

Against Portmanteaux in Uralic Verbal Inflection

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Abstract: Portmanteau affixes are inherently problematic for current approaches to inflectional morphology such as Distributed Morphology and Paradigm Function Morphology which embrace the idea that morphological spellout is based on slots (rule blocks or heads) which are in principle completely independent from each other. There are two possible reactions to this tension: *First*, morphological formalisms may be substantially extended to capture the intuitive notion of a portmanteau affix by formal means, such as the portmanteau rule blocks introduced by Stump (2001), or the revised vocabulary insertion algorithm proposed by Radkevich (2009). In fact, recent developments in nano-syntax (Starke 2009; Caha 2008; 2009) seem to amount to generalize the notion of portmanteau exponence to many affixes which are intuitively simplex, by freely allowing insertion into non-terminal syntactic nodes (cf. also Neeleman and Szendrői (2007) for a related proposal). *Second*, it may be argued that apparent portmanteaux are actually simplex markers (or the combination of simplex markers) and that all alleged cases of portmanteau affixes are basically due to misanalysis. This step is taken in Trommer (2003; 2007a). Subject-object agreement in Uralic languages, where according to traditional wisdom (Collinder 1957; Raun 1988; Zaicz 1988; Salminen 1997; Körtvely 2005; Aranovich 2007) the bulk percentage of transitive agreement marking is achieved by portmanteau affixes, is an ideal testing ground for the existence of portmanteaux since it provides substantial microvariation in an area of inflectional morphology which is theoretically and typologically relatively well-understood (cf. e.g. Cysouw 2003; Baerman et al. 2005). In this paper, we argue that a portmanteau analysis for transitive agreement in Uralic languages is not tenable for three main empirical reasons: apparent portmanteaux either occur in intransitive forms, or are transparently composed of markers occurring in intransitive forms, or are the result of phonologically fusing simplex markers.

1 Introduction

The central claim of this paper is that there are no portmanteau morphemes in the verbal inflection of Uralic languages, contrary to the traditional view in the literature, cf. among others Collinder (1957); Raun (1988); Zaicz (1988); Salminen (1997); Künnap (1999); Körtvely (2005); Aranovich (2007), who argue for the existence of portmanteaux in Uralic languages. Abondolo (1982) is the first author who shows for Mordvin that at least some verbal agreement suffixes can and should be analyzed without the postulation of portmanteaux. With the term *portmanteau* we refer to a single unanalyzable morpheme

which expresses features of two syntactic heads simultaneously that are realized by two separate morphemes in other contexts. In particular, we will use the term specifically for morphemes which encode features of both arguments of a transitive verb simultaneously. This is illustrated in the abstract example in (1), in which a transitive verb agrees with its subject and object, let us assume - for ease of exposure - in person and number which are both expressed by suffixes:

(1) *Abstract example of a portmanteau:*

Obj \ Subj	1sg	2sg	3sg
1sg	-A-a	-A-b	-D
2sg	-B-a	-B-b	-B-c
3sg	-C-a	-C-b	-C-c

This paradigm would suggest an analysis along the following lines: exponent /A/ encodes 1st sg subjects, /B/ encodes 2sg subjects and /C/ 3rd sg subject. Furthermore, /a/ indicates a 1st sg object, /b/ a 2nd sg and /c/ a 3rd sg object. The actual markers are then the logical combination of a subject and an object marker; in the example the former linearly precedes the latter. In the context 1sg subject \rightarrow 3sg object, however, there is not the expected marker combination /-A-c/, but a marker /D/. According to our definition, /D/ would be called a portmanteau, because it seems to encode phi-features of the subject and the object simultaneously, although these are represented by separate morphemes in other contexts. Certainly, this analysis of /D/ as a portmanteaux is only valid if (i) there is no obvious way to split /D/ into two submarkers each encoding only features of a single argument and if (ii) there is no evidence that /D/ is an allomorph of the subject marker /A/ or the object marker /c/ while the other morpheme is zero. Of course, in order to exclude one of these alternative non-portmanteau analyses, we need to know more about the language than a single inflectional paradigm (phoneme inventory, phonological processes, distribution of morphemes across paradigms, syncretism patterns, etc.).

The situation that a verb can agree in phi-features with two arguments arises in the definite conjugation of a number of Uralic languages. On the surface, there seem to be many instances of portmanteaux in this sense, which have been claimed to be unanalyzable. We will show, though, that a portmanteau analysis in the Uralic definite conjugation is not tenable for three empirical reasons. In a nutshell, we will demonstrate that there is language-internal evidence that the alleged portmanteaux can and should be segmented.

We will proceed as follows: Section 2 gives a short introduction on the theoretical status of portmanteau morphemes in the morphological literature and on the agreement system in Uralic languages. Afterwards, in section 3, we present three groups of empirical arguments that we found in these languages against a portmanteau analysis and we provide alternative analyses. Finally, section 4 concludes.

Throughout this paper, the analyses are represented in the framework of Distributed Morphology (DM, Halle and Marantz 1993; 1994). Note that this is just for having the technical means to provide an explicit analysis, but the arguments we put forward are valid independently of the morphological framework and can be translated into other realizational frameworks (e.g. Anderson 1992; Corbett and Fraser 1993; Stump 2001).

2 On Portmanteaux agreement and Uralic

2.1 The Theoretical Status of Portmanteaux

Although portmanteau morphemes are standardly treated in morphology textbooks, and many morphological descriptions and analyses invoke them implicitly, there has been little systematic theoretical research on their formal properties, the only exceptions being Stump (2001) in the Paradigm Function Morphology framework and work in the Distributed Morphology framework (see below, Starke (2009); Caha (2008; 2009); Radkevich (2009); Trommer (2003; 2007a)). But both have to invoke some non-standard concepts and stipulations to capture portmanteaux. Stump (2001) assumes ordered rule blocks which organize rules of exponence (“realization rules”). Realization rules within a rule block compete for realization, but realization rules from different rule blocks do not. Thus if a language has cooccurring subject and object agreement markers, these must necessarily be introduced by realization rules belonging to different rule blocks. A portmanteau which blocks otherwise expected subject and object agreement, is *prima facie* incompatible with this architecture. Stump stipulates that portmanteaux correspond to a special class of realization rules that can do exactly what is otherwise prohibited, viz. they can exceptionally block the realization rules of two otherwise independent position classes at once.

In major postsyntactic approaches to morphology it is also difficult to capture portmanteaux. Thus in the classical version of Distributed Morphology (Halle and Marantz 1993) spell-out can target only a single terminal head, but portmanteaux realize features of more than one head. Many additional operations have been put forward to capture these and other syntax-morphology-mismatches, e.g. fusion of terminals into a single head, but in most cases, these are stipulated, language-specific rules. Caha provides a solution which avoids these operations in a postsyntactic approach to morphology in the framework of Nanosyntax: He claims – building on work by Starke (2009) – that it is in principle possible to spell out a non-terminal node, which contains several terminal nodes. This is in essence the generalization of the notion of portmanteau exponence to affixes which are intuitively simplex. But again, this is a departure from the initial assumptions on spell-out and furthermore, it is questionable whether such an analysis, developed for portmanteaux in nominal inflection, can be carried over to portmanteaux in verbal inflection. The problem is the following: Verbal agreement is the spell-out of features on functional heads. These features have been copied from DPs onto the functional head (e.g. by the operation Agree, cf. Chomsky (2000)). Usually, it is assumed that subject agreement is a relation between the external argument DP and the head T and that object agreement is a relation between the internal argument DP and the head *v* in the following structure:

$$(2) \quad [_{CP} C [_{TP} T [_{vP} DP_{ext} [_{v'} v [_{VP} V DP_{int}]]]]]]$$

Given a portmanteau morpheme which realizes features of two arguments and given the idea that portmanteaux are the spell-out of a non-terminal which dominates the two respective heads (*v* and T), a large part of the structure, namely at least TP must be realized by a single morpheme. As assumed in Starke (2009) and Caha (2009), morphemes always spell-out constituents, hence everything included in TP must be realized by the portmanteau morpheme, i.e. not only the features of the arguments but also the main verb, the argument DPs and perhaps also aspectual heads, auxiliaries, etc. It is unlikely

that such morphemes exist since the arguments and the main verb can of course vary; the alleged portmanteaux we have looked at are tied to the combination of morphosyntactic features of the argument DPs, but not to specific nouns or verbs, if it were, it would be restricted to occur in a certain idiom.

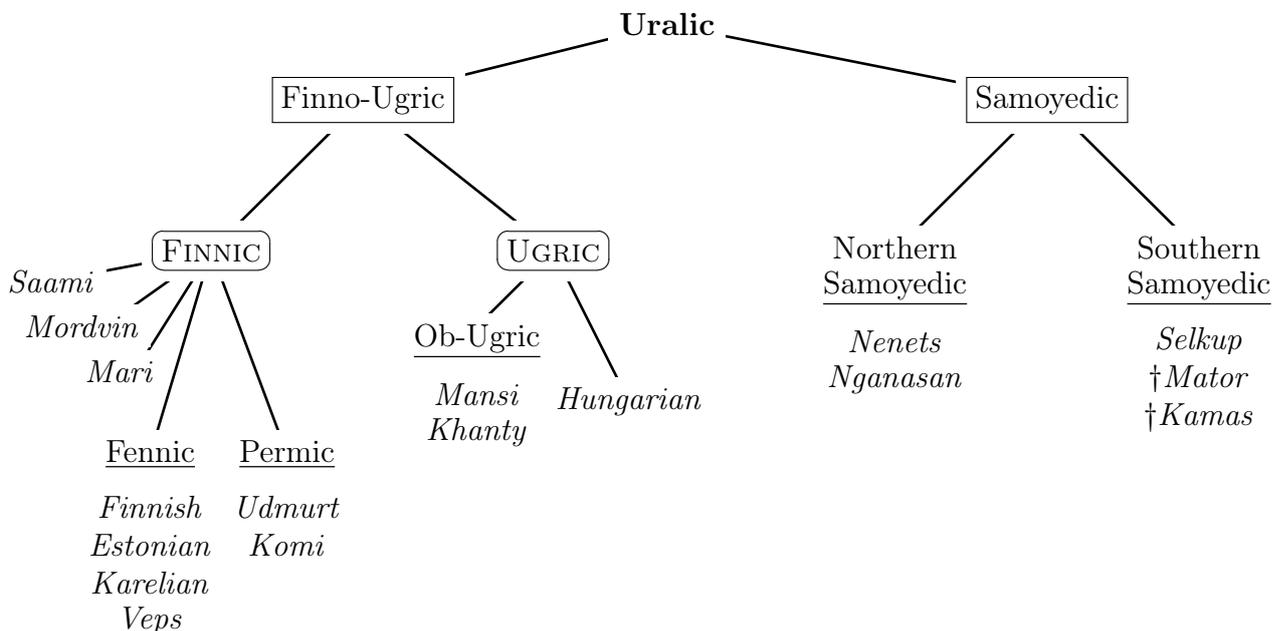
Recently, the discussion on the status of portmanteaus in general has arisen anew. Cahá (2008; 2009) claims that portmanteaus are a necessary concept to capture specific crosslinguistic generalizations on possible case syncretism (cf. also Radkevich 2009) whereas Trommer (2007a) shows that many instances of what seems to be a portmanteau on the surface can be reanalyzed as a non-portmanteau by other, independently needed means of morphological analysis, such as contextual allomorphy and zero exponence. Hence, there is ambiguity in the analysis of such morphemes and it is thus an open question whether portmanteaux do indeed exist or not.

