated in the translation. Again, this suggests that two VPs have been conjoined. Nevertheless, the possessor of the DP in the VPs receives genitive case, in conflict with interpretation 2.

(20) *VP coordination:*

Tuzh zol [[*Masha-len puny-jez zhug-em-yn*] *no* [*Petyr-len kotshysh-ez*
 very strong Masha-GEN dog-3SG beat-PARTC-INES and Peter-GEN cat-3SG
tshyzh-em-yn]] *val.*
 kick-PARTC-INES AUX.PST.SG
 Lit: ‘that brutally [Masha’s dog beaten and Peter’s cat kicked] was.
 ‘that Masha’s dog was brutally beaten and Peter’s cat was brutally kicked.’

So far we have excluded interpretations 1 and 2; only interpretation 3 remains. This leads us to the following generalization:

(21) *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 generalization is also compatible with the following observations: First, 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 and will be shown for a possessor in a genitive DP in (26). (22) illustrates this for dative case (a semantic case). The verb *akyltni* ‘to bother’ assigns dative instead of accusative to its internal argument. If the dative marked argument contains a possessor, this possessor must not bear ablative but genitive instead, cf. (22). This is correctly predicted by the generalization in (21).

(22) *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.’

The second observation that is compatible with the generalization in (21) concerns ECM constructions. 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 of that clause. If the embedded subject contains a possessor, this possessor must bear ablative and the possessum bears accusative, cf. (23).

(23) *ECM construction in Udmurt:*

Petyr [Masha-leš puny-z-e tyloburdo-os-ty kutyl-e] malpa
 Peter Masha-ABL dog-3SG-ACC bird-PL-ACC.PL catch-PRES.3SG 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 selected by 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 nominalized clause bears genitive instead of nominative. This can be seen if a nominalized clause is used as a sentential subject, cf. (24).

(24) [*Petyr-len Masha-leš pyny-z-e vi-em-ez] myn-ym ug*
 Peter-GEN Masha-ABL dog-3SG-ACC kill-PARTC-3SG 1SG-DAT NEG.PRES.3
jara
 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. (25). This is expected given the generalization in (21): a DP that usually bears genitive gets the ablative marker if the XP immediately containing it is assigned accusative (here, by matrix v). Example (25) furthermore 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 that the XP which exhibits the split usually bears genitive.⁷

⁷Another potential test case for the generalization in (21) would be one in which a DP with a possessor is selected by an accusative assigning postposition. The majority of postpositions govern 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). Hence, the prediction that there should be ablative on the possessor of the DP selected by an accusative assigning postposition cannot be tested.

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

Finally, consider what happens to case marking in recursive possessor constructions: if a DP that contains multiple possessors is not assigned accusative, as e.g. in (26) where it is the sole argument of an intransitive verb that bears nominative (a zero marker), all possessors in that DP bear genitive. If, however, a DP that contains multiple possessors is assigned accusative, only the structurally highest possessor gets ablative; the possessors that are more deeply embedded still get genitive marking, cf. (27) (see also Edygarova 2010: 177).

- (26) *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.’
- (27) *Petyr Masha-len apaj-ez-leš puny-z-e zhug-i-z*
 Peter Masha-GEN sister-3SG-ABL dog-3SG-ACC beat-PST-3SG
 ‘Peter has beaten Masha’s sister’s dog.’

This pattern is predicted by the generalization in (21): the lower possessor *Masha* is immediately dominated by the DP *Masha’s sister* that bears ablative. Since accusative marking of the dominating DP 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 accusative case.⁸

To conclude, hypothesis 1 is falsified by the data from the active-passive alternation in (16); hypothesis 2 can be rejected on the basis of the placement of low adverbs to the right of a DP with a genitive possessor in (17), VP topicalization in (19) and VP coordination (20). In addition, both hypotheses can be refuted by the ECM constructions in (23) and (25). Hypothesis 3 is compatible with all the data, viz., it is the case value of the DP containing the possessor that is the decisive factor for the case split in Udmurt, and not its GF.⁹

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 derivation of the generalization in (21) that crucially relies on case stacking and the default nature of the ablative marker.

⁸Since we will pursue a syntactic case stacking analysis for Udmurt, it is interesting that a similar constraint holds in Lardil (Tangkic, Australia), a language with overt case stacking: Richards (2013: 50-51) notes that whereas the structurally highest possessor exhibits overt case stacking in Lardil — it bears the prototypical possessor case genitive plus the case that the dominating DP is assigned — lower possessors can only bear a single genitive marker, i.e., they do not allow for genitive stacking. Richards argues that this is not simply a haplology effect because it is also impossible to stack any other case or tense marker on top of the genitive although these markers can usually stack on top of case markers. Richards does not offer an explanation for this constraint. For a proposal on how to derive this effect in Udmurt, see Section 4.

⁹While in his 1999 book (as cited in Section 1) Valentin K. Kel’makov notes that the condition for the case split in Udmurt is the GF of the DP containing the possessor, he confirms our case-based interpretation of the data upon enquiry (p.c.).

4. Deriving the new generalization

The generalization in (21) with the case 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. Recall that the look-ahead problem arises under the assumption that the D head in Udmurt can assign genitive and ablative to the possessor, but the choice between these cases depends on an information that is not present at the point of case assignment in the DP, namely the properties of the external head that selects the DP containing the possessor and the possessum. Note that this issue potentially still arises under the new generalization because the case that the entire DP bears is assigned by an external head and this head is not yet merged when D assigns case to the possessor. However, there is a way to circumvent this problem given the generalization in (21): we propose that the D head in Udmurt only assigns genitive case. Since it does not assign any other case, no choice between case values has to be made in the DP depending on the properties of the external head, and hence no look-ahead is required. The ablative marker is analyzed as the result of case stacking: it is the realization of abstract genitive and abstract accusative stacked on the possessor in the syntax; there is no abstract ablative case on the possessor.¹⁰

The derivation of the generalization in (21) is divided into three subparts that contain assumptions about the lexicon, the syntax of case assignment and the morphological realization of abstract case features. We consider them in turn.