To summarize this discussion, we have seen that portmanteaux are usually treated as marked cross-referencing elements because they lead to challenges for many morphological theories. Furthermore, there are other independently necessary means to reanalyze them. Thus, we first have to provide empirical evidence showing that there are indeed real, unsegmentable portmanteaux which resist a reanalysis, otherwise the development of more complex analyses is not justified and perhaps even unnecessary. When looking at the Uralic languages, we find empirical arguments against a portmanteau analysis in verbal inflection. We claim that the existence of portmanteaux is an illusion which people gained because of the complex interaction of marker composition, allomorphy, phonological rules, and analysis which were limited to only a part of the languages' inflectional paradigms. Hence, the ambiguity in the analysis of portmanteau morphemes as identified by Trommer (2007a) can be resolved.

2.2 Verbal Inflection in Uralic Languages

The Uralic languages constitute a language family which consists of the subbranches Finnic, Ugric, and Samoyedic. They are spoken by about 25 million people in Western Russia, Scandinavia, and Hungary.

(3) *Uralic languages (cf. Abondolo 1982: ch. 1):*



With respect to the question of portmanteaux, the Uralic languages can be split into two groups as illustrated in (4):

(4) *Conjugation patterns in the Uralic language family (cf. Körtvely 2005):*

1		2	
subject + object agreement		only subject agreement	
Mordvin	Mator	Saami	Veps
Khanty	Kamas	Mari	Udmurt
Mansi	Nenets	Finnish	Komi
Hungarian	Nganasan	Estonian	
Selkup		Karelian	

In all Uralic languages there is agreement between the verb and its subject (the external argument of a transitive verb and the sole argument of an intransitive verb) in person and number, indicated by verbal suffixes. In the languages in column 2 in (4), this is the only kind of agreement a verb shows, viz. transitive verbs do not show object agreement (Fennic, Permic, Saami, Mari). For the purposes of this paper, these languages are of no interest, because the question of portmanteaux only arises if a transitive verb agrees with both of its arguments. Hence, there cannot be portmanteaux in verbal inflection in the sense defined above.

In the languages listed in column 1 (Mordvin, Ugric, Samoyedic¹), however, a transitive verb can agree with its subject and also with its object (in number and/or person)² if the latter is definite (traditionally called *definite* or *objective* conjugation), but not if it is indefinite. In the latter case there is again only subject agreement as with intransitive verbs. This conjugation is called *indefinite* or *subjective* conjugation. (5) provides examples of a transitive verb in the indefinite and the definite conjugation of the Finnic language Mordvin, showing the different verbal suffixes.

(5) *Mordvin (Zaicz (1988: 197), Abondolo (1982: 14, 15)):*

- a. kund-an
 catch-1sg
 I catch (something/someone). *indefinite*
- b. kunda-tan
 catch-1sg>2sg
 I catch you. *definite*

¹Mator is a special case. It is an extinct language, but even at the time when it was still spoken, the distinction between conjugation classes (indefinite vs. definite) which was present in earlier stages of the language, had collapsed. Remnants of this pattern could probably be found in tense marking: There were two different present tense markers for transitive verbs, *η* and *j*, which preceded the subject agreement suffix and whose distribution resembled the distribution the former indefinite vs. definite conjugation. But even this is not clear, it might also be the case that the use of the different tense markers is guided by purely phonological reasons. For discussion see Helimski (1997: 152) and Körtvely (2005: 30f). Hence, the distinction between the conjugation classes seems to be lost and the language is thus of no interest for our discussion of portmanteaux.

²Mordvin is the most complex of the Uralic languages in the sense that a verb can agree in number and person with its object in the definite conjugation. Depending on the analysis, object person is also encoded in Hungarian, but only in some forms, cf. Trommer (2003). In all other Uralic languages with a definite conjugation there is either only number agreement with the object (in Khanty, Mansi, Nenets, Nganasan) or the pure presence vs. absence of a definite object is marked without indicating any phi-features of the object (in Selkup, Kamas).

- | | | |
|----|---|-------------------|
| c. | van-yn ^j
look-1sg
I looked. | <i>indefinite</i> |
| d. | van-yt ^j in ^j
look-1sg>2sg
I saw you. | <i>definite</i> |
| e. | van-samam
look-3sg>1sg
S/he saw me. | <i>definite</i> |

The definite conjugation could potentially exhibit portmanteau exponents which encode features of the verb’s subject and object simultaneously and which are unanalyzable units (as indicated in the glosses in (5)). Indeed, the existence of portmanteaux has often been proposed for Uralic definite conjugations. But as we will show in the following section, we deny their existence on the basis of language-internal empirical evidence.

3 Analysis

Our basic claim is that all alleged portmanteaux in definite conjugation of Uralic languages are actually pseudo-portmanteaux. We show that all these pseudo-portmanteaux are of three types:

1. COMPOSITE PORTMANTEAUX: There is independent evidence in a language that the alleged portmanteaux marker can be segmented into smaller submarkers which encode either only subject or only object features.
2. INTRANSITIVE PORTMANTEAUX: The distribution of a potential portmanteau marker in the indefinite conjugation which includes intransitive verbs suggests that it cannot be a portmanteau which expresses features of two arguments.
3. SANDHI PORTMANTEAUX: Undoing phonological processes reveals that a marker has a wider distribution than we can see on the surface and hence that it is not a portmanteau.

We address each of these types on the basis of selected examples.

Distinguishing portmanteaux from simplex markers faces a methodological problem inherited from structural linguistics and early generative grammar (Harris 1942; Chomsky 1955): there is no standard way to segment and to identify affixes. Whereas there is a relatively broad literature which develops approaches for “stemming”, i.e., separating stems from affixes (see Goldsmith (2011) for an overview) there are no general methods to identify specific affixes in the affixal (non-stem) part of an inflected word form.

To circumvent this problem, we will base our argumentation on two relatively uncontroversial criteria for affix status. Let us start with some useful terminology.

Since we focus on agreement morphology, we are only interested in word forms which mark the phi-features of a DP inflectionally. We will say that the phi-features of a specific DP D are the *phi set* of D, and will call any word form which marks a single phi set inflectionally (i.e., the phi set of a single DP) an *intransitive word form*, and a word form which marks two phi sets a *transitive word form*. Under this terminology, Uralic intransitive verbs, transitive verbs which exhibit only subject agreement, but also nouns with possessor agreement and pronouns which indicate the phi-features of a pronominal DP by affixes (cf. the Mordvin pronominal paradigm in (11)) are intransitive word forms,

whereas transitive verb forms which indicate person and number of subject and object are transitive word forms. We presuppose that there is some non-controversial way of extended stemming which extracts for any (in)transitive word form W a substring A of segments in W which realizes agreement with one or more arguments. We will call A the *phi-affix* of W . Thus -an in (5)-a is the phi-affix of kund-an and -tan in (5)-b is the agreement affix of kunda-tan.

Making a similar distinction for the actual markers we want to identify, we will say that a string of segments is a *simplex phi-marker* if it is an affix expressing a single phi set, and a *portmanteau phi-marker* if it expresses two phi sets. We are now ready to provide our criteria for identifying plausible simplex phi markers which are given in (6):

- (6) A string of segments S is a plausible simplex phi marker for the phi set P in language L if either:
- a. there is at least one intransitive word form W with the phi-affix S for P in L
 - b. all word forms W in L which have S as the initial or final substring of their phi-affix express the phi features of a DP with phi-set P

The criterion (6-a) is intuitively rather trivial: a string of segments in an intransitive word forms is necessarily a simplex marker simply because the word form does not encode a second argument which could lead to a portmanteau interpretation. (6-b) captures the intuition that a string of segments which is present in all word forms of a language expressing a certain phi set is very likely to be identified by the language learner as a marker for this phi set. This is in line with the fact that *islands of reliability*, i.e. potentially small-scale but exceptionless generalizations over morphological distributions play a prominent role in language acquisition (Albright 2002) and reflects the more general insight that morphological learning is based on informativity of word forms (or aspects of word forms) (cf. Sims 2006; Finkel and Stump 2007).

3.1 Composite Portmanteaux

According to the definition in 2.1, a phi-affix is a portmanteau if it is an unanalyzable unit which expresses phi-features of two verbal arguments simultaneously. But if a phi-affix can be broken down into submarkers each of which expresses only the features of one argument, it can no longer be called a portmanteau morpheme. We call such a “portmanteau” *composite portmanteau* because it is actually composed of several markers. Crucially, we will assume that a phi affix of a word form which expresses the phi sets P_1 and P_2 is a composite portmanteau if its phi-affix can be exhaustively decomposed in two substrings S_1 and S_2 such that S_1 is a plausible simplex phi-marker for P_1 , and S_2 a plausible simplex phi-marker for P_2 according to the definition in (6). We will show that such an analysis is not only possible and motivated language-internally in some Uralic languages, but that it is also superior to a non-segmenting analysis because it can derive transparently syncretism.

We illustrate the criteria for segmentation with Mordvin, based on data from the Erza dialect.³ Mordvin distinguishes between the indefinite and the definite conjugation. The latter is applied if a transitive verb is in perfective aspect and takes a definite direct object, the former is used elsewhere (with all other transitive verbs and intransitive verbs). The

³The other Mordvin dialect is Moksha, cf. Raun (1988) for a comparative description. The dialects differ mainly in their phoneme inventory and the application of phonological rules.

agreement exponents are verbal suffixes which express phi-features (person and number) of one or two arguments. Verbal person/number suffixes in Mordvin are often taken to be unsegmentable portmanteaux morphemes (cf. Collinder (1957); Raun (1988); Aranovich (2007); Nevins (2010)), Abondolo (1982) being the first who denies this at least for some forms, based on the observation that parts of the suffixes are similar in form and meaning to markers in other paradigms of the language.

The suffixes in the definite past paradigm are given in (7) in the way it is traditionally presented in the literature (Zaicz (1988:199), see also the data in Collinder (1957); Abondolo (1982); Raun (1988)). This means that it includes the tense marker /i/ (the initial vowel set in bold) and that the suffixes are unsegmented portmanteaux. The superscript ‘j’ indicates palatalization of the preceding consonant which regularly applies to consonants after /i/.

(7) *Unsegmented definite past paradigm:*

Subj \ Obj	1sg	2sg	3sg	1pl	2pl	3pl
1sg	—	- it i ^j n ^j	-i ja	—	- id ^j i ^j z ^j	- in ^j
1pl	—	- id i ^j z ^j	in ^j ek	—	- id ^j i ^j z ^j	- in ^j ek
2sg	- im ik	—	- ik	- im i ^j z ^j	—	- i ^j t
2pl	- im i ^j z ^j	—	- in k	- im i ^j z ^j	—	- in k
3sg	- im im	- in ^j z ^j i ^j t ^j	- iz ^j e	- im i ^j z ^j	- id ^j i ^j z ^j	- in ^j z ^j e
3pl	- im i ^j z ^j	- id i ^j z ^j	- iz ^j	- im i ^j z ^j	- id ^j i ^j z ^j	- iz _j

First of all, we need to single out the phi-affixes of the complex affix W, i.e. those parts of the string which realize agreement with an/the argument(s). Apart from the aforementioned initial tense marker /i/, the non-initial vowel /i/ does also not encode phi-features of a DP. Abondolo (1982) argues that this vowel (and the corresponding vowel /a/ in the non-past paradigm) is a purely epenthetic vowel which is inserted postconsonantly if the immediately following agreement suffix is also consonant-initial, hence, it avoids a consonant cluster. The tense and the epenthetic marker do not express features of arguments and can thus be ignored for our purposes.

Next, the underlying forms of the remaining elements are to be found by undoing the following regular phonological processes in Mordvin (cf. Collinder (1957); Zaicz (1988); Abondolo (1982); Raun (1988); Béjar (2003)):

- voicing of stops after vowels and in front of voiced stops
- palatalization of consonants after /i/ (indicated by the superscript ‘j’)
- regressive assimilation in place of /n/ in front of a velar stop
- deletion of /z/ in front of consonants
- resolution of hiatus /i-a/ by glide insertion
- reduction of a sequence of identical vowels to a single instance of this vowel (/i-i/ ⇒ /i/)

The resulting paradigm with phi-affixes, i.e. without the tense vowel and the epenthetic vowel, is shown in (8).

(8) *Unsegmented definite past paradigm of phi-affixes, underlying forms:*

Obj Subj	1sg	2sg	3sg	1pl	2pl	3pl
1sg	—	-tn	-a	—	-tiz	-izn
2sg	-mk	—	-k	-miz	—	-izt
3sg	-mm	-nzet	-ze	-miz	-tiz	-iznze
1pl	—	-tiz	-iznek	—	-tiz	-iznek
2pl	-miz	—	-iznk	-miz	—	-iznk
3pl	-miz	-tiz	-iz	-miz	-tiz	-iz

Next, we apply the criteria in (6) to (8) to see whether the phi-affixes can be decomposed into simplex phi-markers. According to criterion (6-a) a substring of segments of a phi-affix is a simplex phi-marker if it occurs as a phi-affix in an intransitive paradigm and realizes the same set of phi-features in the transitive and intransitive paradigm. In order to find simplex phi-markers we will look at the indefinite conjugation paradigm which comprises intransitive verbs, at the paradigm of personal pronouns, and at the imperative forms.

The indefinite past paradigm is given below with surface and underlying forms (the initial vowel /i/ in the surface forms is again the past marker):

(9) *Indefinite past paradigm,
surface forms:*

1sg	-in ^j
2sg	-it ^j
3sg	-s ^j
1pl	-in ^j ek
2pl	-id ^j e
3pl	-s ^j t ^j

(10) *Indefinite past paradigm,
underlying forms:*

1sg	-n
2sg	-t
3sg	-s
1pl	-nek
2pl	-de
3pl	-st

The phi-affixes /n/ and /t/ encode the phi-set 1st and 2nd person, respectively. They realize the same phi-set in the definite paradigm: /n/ occurs when the subject is 1st person and /t/ occurs when the object is 2nd person (gaps will be accounted for below). These markers are thus simplex phi-markers.

Another intransitive paradigm in the sense that only one referent is cross-referenced is the paradigm of personal pronouns from which the inflectional suffixes are historically derived.

(11) *Personal pronouns in Erza (Zaicz (1988:198), Raun (1988:104)):*

1sg	m-on
1pl	m-in ^j
2sg	t-on
2pl	t-in ^j
3sg	s-on
3pl	s-in ^j

The stem of the pronoun is - Vn (which can possibly be further subdivided into V that encodes number and the root n). It is preceded by a person-indicating prefix. Here we also find the phi-affix /t/ as a 2nd person marker, but in addition there is another phi-affix

for 1st person, namely /m/. Again, this marker can be found in the definite paradigm when the object is 1st person. /m/ is thus a simplex phi-marker in both paradigms.

Finally, we also find a second phi-affix for 2nd person in the intransitive verbal paradigm of imperative markers:

- (12) *Imperative (Zaicz 1988: 201):*
- a. vano-k = look! (sg)
 - b. vano-do = Look! (Pl)⁴

Of interest is the singular imperative marker /k/ which encodes 2nd person given that it occurs in imperatives. Appearing in an intransitive paradigm, /k/ is a simplex phi-marker. Interestingly, it is also found in the definite paradigm when the subject is 2nd person.

So far we have seen that single segments which are part of the complex suffixes in (8) also occur as phi-affixes in intransitive paradigms. This applies to /n/, /m/, /t/ and /k/. According to our criterion in (6-a), they are thus simplex phi-markers which express a single phi-set and can be segmented from the complex suffixes in the definite paradigm. We can thus postulate four vocabulary items which realize person features:

- (13) Vocabulary items, part I:
- a. /n/ ↔ [1]
 - b. /m/ ↔ [1]
 - c. /k/ ↔ [2]
 - d. /t/ ↔ [2]

What remains as potential portmanteau phi-markers in the definite paradigm are the sequences /iz/, /nze/, /iznek/, /iznk/, /iznze/.

According to the criterion in (6-b), a sequence of segments is a simplex phi-affix if all word forms it occurs in (at the left or right edge) express a certain phi-set. This is the case for the sequence /iz/ in the remaining phi-affixes of the definite paradigm: All strings which contain /iz/ express the feature [plural] or put differently, whenever the feature plural is part of the subject and/or the object in the definite conjugation, /iz/ shows up. Hence, /iz/ is a simplex phi-marker and can be segmented as a further vocabulary item.

We are now left with the sequences /nze/, /nek/, and /nk/. These cannot be further segmented into smaller simplex phi-affixes with respect to the criterion (6-a): some segments of these strings like /n/ or /k/ occur indeed as phi-affixes in intransitive paradigms, but the phi-set P which they express in the intransitive paradigms does not match the phi-set P in the transitive paradigm. However, in conformity with (6-b), there are other forms in the possessive declension (cf. (14)) which contain these three sequences as final substring of their phi-affix and express the same phi-set P as the sequences do in the definite paradigm, i.e. /nek/ encodes 1st person plural, /nk/ expresses 2nd person plural, and /nze/ encodes 3rd person singular. Hence, these three sequences are simplex phi-markers according to the criterion (6-b) Note that /nek/ is also a phi-affix in the indefinite conjugation in (10) and thus a simplex phi-marker in the sense of (6-a) as well.

⁴-/do/ which alternates with -/de/ due to vowel harmony of mid-vowels in [±back] is also the exponent for 2nd plural subject in the indefinite verbal paradigms.

(14) *Possessive declension of the noun kudo ‘house’ (Raun 1988: 102):*

1st sg, one possession	kudo-m
2nd sg, one poss.	kudo-t
3rd sg, one poss	kudo-zo
<hr/>	
1st sg, more than one poss.	kudo-n
2nd sg, more than one poss.	kudo-t
3rd sg, more than one poss.	kudo-nzo
<hr/>	
1st pl, one or more than one poss.	kudo-nok
2nd pl, one or more than one poss.	kudi-nk
3rd pl, one or more than one poss.	kudi-st

We thus end up with eight simplex phi-markers which are represented by the vocabulary items in (15). The criterion according to which they have been identified as simplex phi-markers is indicated on the right.

(15) *Vocabulary items, complete list:*

a.	/n/ ↔ [1]	<i>criterion (6-a)</i>
b.	/m/ ↔ [1]	<i>criterion (6-a)</i>
c.	/k/ ↔ [2]	<i>criterion (6-a)</i>
d.	/t/ ↔ [2]	<i>criterion (6-a)</i>
e.	/iz/ ↔ [pl]	<i>criteria (6-b)</i>
f.	/nek/ ↔ [1pl]	<i>criterion (6-a), (6-b)</i>
g.	/nze/ ↔ [3sg]	<i>criterion (6-b)</i>
h.	/nk/ ↔ [2pl]	<i>criterion (6-b)</i>

If there are two vocabulary items for the same phi-set, then the markers are sensitive to the grammatical function of a DP, e.g. /n/ and /k/ express person of the subject of a transitive verb whereas /m/ and /t/ express person of the object of a transitive verb, compare (16).

Given the inventory of simplex phi-markers in (15), the complex phi-affixes in the definite paradigm in (7) can be segmented into sequences of simplex phi-markers. The result of the segmentation is shown in (16).

(16) *Segmented definite past paradigm:*

Subj \ Obj	Obj					
	1sg	2sg	3sg	1pl	2pl	3pl
1sg	—	-t -n 2 1	-a ?	—	-t -iz 2 pl	-iz -n pl 1
1pl	—	-t -iz 2 pl	-iz -nek pl 1	—	-t -iz 2 pl	-iz -nek pl 1
2sg	-m -k 1 2	—	-k 2	-m-iz 1 pl	—	-iz -t pl 2
2pl	-m -iz 1 pl	—	-iz -ŋk pl 2	-m -iz 1 pl	—	-iz -ŋk pl 2
3sg	-m -m 1 1	-nze -t 3 2	-ze 3	-m -iz 1 pl	-t -iz 2 pl	-iz -nze pl 3
3pl	-m -iz 1 pl	-t -iz 2 pl	-iz -∅ pl 3	-m -iz 1 pl	-t -iz 2 pl	-iz -∅ pl 3

Crucially, none of the markers expresses features of subject and object simultaneously;

each of the markers is either a pure subject or a pure object (person or number) marker. Hence, none of them is a portmanteaux.⁵

Though some readers may still remain skeptical because we have to address the question why the exponents do not always show up when their context is met. It could be the case that the overt markers are still exponents of subject+object features, explaining the absence of expected markers in some combinations. For example, the 2nd person subject exponent /k/ does not show up in the context 2sg subject \rightarrow 1pl object. But there is a natural explanation for the apparent gaps: Béjar (2003) observes that hierarchy effects arise in Mordvin. This means that the verb can potentially agree with its subject and object in phi-features as can be seen e.g. in the forms 2pl subject \rightarrow 1sg object and 1sg subject \rightarrow 3pl object. In each case we find a 1st person and a plural exponent, once indicating features of the object and once those of the subject. But, crucially, the verb cannot agree with both arguments at the same time. This can be seen in the paradigm in (16) because there is always at most only one slot for a person exponent and one slot for a number exponent. Thus, the arguments of a transitive verb compete for agreement in person and number with the verb and hence, one argument can block the coargument from agreeing. Béjar (2003) states the following generalizations:

- (17) *Hierarchy effects in Mordvin (Béjar 2003:168):*
- a. The verb agrees with a local person object; subject person is cross-referenced only if the object is 3rd person.
 - b. The verb agrees with the subject in number (plural); object number (plural) is cross-referenced only if the subject is singular.