4.1. The lexicon

As has already been introduced in Section 3.2, Udmurt exhibits a rich case system. We divide the cases into groups of structural and semantic cases, cf. (28).

(28) *Case system in Udmurt:*

<i>Structural cases</i>	<i>Semantic cases</i>	
nominative	dative	inessive
accusative	ablative	elative
genitive	abessive	illative
	adverbial	egressive
	instrumental	transitive
	approximative	terminative

We assume that abstract cases are decomposed into the two 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.¹¹ [$+$ 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,

¹⁰Diachronic facts of the Finno-Ugric language family corroborate the case stacking analysis. For Finnish, e.g., it has been argued that the local cases, among them the ablative, are a combination of two case markers. See Abondolo 1998: 167, Suhonen 1988: 302 and Grünthal 2003 for details. Thanks to András Bárány for pointing these facts out to us.

¹¹The distinction between [$-$ obj]-cases and [$+$ obj]-cases is confirmed by the fact that there are no verbs in Udmurt that assign the [$-$ obj]-cases genitive or nominative to the DP in object position. In contrast, verbs govern the [$+$ obj]-cases, including the semantic cases, such as dative, ablative, or instrumental.

are nominative and accusative; all remaining cases are [+obl].¹² 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 (29-a); the decomposition for the semantic cases is given in (29-b).

- (29) 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 [$\pm f$], [$\pm g$], etc. in (29); 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 Massam 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.¹³

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 (30) (Arkadiev 2006). In Romani for example, the semantic cases are built on the basis of the structural case accusative.

- (30) 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 on the cases and their representation in Udmurt, 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, i.e., they have a lexical property allowing them to receive up to two case feature sets. This is illustrated in (31-a) for D and (31-b) for N.

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

Each of these unvalued ‘slots’ can be valued by a structural 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 (on case stacking see e.g. McCreight 1988; Andrews 1996; Nordlinger 1998; Yoon 2004; Merchant 2006; Pesetsky 2010; Richards 2013; see Section 5 and footnote 10 for further discussion). A number of languages can overtly stack cases on

¹²In 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.

¹³In 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).

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 (32). What we assume is that this stacking happens in Udmurt syntax as well (wrt. to abstract cases), although the cases cannot be stacked overtly in Udmurt (wrt. to case exponents). We come back to this issue in Section 4.3.

(32) *Case stacking in Huallaga Quechua (Pylkkänen 2002):*

Hipash-nin-ta kuya-: 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 must receive at least one abstract case, i.e., one case feature set.

The second assumption concerns the valuation potential of structural and semantic cases: 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 structural 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 [$\pm\text{obl}$, $\pm\text{obj}$]; the second 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, they form a unity. An important consequence of this assumption is that only two structural cases can stack. One structural and one semantic case 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 possible then.¹⁴ 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.¹⁵

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.¹⁶ For the sake

¹⁴It has repeatedly been noted in the literature (Babby 1984, 1990; Moravcsik 1995; Richards 2013) that the structural/semantic (or: structural/inherent) case distinction plays a central role in case stacking languages: often, XPs with a structural case S do not allow for stacking of another case R; rather, the structural case S is replaced by case R, i.e., there is no overt stacking. In contrast, XPs with a semantic case either allow for stacking or block stacking, but the semantic case is not replaced by case R (see e.g. Japanese topic marking, the Russian genitive of negation, case stacking in Lardil). Although the constraints on stacking in Udmurt are different, the split between these two types of cases is important for Udmurt as well, since stacking is only possible for structural cases.

¹⁵The fact that DPs 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: 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. See Section 5.2 on cross-linguistic variation concerning the number of cases that can stack.

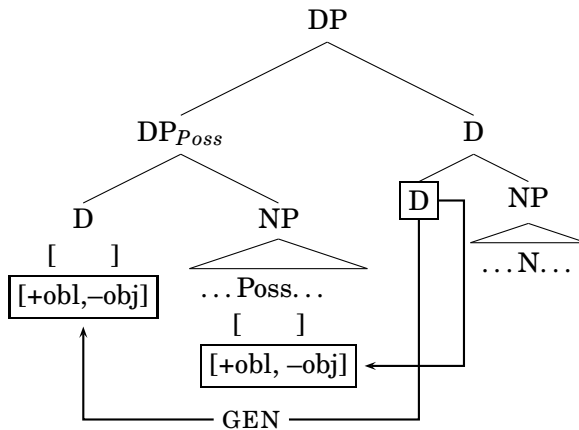
¹⁶Under the assumption that the case assigner must c-command the DP, a problem with genitive case assignment arises: we assume that possessor DPs are specifiers within DP. Consequently, they are not in the c-command domain of the D head which assigns genitive case. In order to solve this problem, one could adopt the search

of concreteness, we assume that semantic cases are assigned to their complements by zero adpositions (cf. Pylkkänen 2002; Řezáč 2008; Hole 2008, among others).

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; Vainikka and Brattico 2010), i.e. to D and N heads (and other DP-internal heads which inflect for case). That means that the case of a functional head can be assigned to more than one element.¹⁷ 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.

Given these assumptions, case assignment in clauses with a possessor proceeds as follows. We start with genitive assignment in the DP. As shown in (33), 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.

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



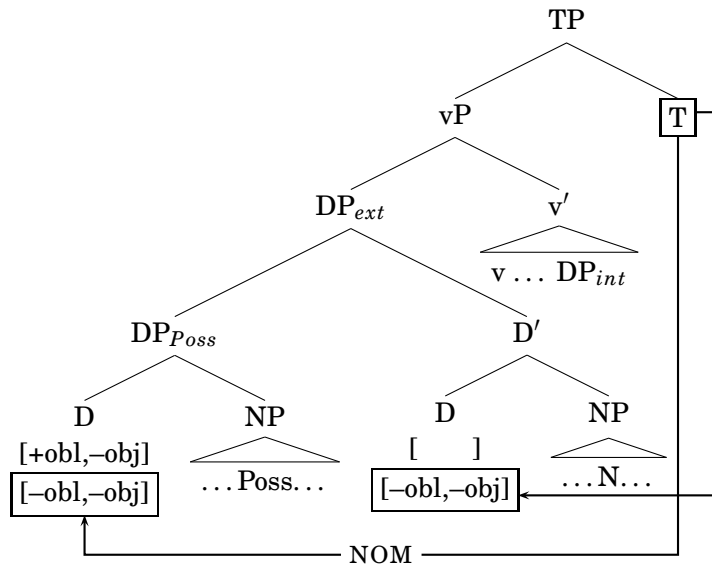
In the following derivations, the entire DP in (33) is merged into different positions in the clausal spine. The initial step of DP-internal genitive assignment to the D and N head in the possessor DP always takes place, but for the sake of clarity we do not indicate it anymore in the following trees. 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.