This explains why e.g. in the context 2sg subject \rightarrow 1pl object there is no 2nd person subject marker: The verb preferably agrees with the object in person if it is local person, which is the case in this example, and hence, subject agreement is blocked. Detailed analysis on the syntax of agreement in Mordvin deriving the hierarchy effects and the unexpected double person marking instead of the usual person+number marking in some of the contexts can be found in Béjar (2003) and Georgi (2010). The important point is that the gaps are due to syntactic mechanisms which do not interfere with the question of portmanteaux that we address in this article. The absence of an expected marker does not mean that the overt marker in this context expresses phi-features of two arguments, instead, the verb only agrees with a single argument.

Finally, note that the markers in (16) are not restricted by context-features to a grammatical category (verb or noun). Due to this underspecification, these markers can be attached to nouns and verbs, deriving the observed transparadigmatic syncretism. This tight connection between the nominal and verbal paradigms could not be derived if the definite conjugation suffixes were not segmented into simply phi-markers occurring as phi-affixes in other paradigms.

To conclude this subsection, we summarize the results: We have seen that segmentation is motivated language-internally because subparts of the verbal phi-affixes occur in

⁵The marker /a/ in the context 1sg subject \rightarrow 3sg object still needs to be integrated in the analysis. According to the generalizations we would expect to find the 1st person subject marker /n/ here, but it does not show up. Béjar (2003) takes it to be an allomorph of /n/ which is chosen if both arguments are singular. Another view goes as follows: Some researchers claim that the expected 1st person subject marker /n/ has followed this /a/ in previous stages of the language (Zaicz 1988; Raun 1988). /a/ can then also be analysed an epenthetic vowel which was inserted to avoid a consonant cluster. The /n/ is no longer pronounced, but the presence of the epenthetic vowel /a/ in modern Mordvin suggests that there is indeed a consonant following /a/ which is however not spelled out.

other paradigms as simplex phi-markers and express the phi-set P in both cases. This observation allows us to split the suffix in the definite paradigm. As a consequence, the composition of markers becomes transparent, allowing for the observation of hierarchy-driven agreement patterns as can be found in many languages, e.g. in Algic and Kiranti. Furthermore, transparadigmatic syncretism can be derived because the same set of markers can be used for verbal and nominal inflection, implemented by exponents which are neutral to the category which they can attach to. But the most important result for our analysis is that segmentation results in a paradigm in which all exponents express only the features of a single argument; either they encode only subject or only object features, but not both at the same time. Absence of an exponent for the coargument is due to hierarchy effects: Due to competition of two arguments for a single person and a single number slot only a single argument can agree in person and/or number, the coargument's features are not represented. Hence, there is not even a potential portmanteau in the definite paradigm. The same result for verbal phi-affixes can be found in Hungarian (cf. Trommer 2003).

3.2 Intransitive Portmanteaux

Another objection to a portmanteau analysis of a phi-marker M in context P in the definite paradigm is the fact that M also occurs as a phi-affix in the indefinite conjugation in P. Given that the latter comprises intransitive verbs that do not have a direct object, this means that M cannot be a portmanteau phi-marker which expresses features of two arguments, cf. (6-a). Hence, a different explanation for the distribution of morphemes in the paradigm has to be found. We call such alleged “portmanteaux” *intransitive portmanteaux* because of their occurrence in paradigms which also include intransitive verbs. We illustrate this fact with Selkup and shortly for Hungarian and we will add another example of such intransitive portmanteaux from Northern Samoyedic languages in the next subsection.

Selkup is the only non-extinct Southern Samoyedic language. As Mordvin, it distinguishes between the indefinite and the definite conjugation. The former includes all intransitive verbs and transitives with an indefinite direct object, the latter is used if the direct object is definite, for example, but the choice of the conjugation class also depends on the locus of the sentence focus and ellipsis of the object. In contrast to all other Uralic languages, the Southern Samoyedic languages do not indicate any phi-features of the direct object in the definite conjugation; instead, the markers only seem to register the pure presence/absence of a definite direct object because they are invariant with respect to the person and number features of the object, varying only for subject features. The table below shows the underlying forms of the indefinite and definite conjugation in the present indicative of the verb *qo-* ‘to find’ (Helimski 1988: 567). The nasal N (assimilating its place of articulation on the surface) is the present tense exponent in Selkup and it precedes the phi-affixes.⁶

⁶The occurrence of the nasal N is restricted to the indicative, inferential, and imperative mood and it seems to be for this reason that some authors, e.g. Helimski (1988: 566), do not call N a present tense marker, but rather treat it as a special element that has to precede the phi-affixes in the aforementioned moods in present tense.

(18) *Selkup indefinite and definite conjugation, present indicative.*⁷

	indefinite	definite
1sg	qo-N-ak	qo-N-am
1du	qo-N-imr:	qo-N-imr:
1pl	qo-N-imit	qo-N-imit
2sg	qo-N-anti	qo-N-al
2du	qo-N-ilr:	qo-N-ilr:
2pl	qo-N-ilit	qo-N-ilit
3sg	qo-N-a	qo-N-iti
3du	qo-N-ɔɔqi	qo-N-itr:
3pl	qo-N-ɔɔtit	qo-N-ɔɔtit

Comparing the indefinite and the definite conjugation e.g. for 1sg subject forms, one would probably analyse the definite suffix as a portmanteau morpheme indicating subject features and some feature of the object because its phonological shape differs from the suffix in the indefinite conjugation. It is not clear what this object feature actually is, because the conditions for choosing the definite conjugation are complex and sometimes seem to take into account a larger syntactic structure (e.g. in elliptic structures), not only features of the object alone. It must thus be something quite abstract, but let us simply assume for our purposes that the feature is [+def], the exact nature is of no importance for the argument to be made and could be replaced with any other feature. Splitting the suffixes into a subject and an object phi-marker each expressing phi-features of the relevant argument, as was done in Mordvin, is not an option because the markers do not indicate object phi-features from the beginning. Furthermore, we can also not see an obvious way to split the markers into separate phi-markers for the subject and a marker for the object feature [+def], making the portmanteau approach a promising analysis.

However, the portmanteau status of at least some morphemes in the definite conjugation is challenged by the presence of the same suffix as a phi-affix in the indefinite conjugation: In the 1du/pl, 2du/pl, 3pl the markers are identical in both conjugation classes. Remember that intransitive verbs with only a single argument are always inflected in the indefinite conjugation and thus cannot be specified for any feature of a direct object or - more abstractly - for a coargument. Hence, the markers in the definite conjugation which are identical to those in the indefinite conjugation are simplex phi-markers and cannot be portmanteaux.

This analysis still leaves open the status of the remaining markers which differ between the two conjugation classes, viz. 1sg, 2sg, 3sg, 3du.

(19) *Different phi-markers in the two conjugation classes:*

	indefinite	definite
1sg	-ak	-am
2sg	-anti	-al
3sg	-a	-iti
3du	-ɔɔqi	-ɔɔtit

Traditionally, the forms in the indefinite paradigm are taken to be basic, viz. the actual

⁷Throughout this article the symbols used in the grammatical descriptions of the languages are replaced by the corresponding IPA symbols.

subject feature exponents, and those in the transitive paradigm are analyzed as special portmanteau forms. However, we will show that the analysis should be the exact opposite: The marker in the definite paradigm are the actual default markers for the corresponding person/number combinations of the subject alone and hence, no portmanteaux; it is the intransitive forms which are special. To illustrate this, we provide evidence from the wide distribution of the definite forms in (19) in other paradigms of the language.

First of all, the agreement markers can be further segmented. If the forms of the indefinite suffixes which have a morphologically different counterpart in the definite paradigm are left aside, the following generalizations about the marker inventory arise:

(20) *Exponents for person and number:*

- a. /m/ ↔ [1]
- b. /l/ ↔ [2]
- c. /t/ ↔ [3]
- d. /Ø/ ↔ [sg]
- e. /r/ ↔ [du]
- f. /it/ ↔ [pl]

The relevant parts are highlighted in the complex forms again to see the generalizations:

(21) *Suffixes in the definite conjugation:*

1sg: am	1du: <u>imr</u>	1pl: <u>im</u> it
2sg: al	2du: <u>ilr</u>	2pl: <u>il</u> it
3sg: iti	3du: <u>itr</u>	3pl: <u>ot</u> it

Indefinite markers with a phonologically different counterpart in the definite conjugation (/ak/, /anti/, /a/, /oq/) do not fit in this pattern and thus seem to be special from a morphological point of view.

Further arguments that the markers in the definite conjugation are the default markers comes from the observation that they are also the markers which are used in non-verbal and (in part) intransitive paradigms. First of all, the exponents of the definite conjugation are very similar to those of the possessive inflection of nouns in which there is no direct object. Again, we find /m/ for 1st person possessor, /l/ for 2nd person possessor, /t/ for 3rd person possessors, /r/ for a dual possessor, and /it/ for a plural possessor.

(22) *Part of the possessive declension (nominative forms) of the noun ‘God’ (Helimski 1988: 558):*

possessor	sg possessum	du possessum
1sg	nom- <u>m</u> i	nop-qi- <u>m</u> i
1du	nom- <u>m</u> r	nop-qi- <u>m</u> r
1pl	nom- <u>m</u> it	nop-qi- <u>m</u> it
2sg	nom- <u>l</u> i	nop-qi- <u>l</u> i
2du	nom- <u>l</u> r	nop-qi- <u>l</u> r
2pl	nom- <u>l</u> it	nop-qi- <u>l</u> it
3sg	nom- <u>t</u> i	nop-qi- <u>t</u> i
3du	nom- <u>t</u> r	nop-qi- <u>t</u> r
3pl	nom- <u>t</u> it	nop-qi- <u>t</u> it

This provides evidence that the forms including the markers in (19) are the basic person/number exponents. One could say that, as in a transitive clause, there are also two coarguments in a possessive constructions: the possessor and the possessum. But in contrast to the verbal conjugation, there is no distinction of markers in the possessive declension with respect to the nature of the lower argument (definiteness, ellipsis, the locus of focus) in the NP which is manifested by different sets of markers, as it is the case in verbal inflection. This means that the features of the lower argument play no role and can thus not be encoded in the markers. As the markers are very similar to the objective markers of the definite conjugation, the latter should also not contain information about the direct object. This argument is valid in general for Uralic languages with a definite conjugation because, as already introduced in 2.2, these languages inflect nouns for person and number, expressing that the noun is possessed and indicating the phi-features of the possessor. The inflectional suffix of verbal and nominal inflection are usually taken from the same set of agreement markers and what is more, they forms in the possessive conjugation clearly resemble those of the definite conjugation, rejecting a portmanteau analysis for the markers in the definite conjugation. Apart from that, note that the possessive form of a noun in the 3rd person can be used to express definiteness of the noun which bears the possessive suffix. In this case the suffixes do not express possession (Helinski 1988). Hence, in such a context there is no second argument implied whose presence could trigger the use of the form which is related to the definite conjugation, which means that the definite suffixes cannot realize features or the presence of a lower argument.

Furthermore, the so called *substantival form* of the verb which forms *nomina actionis* from verbs indicates person and number of the subject if the deverbal noun is used predicatively (Helinski 1988: 569f). As you can see in (23), the relevant suffixes are formally identical to the possessive suffixes of the noun and hence also to the verbal suffixes of the definite conjugation in that again /m/ encodes 1st person, /l/ 2nd person, /it/ plural number, etc. In such cases, there is also no object in a clause, but the forms which are related to the definite conjugation are used.

(23) *Substantival nominative forms of the verb qo-‘to find’:*

	nominative
1sg	qopta- <u>m(i)</u>
1du	qopta- <u>mᵛ</u>
1pl	qopta- <u>mit</u>
2sg	qopta- <u>li</u>
2du	qopta- <u>lᵛ</u>
2pl	qopta- <u>lit</u>
3sg	qopta- <u>ti</u>
3du	qopta- <u>tᵛ</u>
3pl	qopta- <u>tit</u>

To summarize our findings, we have seen that all exponents of the definite conjugation - including those which are not identical to the indefinite conjugation - are used in a variety of (non-)verbal paradigms and should thus be treated as the default markers for the corresponding person and number features. The markers cannot indicate features of a second argument because they are also used in contexts in which no further argument is present. Hence, even those forms in the definite conjugation which have a different counterpart in the indefinite conjugation cannot be analysed as portmanteau morphemes.

Instead, the markers for 1sg, 2sg, 3sg, and 3pl of the indefinite conjugation are special forms.

The insights gained from this review of marker distribution require a new analysis for the forms in the two conjugation classes. As aforementioned, we propose that the exponents in the definite conjugation are the default person and number markers in the language, viz. they are not specified as verbal markers or as additionally expressing features of a coargument and can thus be inserted in verbal and nominal contexts. The four intransitive forms which differ from their definite counterparts, however, are contextually restricted to a verbal environment, indicated by the categorizing functional head [v] (cf. Marantz 2001; 2007) on which object agreement features are located. Due to the context feature, these markers are more specific than the default markers and should always block the default exponents in the definite conjugation (but, being restricted to verbal environments, not in nominal inflection). In order to avoid this, the context [v] is deleted by an Impoverishment rule in the relevant environments before vocabulary insertion in the context of a definite direct object. As a consequence, the more specific VIs do not fit anymore and the default exponents are inserted in the definite conjugation (such an analysis is proposed by Trommer (2003) for Hungarian).

(24) *Vocabulary items in Selkup:*

- a. /m/ ↔ [1]
- b. /l/ ↔ [2]
- c. /t/ ↔ [3]
- d. /∅/ ↔ [sg]
- e. /r/ ↔ [du]
- f. /it/ ↔ [pl]
- g. /ak/ ↔ [1sg] / [v]_
- h. /anti/ ↔ [2sg] / [v]_
- i. /a/ ↔ [3sg] / [v]_
- j. /ɔɔqi/ ↔ [3du] / [v]_

(25) *Impoverishment rules:*

- a. [v] → ∅ / __ [αsg] ('α' is a variable over the person features [1], [2], [3])
- b. [v] → ∅ / __[3du]

The same argument with potential portmanteaux which show up in the indefinite conjugation can be made for Southern Samoyedic languages (see the section below), Khanty and Hungarian. Let us briefly review the Hungarian facts. The language also has a definite and an indefinite conjugation, the former is used for transitive verbs with a definite direct object, the latter for all other transitive verbs and intransitives (if they do not belong to another special conjugation class). Often, the forms of the definite conjugation have been analysed as portmanteaux.

- (26) *Hungarian indefinite and definite conjugation in present tense; conjugation of intransitive verbs in past tense (Keresztes 1992: 42ff):*

	indefinite pres.	definite pres.	intrans. past
1sg	-ek	-em	-em
1pl	ün-k	-(j)ü-k	-ün-k
2sg	-sz/-el	-ed	-e-el
2pl	te-k	-i-te-k	-e-te-k
3sg	-Ø	i-Ø	-Ø
3pl	ne-k	-i-Ø-k	-e-Ø-k

That this analysis cannot be true becomes clear when looking at the paradigms in past tense: Take, for example, the morpheme *-/em/* in the definite conjugation which seems to be a portmanteau expressing 1st sg subject and [+def] (indicating a definite object), because the form in the indefinite paradigm is different, *-/ek/*. In past tense, however, *-/em/* is also used for a 1sg subject of an intransitive verb, but as intransitives only take a single argument, the marker cannot express features of a coargument. Hence, it cannot be a portmanteau, but rather, according to (6-a), a simplex phi-marker. Further evidence for a non-portmanteau analysis of the definite forms in general from the distribution of the markers in other paradigms of Hungarian is provided in Trommer (2003).

To summarize the previous two subsections, let us stress that, in our view, the reason why exponents in the definite conjugation have been analysed as portmanteaux in the past is that researchers only looked at the definite conjugation paradigm and did not take into account other inflectional paradigms. These often show that a potential portmanteau marker has indeed a wider distribution and in some instances (in contexts with only a single argument involved) their distribution is incompatible with a portmanteau analysis. It might then be the case that forms of the indefinite conjugation turn out to be the more marked members of the pair, suggesting a completely different analysis than the traditional one. Furthermore, looking at other paradigms might reveal that the pretended portmanteau can be split into submarkers which are each only simplex phi-markers.

3.3 Sandhi Portmanteaux

In this subsection the role of phonological processes is examined. The core observation is that if phonological processes are undone, the underlying forms show that (i) a marker has a wider distribution than can be seen on the surface and that it is thus not restricted to a certain combination of subject and object features, a fact which originally predestined it to be a portmanteau phi-marker; or that (ii) there are defective exponents that are fused with segmental exponents; the result on the surface is a single phoneme giving rise to the illusion of a portmanteau, although there are two simplex phi-markers for subject and object features underlyingly. We call such alleged “portmanteaux” *sandhi portmanteaux* because systematic phonological processes (sandhi processes) apply if two (or more) items are juxtaposed and they mask the nature of each single item in isolation.

We start with the first and more trivial case, exemplified by Mansi (Ugric subbranch; alternate name of the language is Vogul). In this language a transitive verb is inflected in the definite conjugation if its direct object is definite. In addition to the general subject agreement in person and number, the verb then also indicates the number of the object, marking a three-way contrast between singular, dual, and plural. The surface forms of

phi-affixes in the definite non-past paradigm are shown in (27).

- (27) *Definite non-past paradigm of the verb u:nti- 'to occupy' (Keresztes 1988:402), surface forms:*

Subj \ Obj	sg	du	pl
1sg	u:nti-l-əm	u:nti-jaʁ-əm	u:nti-jan-əm
1du	u:nti-l-amen	u:nti-jaʁ-men	u:nti-jan-men
1pl	u:nti-l-uw	u:nti-jaʁ-uw	u:nti-jan-uw
2sg	u:nti-l-ən	u:nti-jaʁ-ən	u:nti-jan-ən
2du	u:nti-l-en	u:nti-jaʁ-en	u:nti-jan-en
2pl	u:nti-l-en	u:nti-jaʁ-en	u:nti-jan-en
3sg	u:nti- te	u:nti-jaʁ-e	u:nti-jan-e
3du	u:nti-l-en	u:nti-jaʁ-en	u:nti-jan-en
3pl	u:nti-l-anəl	u:nti-jaʁ-anəl	u:nti-jan-anəl

The Mansi system is quite transparent: the verbal stem is immediately followed by a tense marker (which is zero in non-past and not indicated here, but it is the overt marker /s/ in the past) which itself precedes the phi-affix. This affix can be split into two simplex phi-markers according to the criterion in (6-b). The first simplex marker realizes object number: /l/ encodes singular, /aʁ/ dual, and /an/ plural objects (the preceding glide /j/ is inserted to avoid a hiatus). The final suffix in the string indicates person and number of the subject. The corresponding morphemes are constant across object number contexts, there is no allomorphy, e.g. /əm/ is used for 1st singular subjects, /ew/ for 1pl subjects, etc. The only exception can be found with 3sg subjects. If a 3rd person singular subject acts upon a singular object, the singular object marker /l/ is missing and instead of the subject marker -/e/ for 3rd singular present with dual and plural objects we find the marker -/te/ (set in bold). Hence, it could be said that -/te/ expresses the subject features [3sg] and the object feature [sg] simultaneously and that -/te/ is thus a portmanteau phi-marker according to the definitions in section 3.

In what follows, we encode grammatical functions that are necessary to distinguish between phi-features realizing subject or object features by the functional head with which the corresponding argument DP agrees in syntax, i.e. the head onto which the phi-features of the DP are copied and where the vocabulary items are inserted in the morphological component. Following recent assumptions of the minimalist syntactic framework, the external argument of a transitive verb and the sole argument of an intransitive verb agrees with the head T, whereas the internal argument of a transitive verb agrees with the head v. In the context of T thus means in the presence of subject agreement, and in the context of v means in the presence of object agreement. Since transitive verbs can be in the definite (objective) or indefinite (subjective) conjugation, there must be two different *vs*: (i) a defective v in the indefinite conjugation, abbreviated as v_i , which does not induce an Agree relation with the direct object even if one is present and (ii) a non-defective v in the objective conjugation, abbreviated as v_t , which agrees with the internal argument of a transitive verb such that phi-features are copied onto v_t .