In the first context, 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. (34). 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.

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.

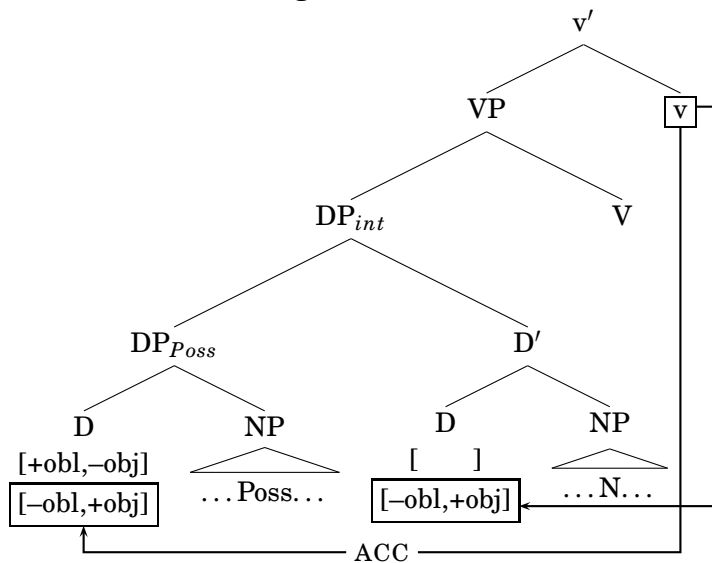
¹⁷There are two related proposals on concord that we do not adopt here for various reasons. (i) Case is assigned to the sister node δ of a case assigner and, unless blocked by independent principles, the case value on δ spreads downward in the domain dominated by δ (see Matushansky 2008; Bjorkman to 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.

(34) *Nominative case assignment:*



Virtually the same happens if the DP in (33) is merged as the internal argument of a transitive verb. In that position, *v* assigns accusative $[-obl, +obj]$ to the D head of the internal argument, 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.

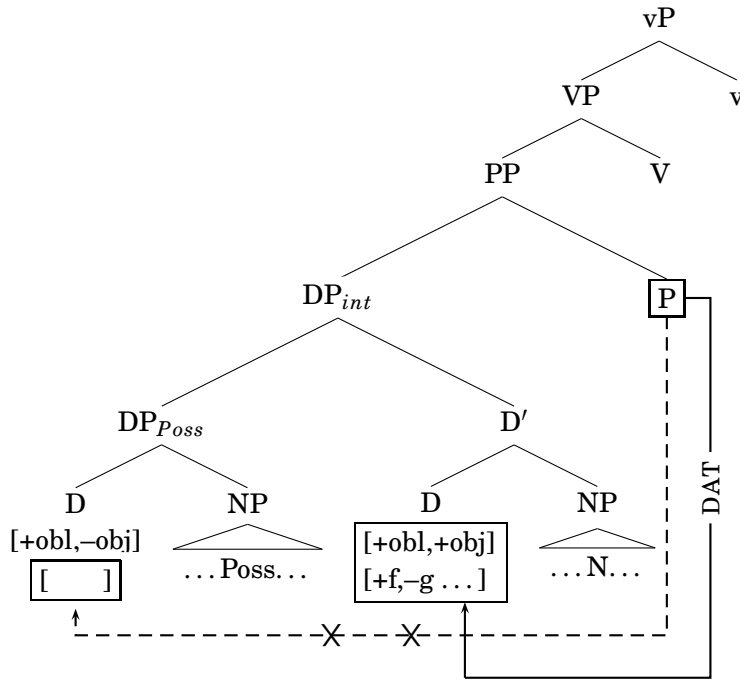
(35) *Accusative case assignment:*



In (36), the DP containing the possessor is assigned a semantic case. This happens if the DP is the sister of a zero postposition. This PP may, for example, be merged as the internal argument of *V*, cf. (36). For concreteness, we illustrate semantic case assignment with dative, but the derivation would be the same with any other semantic case value. In (36), *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 structural features $[+obl, +obj]$ and the other one with the semantic case feature set $[+f, -g, \dots]$. Crucially, however, *P* cannot assign dative to the possessor. The reason is that one case slot of this head is already filled with genitive. Thus there is not enough 'space' left on the D head of the possessor for the dative case. Consequently, there is no case stacking on the possessor if the case assigned to the dominating DP is a semantic case.¹⁸

¹⁸The second case slot of D remains unvalued in (36). This begs the question whether the empty case slot on