The portmanteau vocabulary item for Mansi thus looks as follows:

- (28) *Portmanteau analysis of -/te/:*
 /te/ \leftrightarrow [{3sg T} {sg v_t }]

However, there is reason to doubt this analysis because *-/te/* actually shows up *whenever* the subject is 3rd person singular. On the surface this cannot be seen because *-/te/* is reduced to *-/e/* after consonants, an alternation which is also found outside verbal inflection, e.g. in the possessive declension (Keresztes 1988:396):

- (29) aaxi-te ‘his/her daughter’
 pix-e ‘his/her son’

Given that the object number suffixes which precede the phi-marker for a 3rd person subject always end in a consonant, the deletion process applies throughout and *-/te/* usually does not surface. This means that if the phonological deletion process is undone, the underlying form of the verb in the context 3rd sg subject \rightarrow non-sg object is not *-/e/* but also */-te/*:

- (30) *Underlying forms for 3sg subject \rightarrow non-sg object:*
 a. 3sg subject \rightarrow dual object: u:nti-aʒ-te
 b. 3sg subject \rightarrow plural object: u:nti-an-te

/te/ surfaces with singular objects because the consonantal object marker */l/* is missing and stems usually end in vowels. As dual and plural objects also have *-/te/* as the underlying subject exponent, *-/te/* cannot be specified for a specific number of the object as in (28); it can only be a general simplex phi-marker for 3sg subjects and hence not a portmanteau. What is indeed exceptional in the context 3sg subject \rightarrow sg object is the absence of the singular object marker */l/* which should precede *-/te/* and usually triggers deletion of */t/*. Here we propose an impoverishment rule which deletes the feature [+sg P] in the relevant context prior to vocabulary insertion (cf. Bonet 1991):⁸

- (31) *Exponent and impoverishment rule in Mansi:*
 a. Vocabulary item: */l/* \leftrightarrow [sg vt]
 b. Impoverishment rule: [sg vt] \rightarrow [Ø] / __ [3sg T]

As a consequence of the impoverishment rule in (31-b), the general singular object exponent */l/* can no longer be inserted and the object feature [sg] remains unrealized.

The second example of the influence of phonological rules on a portmanteau analysis are fusion processes as initiated by defective markers. On the surface there is a context-dependent alternation of a single segment and as a segment cannot be further divided into smaller segments which each expresses features of the subject or the object alone as was done in 3.1 for Mordvin, a portmanteau analysis seems to be unavoidable. However, we will argue that the segment can indeed be further segmented into an underlying intact marker and a defective marker which must phonologically fuse with the intact one and thereby changes its phonological shape. The coalescence process gives rise to the illusion of two different markers on the surface although the intact marker is always the same, only the defective marker differs. Each of the markers (intact and defective) encodes only features of one argument of a transitive verb and hence, there is no portmanteau.

⁸Keresztes (1988) does not explicitly argue for a portmanteau analysis. He proposes (p.403) that */t/* in *-/te/* is an allomorph of */l/*, and *-/e/* is then the general 3rd person subject marker. But this analysis does not capture the fact that due to the consonant-final shape of the object dual and plural suffixes */aʒ/* and */an/*, *-/te/* is always reduced to *-/e/*. Hence, *-/te/* is the underlying 3rd person subject marker and */t/* cannot be an allomorph of */l/*.

Evidence for such an analysis is provided by the distribution of the markers in non-definite/intransitive paradigms and from learning of syncretism patterns. We exemplify the claim with the Northern Samoyedic languages Nenets and Nganasan whose head-marking systems work very similar.

Nenets (Samoyedic subbranch, alternate name is Yurak) divides into two dialects: Tundra Nenets and Forest Nenets. The following data are based on descriptions of the Tundra dialect (cf. Salminen 1997; 1998; Körtvely 2005). In Nenets, a verb can in principle be inflected in one of three conjugation classes, called *subjective* (= indefinite), *objective* (= definite), and *reflexive*. Intransitive verbs can only be inflected in the subjective conjugation; if, however, they have a reflexive-medial meaning they can only be used in the reflexive conjugation. Transitive verbs can be in the subjective or objective conjugation class, depending on semantic and syntactic factors such as definiteness of the direct object, its person (objective conjugation only possible with 3rd person objects) and the element which is focused. The exact conditions still need to be explored in more detail (for an extensive discussion of the topic see Körtvely (2005)) and they do not matter for the question of morphological exponence which is the topic of this paper.

As in Mansi, verbs in the objective conjugation show object agreement in number in addition to the usual subject agreement. The verb stem is followed by a mood marker (also called secondary stem e.g. by Salminen (1997)) which in turn precedes the object number marker (in the objective conjugation).⁹ Afterwards the subject agreement suffix is attached, which can be further split into a subject person and a subject number marker. The final suffix is a tense marker, which is zero in the following examples, indicating the aorist.

- (32) *Template in Nenets:*
 stem - mood (secondary stem) - object number - subject person - subject number
 (- tense)

The underlying forms of the phi-affixes (object number, subject person and number) in the objective indicative aorist paradigm are given in (33) (for surface forms see the appendix). The superscript ‘j’ indicates palatalization of the preceding consonant:

⁹There are several allomorphs of the secondary stem as can be seen in the paradigm in (33). The choice of the actual marker is driven by the conjugation class and the number of the direct object. The exponent could thus have a context restriction on the number of the object. We will not discuss these markers any further here, because even if one wants to analyse them as being indeed secondary exponents of object number, they never indicate features of more than one argument and hence, they do not fall under the current subject of portmanteaux.

(33) *Underlying forms of objective conjugation in Nenets (Körtvely 2005: 68):*¹⁰

Subj \ Obj	objective conjugation		
	<i>sg object</i>	<i>du object</i>	<i>pl object</i>
<i>sec. stem</i>	-ŋa-/-ø-	-ŋa-/-ø-	-yø-
1sg	-m -ø	-xøyu- n -ø	-n -ø
1du	-m ^j in	-xøyu- n ^j in	-n ^j in
1pl	-m -at	-xøyu- n -at	-n -at
2sg	-r -ø	-xøyu- t -ø	-t -ø
2du	-r ^j in	-xøyu- t ^j in	-t ^j in
2pl	-r -at	-xøyu- t -at	-t -at
3sg	-t ^(j) a	-xøyu-t ^(j) a	-t ^(j) a
3du	-t ^j in	-xøyu-t ^j in	-t ^j in
3pl	-t ^(j) on	-xøyu-t ^(j) on	-t ^(j) on

A dual object is indicated by /xøyu/, a plural object does not have an overt marker. It seems to be encoded by a zero morpheme because in other respects it uses the same subject agreement suffixes as we find with dual objects (/n/ for 1st person, /t/ for non-1st person, /in/ for dual, /at/ for plural), the only difference between the two columns is the presence / absence of /xøyu/. When looking at singular objects, we can make an interesting observation: There is also no overt segmentable exponent for a singular object, just as with plural objects, but in local person subject contexts the initial segment of the subject marker changes (set in bold) compared to the non-singular object contexts: the 1st person subject marker with non-singular objects is /n/, but /m/ with singular objects; the 2nd person subject marker is usually /t/, but /r/ with singular objects. There is no such alternation with 3rd person subjects:

(34) *Subject person markers in the objective conjugation:*

Subj \ Obj	sg	non-sg
	1	m
2	r	t
3	t	t

Hence, the number ‘singular’ of the object seems to be expressed not by an independent segmental exponent, but by insertion of a special subject person marker. The markers /m/ and /r/ can thus be analysed as portmanteau morphemes expressing subject person and singular object number simultaneously. Of course, the data could also be analysed in a way that /m/ and /r/ and the actual basic exponents for 1st and 2nd singular subjects and that /n/ and /t/ are portmanteaux which express features of the subject and at the same time non-singular number of the object. Such a portmanteau analysis is adopted in Salminen (1997) and Körtvely (2005). At first sight, both of these options seem to be reasonable assumptions because the markers only consist of a single segment and hence, a segmentation into smaller segments as proposed above for Mordvin is not applicable.

There is, however, reason to doubt this analysis: The putative portmanteaux also show up in the subjective (= indefinite) and reflexive conjugation, but as these conjugations

¹⁰The data are adapted to IPA where necessary.

include intransitives with only a single argument, the markers cannot express features of subject *and* object, cf. the argumentation in section 3.2.

(35) *Underlying forms of the subjective and reflexive conjugation in Nenets:*¹¹

Subj	subjective	reflexive
<i>sec. stem</i>	-ŋa-/-ø-	yø
1Sg	-tø̃m	mt
1Du	-n ^j in	-n ^j in
1Pl	-m-at	-n-at
2Sg	-n~tø̃	-n~tø̃
2Du	-t ^j in	-t ^j in
2Pl	-t-at	-t-at
3Sg	–	-t
3Du	-xø̃n	-xø̃n
3Pl	-t	-t-t

/m/, for example, is also used in the subjective (=indefinite) conjugation for a 1pl argument. The other members of the pairs, /n/ and /t/, respectively, are also found in the intransitive paradigms. Hence, none of these can be treated as a portmanteau. The question is thus, how these markers can be analyzed, being neither portmanteaux nor - apparently - segmentable into several clearly disjoint segments.

We propose the following solution: The respective markers are indeed complex and can be segmented in a separate subject and a separate object marker, hence there is no portmanteau. What is special is that one of the markers is phonologically a fully specified segment, whereas the other one is a phonologically defective segment, i.e. a partially specified segment which cannot be realized on its own because it lacks specific phonological features and coalesces with the non-defective affix segment to get its features phonetically realized. Exactly the same mechanism has recently been argued to underly many cases of non-concatenative morphology such as umlaut and consonant mutation (de Lacy 2008; 2011; Bye and Svenonius 2011). The analysis we provide here might be understood as a kind of consonant mutation which applies to inflectional affixes in parallel to the better-known cases that affect lexical stems, and in fact it has been argued that umlaut (Wolf 2007) and consonant mutation may also apply to affixes (Paradis 1992).¹² The result of coalescence is that features of the defective segment (which is in Nenets an inflectional marker) overwrite the corresponding features of the full segment (a second inflectional marker) which changes the shape of the full segment. This leads to the impression of a different single marker on the surface although there are two different markers underlyingly which fuse into one marker consisting of only *one* segment. This gives the impression of a portmanteau.

The observation which supports the existence of a defective marker is the following: If the segments in question, i.e. /n, m, r, t/ are decomposed into their phonological features one can see that the alternation between /m/ and /n/ on the one hand and /r/ and /t/

¹¹The marker for a 2sg argument varies and is conditioned by the nature of the verb stem: /n/ is replaced by /t/ if the stem ends in a consonant and is a mixed stem (i.e. a stem which has properties of both vocalic and consonantal stems plus all -o-stems and most of the -ø-stems, cf. Salminen (1998)).

¹²Alternatively, segmental cases of nonconcatenative morphology and the data discussed here might be captured by floating phonological features (Lieber 1992; Akinlabi 1996; Wolf 2007). See de Lacy (2008; 2011); Bye and Svenonius (2011) for arguments for an approach in terms of defective segments.

on the other hand involve the same structural change, namely that the second segment is derived from the first (i) by replacing the place feature of the first with [cor(onal)] and (ii) by fixing the value of the feature [\pm cont(inuous)] to [-cont]. Hence, the two alternations in (34) can be unified: they result from the same process, the change of the subject marker (/m/ and /r/) with non-singular objects by overwriting with the aforementioned features which gives rise to a different segment (/n/ and /t/). We thus take the two features [cor, -cont] to be the realization of the feature [-sg]. Since the alternations in (34) also take place in the subjective and reflexive conjugation, the defective marker cannot be specified for realizing non-singular objects, it is thus a general non-singular marker:

$$(36) \quad \textit{Defective number exponent in Nenets:} \\ [\text{cor, -cont}] \leftrightarrow [-\text{sg}]$$

This marker is phonologically defective since it lacks relevant phonological features. It has to coalesce with an adjacent segment in order to be realized. In the following discussion we abbreviate the phonological features [cor, -cor] of this marker by the abstract symbol /T/.

$$(37) \quad \textit{Defective number marker coalescing with the following consonant:} \\ \text{a. } /T + m/ \rightarrow [n] \\ \text{b. } /T + r/ \rightarrow [d]$$

Remember that in the objective conjugation in Nenets the object number marker is adjacent to the subject person marker, cf. (32). If the object is non-singular, the defective marker is inserted as an object number marker next to the intact subject marker. In the subjective and reflexive conjugation the defective marker is inserted if the subject is singular. It is then also adjacent to the intact subject person marker /m/, /r/ and /t/, respectively. In both contexts the defective number marker and the intact subject marker will fuse because the sequence of these exponents results in a cluster of features which is excluded by phonotactic constraints and needs to be repaired: If the markers for 1st and 2d person subject cooccur with the defective marker this results in the two sequences /T-m/ and /T-r/. But clusters of a coronal and a sonorant are unattested in Nenets. In order to be pronounced and to avoid the cluster, the defective marker coalesces with the intact one. The result is a single consonant which consists of the features of the subject marker plus the features of the defective object marker which, if necessary, overwrite the corresponding features of the subject marker, e.g. the segment [n] bears phonological features of both markers: [cor,-cont] of /T/ as well as [+nas, +voiced] of /m/. If the subject is 3rd person, the marker does not show an alternation between singular and non-singular objects, it is always /t/, cf. (34). This follows from the analysis because /t/ is already [cor, -cont], adding the non-singular object marker /T/ does not change the feature matrix which constitutes /t/.¹³ A detailed OT-analysis of the coalescence process is given in the appendix.

Finally, since the defective number marker in (36) is not specified for a grammatical function, it is also expected to occur if the subject is non-singular. This is indeed the case in the subjective and reflexive conjugation, cf. (35), where the 1st person marker surfaces as /n/ instead of /m/ and the 2nd person marker surfaces as /t/ instead of /r/

¹³Due to the obligatory lenition between two vowels, the resulting /t/ turns into a [d] at the surface, cf. the appendix for surface forms.

if the subject is dual or plural.¹⁴ However, /T/ does not cause alternation of the subject person markers /m/ and /r/ in the objective conjugation if the subject is non-singular and the object is singular, i.e. it does not realize the feature [-sg] of the external argument of a transitive verb. In order to avoid the realization of the defective marker /T/, an impoverishment rule (cf. Bonet 1991) must apply in the objective conjugation, but not in the other two conjugation classes. Remember that we distinguish the objective from the subjective and reflexive conjugation by the presence of a non-defective *v* (v_t) in the former which agrees with the direct object in the objective conjugation. However, in the subjective and reflexive conjugation, v_i is present which cannot agree in phi-features with the direct object of a transitive verb.

In (38) the impoverishment rule is illustrated. It effects the deletion of the feature [-sg] of the subject (located in the functional head T) in the objective conjugation before vocabulary insertion takes place.

- (38) *Impoverishment rule I:*
 [-sg T] \rightarrow \emptyset / $__$ [v_t]

The defective marker has then no longer a subset of the syntactic node and cannot be realized. This rule captures the ergative pattern in the distribution of the defective marker: it realizes non-singular internal arguments of a transitive verb and the single non-singular argument of an intransitive verb, but not the external argument of a transitive verb.¹⁵

The central point of this analysis is that coalescence of the defective and the full marker results in a single segment on the surface, which leads to the illusion that this segment is a portmanteau morpheme expressing features of subject and object simultaneously. But undoing coalescence reveals that there is actually a separate subject (intact) and an object (defective) marker in the objective conjugation, and hence no portmanteau.

The same argument for the non-existence of portmanteaux can be made for the other Northern Samoyedic language Nganasan: the presence of two underlying markers is masked on the surface by a phonological coalescence process of a defective and an intact marker.

Nganasan (alternate name is Tawgi) has the same three conjugation classes as Nenets. The verbal template in Nganasan corresponds to that of Nenets in (32). The indicative aorist paradigm with the phi-affixes of the subjective, reflexive, and objective conjugation is given in (39). The superscript ‘c’ indicates a consonant which is usually not phonologically realized.

¹⁴The underlying subject person markers /m/ and /r/ do not surface in the singular forms for 1st person and 2nd person subjective and reflexive conjugation because there are specific exponents for these features in those conjugation classes (/t \emptyset m/, /mt/, /n \emptyset ~ t \emptyset /). They block the default person markers /m/ and /r/ which are inserted in the objective conjugation. For vocabulary items see the appendix.

¹⁵There is one phi-affix that still needs to be accounted for. In the subjective conjugation, a 1st person plural subject is encoded by /m/ and not by /n/. The latter is, however, expected given that the defective [-sg]-marker in general applies throughout all conjugation classes in Nenets. We take this to be a language-specific and accidental gap which does not interfere with the whole picture of the agreement pattern. It can be integrated by another impoverishment rule which deletes the feature [-sg], to which the defective marker refers, in exactly the context described by this paradigm cell. Another option is to insert a highly specific zero marker for [-sg] in the context of the features which define the relevant paradigm cell.

(39) *Indicative aorist paradigms in Nganasan, underlying forms:*

Subj \ Obj	subjective	objective			reflexive
		sg object	du object	pl object	
<i>sec. stem</i>	-ntu-	-ntu-	-ntu-	-nta-	-nta-
1sg	-m	- m -ə	-kəi-j- n -ə	-j- n -ə	-n-ə
1du	-m-i ^c	- m -i ^c	-kəi-j- n -i ^c	-j- n -i ^c	-n-i ^c
1pl	-m-uʔ	- m -uʔ	-kəi-j- n -uʔ	-j- n -uʔ	-n-uʔ
2sg	-ŋ	- r -ə	-kəi-j- t -ə	-j- t -ə	-ŋ
2du	-r-i ^c	- r -i ^c	-kəi-j- t -i ^c	-j- t -i ^c	-n-ti ^c
2pl	-r-uʔ	- r -uʔ	-kəi-j- t -uʔ	-j- t -uʔ	-n-tuʔ
3sg	–	-t-u	-kəi-j-t-u	-j-t-u	-t-ə ^c
3du	-kəj	-t-i ^c	-kəi-j-t-i ^c	-j-t-i ^c	-n-ti ^c
3pl	-ʔ	-t-uŋ	-kəi-j-t-uŋ	-j-t-uŋ	-n-t-əʔ

Let us first concentrate on the objective conjugation. Parallel to Nenets, dual objects are encoded by a separate morpheme, /kəj/ in Nganasan. In addition, there is a general non-singular object marker /-j-/ which is realized by palatalization of the following consonant, also as a sort of coalescence. A corresponding marker does not exist in Nenets. As in Nenets, there seems to be no separate singular object marker. Instead, the subject person markers change their form if the subject is local person, giving the impression of being portmanteaux. The alternations are exactly the same as in Nenets (cf. (34)): /m/ alternates with /n/, and /r/ alternates with /t/; there is no such alternation in the 3rd person, which is always encoded by /t/. The argument against a portmanteau analysis of either /m,r/ or /n, t/ put forward for Nenets is also valid for Nganasan: All of the alternating sounds also occur in the subjective and reflexive conjugation (cf. (39)) which include intransitive verbs, making a portmanteaux analysis untenable. We thus analyse the marker alternations as an effect of the defective marker in (36), too: both Nenets and Nganasan have this defective number marker which fuses with the underlying intact subject markers /m, r, t/. This leads to the surface forms /n, t, t/ of the subject markers on the surface. The existence of portmanteaux in the objective conjugation is just an illusion of surface forms because underlyingly there are two markers: the intact marker encodes only subject features and the defective marker encodes only subject features.

Note that, as was the case in Nenets, the defective number marker does not realize non-singular of the subject in the objective conjugation if the object is singular. In this case /m/ and /r/ surface. Hence, the impoverishment rule in (38) also applies in Nganasan. Up to this point, Nenets and Nganasan thus work the same. There is, however, one important difference between the two languages: Whereas in Nenets the defective marker applies in all conjugation classes, it only affects the objective conjugation in Nganasan. This means that the underlying subject person markers /m/ and /r/ surface with non-singular subjects in the subjective conjugation (the 2nd person singular marker /ŋ/ in subjective and reflexive conjugation blocks the default 2nd person marker /r/). In the reflexive conjugation the default person markers do not surface because they are replaced by a reflexive marker, i.e. a nasal /n/ (Helmski 1988). Since the coalescence of /n/ and /T/ would result in /n/, as well, it is unclear whether the defective marker applies in the reflexive conjugation, too. For concreteness, we assume that it applies in neither of the two conjugation classes. In order to avoid the application of /T/ in these contexts, a

second impoverishment must apply in Nganasan. It deletes the feature [-sg] in the non-objective (i.e. subjective and reflexive) conjugation classes on the head containing subject features (which is indeed the only head carrying phi-features because v is defective in the subjective and reflexive conjugation).

- (40) *Impoverishment rule II for Nganasan:*
 [-sg] \rightarrow \emptyset / $__$ [v_t]

With the rules in (38) and (40) the distribution of the defective marker in Nenets and Nganasan is accounted for.

Before closing this section, we want to add an argument from learning of syncretism patterns to the argument from the distribution of markers in intransitive paradigms against a portmanteau analysis of the markers in Nenets and Nganasan.

Pertsova (2007; 2011) suggests that the language learner is biased to reduce arbitrariness in the input data s/he is confronted with and to find patterns in the input. Applied to inflectional morphology this means that accidental homonymy of markers is avoided and syncretism is best to be resolved by the featural specification of the marker entries. The learner is also biased to take some instances of syncretism to be more natural than others which means that they are more likely to occur and more easily to learn. Pertsova proposes a 3-way gradation of syncretism patterns such that type 1 is the easiest to learn and type 3 is the hardest to learn: Type 1 syncretisms can be captured by underspecification of markers alone, i.e. the features which define the paradigm cells occupied by a marker form a natural class, no blocking mechanism or homophonous marker entries are necessary. In languages with type 2 syncretisms underspecification alone does not suffice to cover the distribution of a marker because this would lead to overlaps of marker in the paradigm, hence, a concept of blocking is necessary. A typical type 2 syncretism is an L-shaped syncretism in a paradigm, cf. the discussion below. Type 3 syncretism can only be covered by the postulation of homophonous markers, underspecification and blocking do not suffice. The argument for segmentation in Nenets and Nganasan is that without segmentation a type 2 syncretism arises whereas the result of segmentation is type 1 syncretism throughout, which is more natural and more easy to learn. To see this, we will look at the subject person markers in the objective conjugation which are identical in both languages.