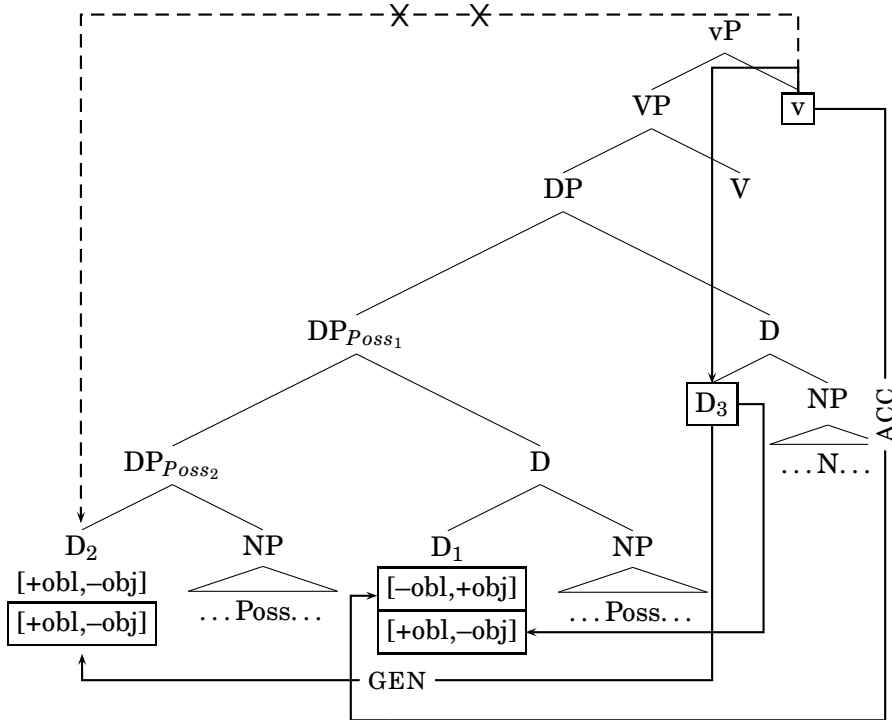
(36) *Dative case assignment:*



Finally, consider a case of double possessors with double genitive assignment to the most deeply embedded possessor. In (37), the structurally highest DP contains a possessor DP (DP_{Poss_1}) in its specifier which in turn contains a possessor (DP_{Poss_2}). Within DP_{Poss_1} , the lower possessor (DP_{Poss_2}) receives genitive from D_1 . Next, DP_{Poss_1} is merged and D_3 assigns genitive to all elements that are dominated by DP_{Poss_1} and still have an empty case slot, including D_2 and D_1 . As a result, D_2 bears genitive twice and D_1 bears it once, its second case slot is yet unvalued. The complex DP containing the two possessors can now be merged with another head. If it is the sister of a transitive verb, it is assigned accusative by v . Recall that, empirically, in such a configuration only the structurally highest possessor ends up with the ablative (cf. (27)); the most deeply embedded possessor must bear genitive. This is predicted by the analysis in (27): since the two slots of the lower possessor are already filled with genitive case, accusative can only be assigned to the higher possessor that still has an empty slot available. Since accusative is a prerequisite for a possessor's occurrence with ablative marking, the lower possessor will bear the genitive suffix. The different morphological marking of the two possessors in a multiple possessor construction thus follows from the restriction on the number of case slots in Udmurt (an assumption that will be further discussed in Section 5.2) and the different structural position of the possessor DPs.

the possessor can be valued by a structural case assigned by a higher head; it could, for example, be valued with accusative from v in a ditransitive construction where the PP functions as the indirect object. This would predict ablative marking on the possessor of the indirect object. But this is not borne out. To prohibit accusative assignment to the empty slot, one could assume the PP to be intransparent for Agree. See Section 5.1.2 for a discussion of boundedness of case assignment.

(37) *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), which 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. 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. (38) (see Zwicky 1977; Wunderlich 1996; Harley and Ritter 2002; Nevins 2003, among others).¹⁹

¹⁹The fact that only positive feature values are used in Udmurt may be taken to suggest that the system would also work with privative features instead of binary ones. However, using privative features does not work without making further assumptions. The following problem arises: case feature sets which are solely represented by negative feature values in the binary system are completely empty in the privative system (as for nominative wrt. the structural case feature set; as for the ablative wrt. the semantic case feature set). Thus, the question arises how the absence of features can block further case assignment: on the one hand, a nominative DP should be able to receive two structural cases or one semantic case in addition to the nominative; on the other hand, abstract ablative would fill only one case slot, which wrongly predicts that a possessor dominated by a DP that receives ablative should receive ablative in addition to genitive, resulting in ablative marking on the possessor. A solution to these problems would be to exploit the set-theoretic idea that underlies our concept of case slots. Cases are represented by one or two case feature sets. Thus, nominative would be represented by an empty feature set $\{\emptyset\}$; ablative would be $\{+obl, +obj\}[\emptyset]$. As a consequence, nominative could fill a case slot since $\{\emptyset\} \neq \emptyset$. The ablative would fill two case slots, one with $\{+obj, +obl\}$, the other one with \emptyset .

(38) *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 the positive semantic features, e.g. in (38), the dative VI, is specified for the semantic feature [+f] in addition to being specified as [+obl, +obj]. How exactly the semantic case features are distributed over the semantic case VIs is of no importance, and we thus only indicate the dative VI in (38). What is of central importance is the specification of the ablative exponent: this semantic VI is fully specified for [+obl, +obj], as all the semantic case VIs; however, 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 (argued for in Section 3.2): it 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. 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 feature 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).²⁰ Fusion is a set-building operation which unifies the features of the two case slots into one. Several instances of identical values are reduced to a single instance of that value. The results of fusion are shown in (39). 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 that realizes this fused feature structure is given in brackets (see the list of VIs in (38)).

- (39) 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)

²⁰Note that fusion as we use it here is a bit different from the concept in the literature. Fusion standardly applies 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.

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, e.g. dative in (39-a). Recall that any stacking of an abstract semantic case and the genitive is excluded already in the syntax (cf. (36)). Thus, the D head of the possessor has only one valued case slot in such a context. Consequently, fusion of the genitive feature set with an empty set 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 (39-b); cf. (34). 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 is thus determined by the positive feature from the abstract genitive alone.

In the case of multiple possessors, all possessors except for the structurally highest one end up with genitive-genitive stacking (cf. (37)). Since fusion is a set-building operation, the result in (39-c) is a representation of the genitive, which is of course also realized by the genitive VI.

The interesting context is the one shown in (39-d): abstract accusative and abstract genitive stack (cf. the derivations in (35) and in (37)). 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 only matching semantic VI is the ablative VI, since it is the most underspecified semantic case marker. In (39-d), the representations before and after fusion contain no semantic features. Thus, all semantic case VIs except for the ablative do not match the context for insertion in (39-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 possessors: nominative and accusative, cf. (39-e). These could, e.g., potentially stack on the head of an internal argument of a transitive verb: 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, ...]) on the possessor; rather, it realizes the combination [+obl, +obj] that arises due to fusion of abstract genitive and accusative.

4.4. *Interim conclusion*

Under the assumption that D and N heads in Udmurt bear two case slots, Udmurt allows for limited case stacking in the syntax. Postsyntactic morphological fusion unifies the two case slots (see (39)). 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. Importantly, we do not claim that *every* occurrence of an ablative marker is the result

of stacking genitive and accusative in the syntax. Ablative marking can also result from the assignment of abstract ablative.

It should be noted that in the case of genitive and ablative stacking, a new feature representation arises in the morphology ([+obj, +obl]) that was not present in the syntax, i.e., none of the individual abstract cases was specified as [+obl, +obj]; this representation only arises after postsyntactic fusion (cf. Trommer 2006; Müller 2006; Georgi 2012 for related proposals). As a consequence of fusion, a *more specific* VI is inserted when genitive and accusative stack: we find the ablative marker instead of the less specific genitive marker. This is the reverse of the effect of impoverishment (Bonet 1991; Noyer 1992; Halle and Marantz 1993, 1994; Bobaljik 2002; Frampton 2002): impoverishment deletes features prior to vocabulary insertion and thus leads to the insertion of a *less specific* VI. Fusion has exactly the opposite effect without adding new features (i.e. enrichment).

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 (37)). Lower possessors will receive genitive twice, which leaves no slot for the accusative case to be assigned, which in turn does not create a context where the ablative marker can be inserted. This context may only arise on the structurally highest possessor and thus only this possessor can bear the ablative marker. This analysis crucially relies on the restriction that all case bearing items cannot have more than two case slots; otherwise the abstract accusative could spread to more deeply embedded possessors in recursive possessor constructions and these possessors would be wrongly predicted to bear the ablative marker.

5. Discussion of the consequences

This section provides a discussion of technical and empirical consequences. We start with some theoretical issues, especially the cyclicity and locality of syntactic operations. Afterwards we will turn to a 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) no operation may require look-ahead or violate strict cyclicity, an analysis of the case split with possessors in Udmurt runs into theoretical problems.

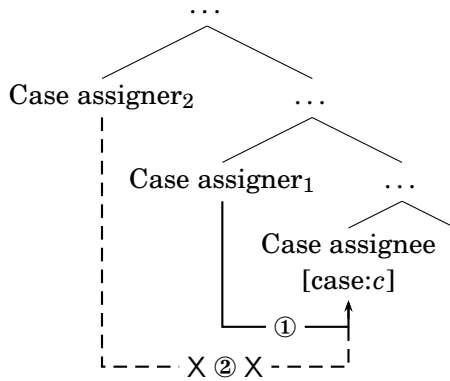
The analysis developed in Section 4 overcomes these problem by adopting the possibility of case stacking and the postsyntactic morphological operation fusion. The look-ahead problem does not arise because the D head only assigns a single case (genitive). Hence, there is no need to choose between genitive and ablative assignment in the DP depending on the nature of the external head that will later select the DP. Genitive is always assigned to the possessor. Due to case stacking, the relevant information about the external case is present on the possessor; there, it can be locally manipulated by fusion in the postsyntactic morphological component. Given a late insertion model, fusion influences the case marker that is inserted, leading to a case split.

5.1.2. Locality

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. 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 (40).

(40)



Assuming that the case assignee in (40) bears only one case slot, only case assigner₁ can establish a case assigning relation with it, since it is the first case assigner to enter the derivation. Case assigner₂ comes too late and can therefore not establish a long distance case assignment relation with the case assignee (see the crossed out arrow in (40)).²¹

However, the question arises whether this kind of ‘locality by intervention’ is sufficient to derive all kinds of locality effects with respect to case marking in Udmurt. Vainikka and Brattico (2010), for instance, have argued for Finnish that accusative case assignment can be long distance and can even cross a potentially infinite number of non-finite clause boundaries. But, as they show, certain finite clause boundaries cannot be crossed by accusative case marking. Hence, they need an additional mechanism which ensures that some XPs block non-local case assignment and some do not.

The same seems to hold for Udmurt. Certain finite subordinate clauses are intransparent for case assignment. In (41) accusative case assignment of matrix *v* does not affect elements within the adjunct clause. If accusative case marking was unbounded, we would expect it to turn up on the subject of the adjunct. But, as we can see in (41), the embedded subject *Masha’s brother* still bears nominative.

- (41) *Mon Petyr-ly ken’esh s’ot-i Masha-len agaj-ez kyly-mte*
 1SG Peter-DAT advice.ACC give-PST.1SG Masha-GEN brother-3SG hear-PARTC.NEG
dyrja.
 when
 ‘I gave Peter an advice without Masha’s brother hearing it.’

One might object that the adjunct clause in (41) is base-generated too high up in the tree to be within the c-command domain of matrix *v*. If the subordinate clause was base-generated as an adjunct to matrix *v* or even higher in the tree, we would have an explanation for the fact that the matrix accusative does not overwrite the embedded nominative. While this explanation might save us cases like (41), it fails to do so in examples like (42). In (42), the direct object is modified by a restrictive relative clause. Since relative clauses are contained within the DP they modify and the DP is within the c-command domain of *v* (because it receives accusative),

²¹This is a derivational re-interpretation of Relativized Minimality (Rizzi 1990).

the relative clause is also within v's c-command domain. Again, if accusative case marking was unbounded, we would expect the subject of the relative clause to bear accusative. But it bears nominative.

- (42) *Mon ažži-ško vorgoron-ez kudz-e puny/*-jez kurch-i-z.*
 I see-PRES.1SG man-ACC which-ACC dog/*-ACC bit-PST-3SG
 'I see a man who a dog has bitten.'

Hence, we may conclude that, as Vainikka and Brattico (2010) also assume, certain XPs (e.g. adjunct clauses, relative clauses, etc.) are intransparent for case assignment. Or in other words, there must be some XPs which block Multiple Agree.

Another potential instance of an unbounded accusative spreading downwards has been raised in footnote 18: the case of the possessor of an indirect object in ditransitive constructions. The situation is illustrated in (43).

- (43) $[_{vP} [_{VP} [_{PP} [_{DP_{ind.obj.}} DP_{poss} D NP] P] DP_{dir.obj.} V] v]$

 GEN DAT ACC

The possessor receives genitive case within the DP but it does not receive dative from the post-position because dative case occupies two slots and the possessor has only one slot remaining at that point of the derivation (see the crossed out dashed line in (43), compare also the derivation in (36)). Since the dative does not fill the remaining slot, the question arises whether the empty slot can be filled by a head which is even higher in the structure; in our case v, which assigns accusative case (see the dotted line in (43)). If the remaining slot on the possessor could be filled by v, we would expect ablative case on the possessor of an indirect object because its resulting feature specification would be [+obj,−obl][−obj,+obl]. After fusion, this feature specification is realized by the ablative marker. However, this prediction is not borne out:

- (44) *Masha Petyr-len agaj-ez-ly kuz'ym s'ot-i-z.*
 Masha Peter-GEN brother-3SG-DAT present.ACC give-PST-3SG
 'Masha gave Peter's brother a present.'

The possessor of the indirect object bears genitive and thus we may conclude that, just like relative clauses, PPs must be intransparent for long-distance case assignment as well.

Such cases of intransparency can be modeled in various ways. One possibility is the concept of phases. It has repeatedly been argued in the literature that certain XPs are phases. Those XPs that we observe to be intransparent (finite subordinate clauses, PPs; cf. e.g. Chomsky 2001; Abels 2003) are a subset of these XPs, while those which seem to be transparent in our system (e.g. non-finite clauses such as ECM-constructions in (23)) are not. Hence, an explanation for this kind of intransparency in terms of phases seems plausible.²²

Finally, we take a look at a construction in which it seems that a low nominative may appear within other DPs. If this was the case, the construction would pose a serious problem for our theory of case stacking because we could not explain why the deeply embedded nominative is not overwritten by other structural cases. The issue arises with another, less frequent, possessor construction in Udmurt (cf. Kel'makov and Hännikäinen 1999; Winkler 2001; Suihkonen 2005; Edygarova 2009, 2010). An example is given in (45).

²²Note 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 and would never receive case at all. 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.

- (45) *kion vuz-em*
 wolf howl-PARTC
 ‘a wolf’s howling’

(Edygarova 2009: 110)

In this secondary possessor construction, which is mostly used for indefinite possessors or possessors with no reference denotation, the possessor always bears nominative (zero suffix) and it does not alternate with respect to the syntactic position of its head noun. In contrast to the primary possessor construction in Udmurt (compare (11)–(13)), an unmarked possessor must immediately precede its head noun; i.e. no element may intervene between possessor and possessum.

(46) shows that in the secondary possessor construction, the nominative on the possessor is not overwritten by the accusative of the head noun. Of course, this raises the question, why, given our analysis of Section 4, this should be so.

- (46) *Mon kion vuz-em-ez kyl-i*
 I wolf howl-PARTC-ACC hear-PST.1SG
 ‘I heard a wolf’s howling’.

One possibility would be to account for the difference in case-marking by difference in structure. It has been claimed in the literature that morphosyntactic differences between alienable and inalienable possessors are reflected by a different position in the tree (see e.g. Vergnaud and Zubizarreta (1992); Alexiadou (2002) and references cited therein). A similar distinction could be assumed for the two possessor constructions in Udmurt. The primary possessive construction corresponds to the alienable possessor construction and the secondary nominative possessor construction to the inalienable counterpart, cf. (47). This assumption is not implausible because inalienable possessors cross-linguistically tend to be unmarked.

- (47) a. *Alienable Possession* b. *Inalienable Possession*
- DP

↙ ↘

Poss_{DP} D'

 ↙ ↘

 D NP

 |

 car

DP

↙ ↘

D NP

 ↙ ↘

 Poss_{DP} N

 |

 face

If one assumed further that the NP is intransparent for case assignment, this would explain why the nominative on the possessor of a direct object is not affected by accusative case assignment of *v*. This, however, cannot be the right solution because the head noun does receive accusative case and it is in the exact same phase as the possessor. Hence, an explanation for the invariant nominative case on the possessor due to intransparency fails.

Another, more promising solution to the problem of this possessor construction comes to mind when we take a closer look at what appears to be the nominative on the possessor. As mentioned above, the possessor in this construction always bears the unmarked case, but as it turns out, it is also always unmarked with respect to other categories such as number.

- (48) **kion-os vuz-em*
 wolf-PL howl-PARTC
 ‘the howling of wolves’

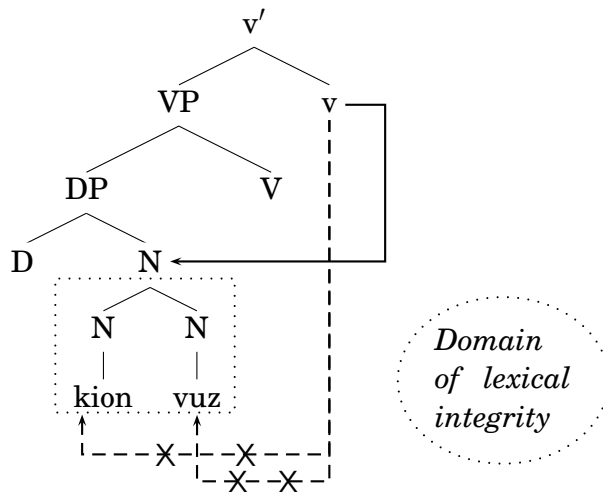
This suggests that the possessor does not bear the unmarked case, but rather that it does not bear any inflectional affixes at all. Together with the observation that the possessor must always immediately precede the possessum, this suggests that what we are dealing with here, is rather a complex word than a possessive construction.

This assumption is further underpinned by the fact that the possessors in this construction must be indefinite and cannot be referred to by a pronoun in the following clause.

- (49) a. **Mon kion vuz-em-ez kyl-i. sobere azbar-ys' kureg-ez*
 1SG wolf howl-PARTC-ACC hear-PST.1SG then garden-ELA chicken-ACC
kut-em-z-e adz-i.
 bring-PARTC-3SG-ACC see-PST.1SG
 'I heard a wolf howl. Then I saw him snatch a chicken in the garden.'
- b. *Mon kion-leš vuz-em-z-e kyl-i. sobere azbar-ys'*
 1SG wolf-ABL howl-PARTC-3SG-ACC hear-PST.1SG then garden-ELA
kureg-ez kut-em-z-e adz-i.
 chicken-ACC bring-PARTC-3SG-ACC see-PST.1SG
 'I heard a wolf howl. Then I saw him snatch a chicken in the garden.'

In (49-a), *kion vuzemez* is one syntactic head. Hence, the (dropped) pronoun in the second sentence cannot refer to the subpart of that head due to lexical integrity. In (49-b), the primary possessor construction, *kionleš vuzemze* consists of two syntactic heads and, consequently, referring to one of them is unproblematic. In conclusion, if the so-called nominative possessor construction is in fact the result of complex word formation, it is clear why case assignment does not affect it. This word formation process either applies in the lexicon or in the syntax by means of merging bare roots. In both cases, the first part of the compound does not possess its own case slots and thus remains uninflected:

- (50) *Case assignment from v to elements within the DP*



Finally, it should be noted that the secondary possessor construction can also be used to express other thematic relations besides possession (e.g. origin; cf. Edygarova 2009 for an overview), see (51-a)–(51-c) (Edygarova 2009: 110–112). Furthermore the relationship between the first and the second noun can be entirely unpredictable, as in (51-d) (Edygarova 2009: 110).

- (51) a. *gurt kalik*
 village people
 'people from a village'
- b. *škola bakčá*
 school garden
 'school garden'
- c. *nilkišno ogažejaškon-jos*
 women union-PL
 'women's unions'
- d. *bakčá šijon*
 kitchen garden food
 'vegetable'

Such a variety of meanings is well known from compounding (cf. e.g. Fanselow 1985). If the secondary possessor construction in Udmurt is indeed the result of complex word formation,

that is, if the structures in (45) and (51) are compounds, it is not surprising that this construction can express more relations than just possession.

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 may be taken to suggest 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 co-occurrence of two case markers. Fusion has to apply as a repair mechanism. Thus, it is plausible that the conflict of constraints arises because syntax and 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 (32) does. Thus, we take syntactic case stacking — in the DP as well as in the clause — to be a widespread phenomenon that is, however, sometimes disguised by the way morphology realizes stacked abstract cases. In fact, a number of other phenomena in the DP have been treated as case stacking as well under the term *Suffixaufnahme*, which is the traditional label for case stacking on possessors (cf. Plank 1995 for an overview). The present analysis predicts a certain range of variation between languages along the following two parameters: (i) Restrictions on the number of cases that can stack (syntactically or morphologically) and (ii) the existence of morphological case stacking. 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 about restrictions on the number of cases that can stack:

(52) *Parameter (i): number of cases that can stack*

a. *Number of cases limited:*

(i) *limited to one:*

no case stacking

(ii) *limited to two:*

e.g. Kanyara and Mantharta languages.

(iii) *limited to three*

...

b. *Number of cases unlimited:* e.g. Martuthunira in (53).

Setting (52-a-i) is trivial: if there is only a single case slot in the syntax in a language L, L does not have syntactic case stacking and hence, there can be no overt case stacking. On the other end of the continuum are languages in which the number of cases that can stack is unlimited. Martuthunira (Pama-Nyungan, Corbett 2006: 135) is an example of such a language, cf. (53).

(53) *Ngayu nhawu-lha [ngurnu tharnta-a [mirtily-marta-a [thara-ngka-marta-a]]*
 1SG.NOM see-PST that.ACC euro-ACC joey-PROP-ACC pouch-LOC-PROP-ACC
 ‘I saw that euro (hill kangaroo) with a joey (young kangaroo) in (its) pouch.’

We assume that Udmurt represents an instance of the setting in (52-a-ii). It allows for case stacking in the syntax but only in a very limited way: the number of cases that can stack is restricted to two (see footnote 15 for reasons why this is necessary). One might argue that this

restriction 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: there are languages with overt case stacking that 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 what follows, we concentrate on languages that allow for syntactic case stacking. The question is whether such languages can stack cases overtly, this is parameter (ii) on the morphological realization of stacked abstract case values (see Corbett 1995; Moravcsik 1995 for a similar though not identical typology of case stacking in the DP):

(54) *Parameter (ii) on the realization of abstract case values:*

- 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) *Case maintenance*: the case that is assigned first to an element is realized, e.g. German.
 - (iii) *Matching*: Both case values are realized by a single marker, but this is only possible if the marker is syncretic for the two abstract cases; e.g. Polish.
 - (iv) *Allomorphy*: a portmanteau morpheme realizes all abstract cases at once; e.g. Udmurt, Beztha (and other Daghestanian languages).
 - (v) *Phonological repair (haplology effect)*: Phonologically identical case markers are not tolerated; e.g. Jiwari, Old Georgian, Dyirbal.

If each of the abstract case values is realized by an overt case marker, a language is said to have overt case stacking, see the strategy in (54-a). Huallaga Quechua (see (32)) is such a language. If, however, a language does not allow for the realization of more than one case marker, it can choose from among five different strategies to fulfill the morphological restriction to a single case marker.²³

The first strategy (cf. (54-b-i)) is case attraction and is well attested in relative clauses: it is only the case value that is assigned last to an element that is morphologically realized. But this pattern is also found in the DP, e.g. in Rithangu (Pama-Nyungan, Schweiger 1995: 354f.; see also Pesetsky 2010 on this strategy in the Russian DP). The genitive case morpheme of the possessor is replaced by the case of the head noun if the latter is ablative, locative, allative or pergressive. If the head noun bears a different case, only the genitive is realized on the possessor, cf. the data in (55). This strategy has also been applied to multiple case chains outside the DP, e.g. in Massam (1985); McCreight (1988); Béjar and Massam (1999); Vainikka and Brattico (2010).

(55) *Rithangu, case attraction in the DP:*

- a. *nu-ŋu dawal*
2SG-GEN country.NOM
'your country'
- b. *wa:n-i+nu+ra nu:-kala-li? dawal-li?*
go-FUT+now+1SG 2SG-LIG-ALL country-ALL
'I will now go to your country.' *head=allative*
- c. *yaka-n?-gu+ñā+ra la-na madalungu-y*
this=AUG=GEN=3SG=ACC=1SG spear-PST hook=spear-INSTR
'I speared him with this [man's] hook spear.' *head=instrumental*

²³ Another possibility is that the construction fails. The conflict cannot be resolved and the result is ungrammaticality; see e.g. Russian as analysed in Babby (1984: 8-10).

Another possible strategy of languages that have syntactic but not overt case stacking is what we call *case maintenance* in (54-b-ii). It is the reverse of case attraction in that it is the case value assigned first to an element that is morphologically realized. The cases that are assigned later are ignored for morphological realization. Any language without overt stacking that does not apply any of the other strategies (attraction, matching, allomorphy) 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 at all. All of these languages could also be described as not having syntactic case stacking in the first place, i.e., only a single case value can be assigned to an element.

The third strategy in (54-b-iii) is matching: a single case marker realizes the stacked abstract cases. But this marker needs to fulfill the requirement that it has to be syncretic for the abstract stacked case values; otherwise, the output is ungrammatical. We did not find an example of matching on possessors but this pattern is common in the clause, e.g. for across-the-board-movement of a wh-phrase. Assuming that the single wh-phrase in such a construction is merged in both conjuncts before it moves to its final position (cf. e.g. Nunes 2004) and assuming that it is assigned a case in each of them, it bears more than one case value. In a language like Polish that does not allow for overt stacking, the fronted wh-phrase must fulfill the case requirements of both clauses (Citko 2005). In (56-a) this is trivially the case because both verbs assign accusative and the wh-word realizes accusative. More interestingly, in (56-b) the wh-phrase bears genitive and accusative, but since *kogo* is syncretic for these two cases the output is grammatical. If there is no syncretic form as in (56-c) with dative and accusative on the wh-phrase, ungrammaticality results.²⁴

(56) *Matching effects in Polish (Citko 2005: 485-487):*

- a. *Kogo Jan lubi t a Maria podziwia t?*
 who.ACC Jan likes *t*.ACC and Maria admires *t*.ACC
 ‘Who does Jan like and Maria admire?’
- b. *Kogo Jan nienawidzi t a Maria lubi t?*
 who.ACC/GEN Jan hates *t*.GEN and Maria likes *t*.ACC
 ‘Whom does Jan hate and Maria like?’
- c. **Kogo/Komu Jan lubi t a Maria ufa t?*
 who.ACC/DAT Jan likes *t*.ACC and Maria trusts *t*.DAT
 ‘Who does Jan like and Maria trust?’

(54-b-i) and (54-b-ii) are frequently discussed strategies in the literature. What we have proposed in this paper is that there is another strategy that we call the allomorphy strategy, cf. (54-b-iv): the stacked cases are realized by a marker *M* that does not correspond to any of the morphemes that would realize each of the stacked abstract cases alone. Rather, it seems that the marker *M* is a kind of ‘portmanteau’ morpheme that realizes all stacked cases at once (cf. Moravcsik 1995: 462 for the term portmanteau in this context). This is the situation we find in Udmurt: if abstract genitive and accusative case stack, a morpheme shows up that neither corresponds to the genitive nor to the accusative *VI*, but another marker which, in Udmurt, is identical to the marker of the abstract ablative. Indeed, the Udmurt pattern has been described as a special kind of case stacking in the typological literature (cf. Corbett 1995; Kibrik 1995; Moravcsik 1995).²⁵

²⁴Beside ATB-movement constructions, matching is also found with other phenomena such as parasitic gaps (cf. Levine et al. 2001; Kathol 2001), free relative clauses (cf. Bresnan and Grimshaw 1978; Groos and Riemsdijk 1981), and topicalization in Norwegian (Taraldsen 1981).

²⁵Note that Hungarian, as analysed in Szabolcsi 1994 (cf. section 3.1), probably also makes use of either the case attraction (54-b-i) or the allomorphy strategy (54-b-iv). In her system, there are two case-related positions within the DP: a low one which is associated with nominative and a high one associated with dative. Szabolcsi

Furthermore, there are languages that do not have a morphological restriction on the number of cases that can be realized, but rather a phonological restriction (cf. strategy (54-b-v)). 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 and Dyirbal (Pama-Nyungan, Austin 1995; Schweiger 1995), and Old Georgian (Kartvelian, Boeder 1995); see Dench and Evans 1988 for further examples.

To summarize, linguistic variation reduces to (i) whether there are restrictions on the number of cases that can stack (syntactically or morphologically) and (ii) the morphological realization of syntactic case stacking. Given these parameters, Udmurt exhibits just one of the expected repair strategies that apply when a language has syntactic case stacking but no morphological stacking, i.e., if it only has 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 Daghestanian languages), the case split depends on the *case* assigned by an external head.

6. Conclusion

In this paper, we examined the case split in Udmurt: 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 by its position in the syntactic structure. The choice of the possessor case in the DP thus seems to require look-ahead. We have shown that there is no evidence that the split in Udmurt is based upon different structural positions of the possessor; 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. Since there is only a single morphological slot for a case marker in Udmurt, the two case features have to fuse into a single feature structure in the postsyntactic morphological component. Only in case of a combination of abstract genitive and accusative does a feature structure arise which is realized by the default semantic VI, the ablative exponent. There is thus never abstract ablative case on the possessor. This analysis neither requires 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.

remains implicit about how it is accommodated that dative possessors do not receive nominative in their base position. In the standard system, this is not a trivial question and may even pose a serious problem. In our system, the question can be answered easily: just as in Udmurt, possessor DPs in Hungarian have two case slots. The first slot is filled with nominative in the base position, the second one is filled with dative if the possessor moves to SpecDP later on. To solve the conflicting case specification, Hungarian either fuses both feature sets (allomorphy strategy) or realizes only the second case slot (case attraction).

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