- (41) *Syncretism pattern of subject person markers in Northern Samoyedic, surface forms:*

	sg object	du object	pl object
1st	m	n	
2nd	r	t	
3rd			

The distribution of /n/, /m/ and /r/ can be captured by underspecification alone because the contexts in which they occur constitute a natural class. These are thus instances of a type 1 syncretism. The distribution of /t/, however, is L-shaped and requires blocking: the contexts where /t/ occurs do not form a natural class; the underspecification that comes closest to the distribution of /t/ is that it is a non-singular object marker. But then it would overlap with /r/ in the context 2nd person subject/singular object. Hence, /r/ must block /t/, e.g. by the concept of Specificity in DM (Halle and Marantz 1993;

1994). If, however, the defective marker is separated from the subject marker as we have proposed, then there are only type 1 syncretisms in the distribution of subject person markers in Nenets and Nganasan because the occurrences of /m/, /r/ and /t/ are natural classes:

(42) *Syncretism pattern of subject person markers in Northern Samoyedic, segmented underlying forms:*

	sg object	du object	pl object
1st	(/T/ +) m		
2nd	(/T/ +) r		
3rd	(/T/ +) t		

To summarize, the decomposition analysis of verbal inflection markers in Nenets and Nganasan has two advantages over a portmanteau analysis: First, the latter is not tenable, given the appearance of the alleged portmanteaux in intransitive paradigms. And second, this is consistent with a regular syncretism approach as it is proposed e.g. by Pertsova (cf. Pertsova 2007): If we do not adopt the idea of two separate markers, there is an irregular distribution of /t/. The analysis with the defective marker provides a throughout regular syncretism which contributes to the learnability of the paradigm.

3.4 Summary of “portmanteaux” in Uralic

In this subsection we give a summary of the Uralic languages and the reason why they do not exhibit portmanteaux in the definite conjugation. The languages of (4), column 1 are grouped together according to the evidence against portmanteaux. Some languages are assigned to more than one group because there is multiple evidence against a portmanteau analysis.

(43) *Uralic languages with subject + object agreement:*

composite port.	intransitive port.	sandhi port.
Mordvin	Hungarian Selkup Kamas Nenets Nganasan	Mansi

We have considered most of the languages in detail. It was shown that Mordvin “portmanteaux” are composite because there is evidence that they can be segmented into (intact) submarkers which express either only features of the subject or the object. This analysis was supported by the distribution of submarkers in other paradigms of the language and by the fact that such an analysis enables the resolution of transparadigmatic syncretism.

The claim that Selkup and Hungarian have portmanteaux in the definite conjugation was denied because the pretended portmanteau suffixes also occur in paradigms which intransitives with only a single argument also fall into and hence, the morphemes cannot express features of two arguments simultaneously; they are thus “intransitive portmanteaux”. The same was true for the Northern Samoyedic languages Nenets and Nganasan. Kamas is another example for a language in which the distribution of markers argues against a portmanteau analysis in the definite conjugation. Kamas is an extinct Southern Samoyedic language and as the other languages of this subbranch, the definite conjugation

does not indicate any phi-features of the definite object, rather it seems to indicate only its presence, compare Selkup above. The indefinite and definite conjugation suffixes are given below:

(44) *Conjugation classes in Kamas, present tense, first verb class (Donner 1944: 146ff):*

	indefinite	definite
1sg	-em	-am
1du	-b ^w i	-b ^w i
1pl	-bε	-ba
2sg	-el	-al
2du	-l ^w i	-l ^w i
2pl	-lε	-la
3sg	-ie	-at
3du	-g ^w i	-di
3pl	-lε	-dən

Leaving aside the apparent vowel changes for the moment, one can see that there are sometimes different forms for the indefinite and the corresponding definite conjugation of a given subject, especially in 3rd person forms. One of these forms must be the default realization of the subject features, the other must be special, viz. specified for something in addition. Usually, the forms in the definite conjugation are taken to be the special ones with the background idea that the presence of the object is somehow encoded in these forms. But as in Selkup, it can be shown that it is exactly the other way around: Characteristic forms of the definite conjugation can be found in a number of other environments encoding the same morphosyntactic features and hence, these are analysed as the default forms. Take, for example personal pronouns and the possessive conjugation in Kamas:

(45) *Personal pronouns, nominative (Donner 1944: 142-43):*¹⁶

	sg	du	pl
1	man/mən	miste	mi/me
2	tan/tən	siste	si
3	di/də	diside	dizεŋ

(46) *Possessive declension of the noun tura ‘house’ (Donner 1944: 138):*

	one possession	more than one possession
1sg	tura-m	tura-zɔŋ-ba
1du	tura- bi	tura-zɔŋ-bi
1pl	tura-ba	tura-zɔŋ-ba
2sg	tura-l	tura-zɔŋ-na
2du	tura-li	tura-zɔŋ-ni
2pl	tura-la	tura-zɔŋ-na
3sg	tura-t	tura-zɔŋ-de
3du	tura-d ^w i	tura-zɔŋ-d ^w i
3pl	tura-dən	tura-zɔŋ-dən

¹⁶The very complicated symbols used by Donner for transcription are simplified here. See Donner (1944: 122-26) for an introduction to the vowel and consonant inventory of Kamas and the symbols he uses.

In each of the paradigms we see that the whenever the suffix starts with the coronal stop /d/ (/t/ in wordfinal position) the possessor or the personal pronoun is 3rd person. The same holds for the definite conjugation in (44), but not for the indefinite conjugation where special forms seem to be used for 3rd person. In the 2pl we find the the suffix *-la* in the possessive and the definite conjugation, but *-le* in the indefinite conjugation. We analyze those forms that have a wider distribution as default forms and it turns out that these are the forms of the definite and not of the indefinite conjugation. The latter have a special status. This suggest an analysis along the lines proposed for Selkup above.

The Northern Samoyedic languages Nenets and Nganasan do not only exhibit intransitive portmanteaux, but in addition a sandhi process gave rise to the impression of portmanteaux: A defective marker is fused with an intact marker which leads to a different exponent on the surface.

In Mansi we found another “sandhi portmanteau” because the phonological process of deletion masks that the alleged portmanteaux has a wider distribution than can be seen on the surface: It is not restricted to a certain combination of subject and object features but, occurring with a wide range of object features, it can only express subject features.

To summarize, in each of the Uralic languages which can have subject and object agreement in the definite conjugation and hence potential portmanteaux morphemes there are one or more empirical arguments against a portmanteaux analysis and a different analysis has been provided. We thus conclude that there a no portmanteaux in the sense defined in section 1 in the Uralic languages with a definite conjugation.

4 Conclusion

Appendix

Nenets

The surface forms of the paradigms in (33) and (35) are given below:

(47) *Surface forms of the subjective, objective, and reflexive conjugation in Nenets:*

	subjective	objective			reflexive
		<i>sg object</i>	<i>du object</i>	<i>pl object</i>	
<i>secondary stem</i>	-ŋa-/-ø-	-ŋa-/-ø-	-ŋa-/-ø-	-yø-	-yø-
1Sg	-dəm	-wə	-xəjunə	-nə	-wəʔ
1Du	-n ^j iʔ	-m ^j iʔ	-xəjun ^j iʔ	-n ^j iʔ	-n ^j iʔ
1Pl	-waʔ	-waʔ	-xəjunaʔ	-naʔ	-naʔ
2Sg	-nə	-rə	-xəjudə	-də	-nə
2Du	-d ^j iʔ	-r ^j iʔ	-xəjud ^j iʔ	-d ^j iʔ	-d ^j iʔ
2Pl	-daʔ	-raʔ	-xəjudaʔ	-daʔ	-daʔ
3Sg	–	-da	-xəjuda	-da	-ʔ
3Du	-xəʔ	-d ^j iʔ	-xəjud ^j iʔ	-d ^j iʔ	-xəʔ
3Pl	-ʔ	-doʔ	-xəjudo	-doʔ	-dəʔ

(48) provides a list of phonological rules that apply to the underlying forms in (33) and (35), repeated in (50), (Körtvely 2005):

- (48) a. $m \rightarrow w / V_V$
 b. $t \rightarrow d / V_$
 c. $t \rightarrow ? / _ \#$ or $_ C$
 d. $n \rightarrow ? / _ \#$ or $_ C$
 e. $\emptyset \rightarrow \emptyset$
 f. $u \rightarrow y / C^j _$

(49) *Underlying forms of the subjective, objective, and reflexive conjugation in Nenets:*

	subjective	objective			reflexive
		<i>sg object</i>	<i>du object</i>	<i>pl object</i>	
<i>secondary stem</i>	-ŋa-/-ø-	-ŋa-/-ø-	-ŋa-/-ø-	-yø-	-yø-
1Sg	-tøm	-mø	-xøyunø	-nø	-mt
1Du	-n ^j in	-m ^j in	-xøyun ^j in	-n ^j in	-n ^j in
1Pl	-mat	-mat	-xøyunat	-nat	-nat
2Sg	-n~tø	-rø	-xøyutø	-tø	n~tø
2Du	-t ^j in	-r ^j in	-xøyut ^j in	-t ^j in	-t ^j in
2Pl	-tat	-rat	-xøyutat	-tat	-tat
3Sg	-	-t ^(j) a	-xøyut ^(j) a	-t ^(j) a	-t
3Du	-xøn	-t ^j in	-xøyut ^j in	-t ^j in	-xøn
3Pl	-t	-t ^(j) on	-xøyut ^(j) on	-t ^(j) on	-tt

SEGMENTATION OF THE UNDERLYING FORMS:

The forms in (47) are segmented according to the criteria in (6). For example, *-/at/* is identified as a subject plural marker because it is always the final substring of a phi-affix and all forms in which it appears express the phi-set [plural] of the subject DP, cf. (6-b). In the subjective conjugation, */t/* remains in the form for 2pl subject after segmenting */at/* and it is thus a potential phi-marker which is confirmed by its distribution and the phi-set it expresses in all its occurrences. This segmentation was done for the whole paradigm, mainly relying on criterion (6-b). The results of segmentation are displayed in the paradigm below:

(50) *Underlying forms of the subjective, objective, and reflexive conjugation in Nenets, segmented:*

	subjective	objective			reflexive
		<i>sg object</i>	<i>du object</i>	<i>pl object</i>	
<i>secondary stem</i>	-ŋa-/-ø-	-ŋa-/-ø-	-ŋa-/-ø-	-yø-	-yø-
1Sg	-tøm	-mø	-xøyu-nø	-nø	-mt
1Du	-n ^j in	-m ^j in	-xøyu-n ^j in	-n ^j in	-n ^j in
1Pl	-m-at	-m-at	-xøyu-n-at	-n-at	-n-at
2Sg	-n~tø	-rø	-xøyu-tø	-tø	-n~tø
2Du	-t ^j in	-r ^j in	-xøyu-t ^j in	-t ^j in	-t ^j in
2Pl	-t-at	-r-at	-xøyu-t-at	-t-at	-t-at
3Sg	-	-t ^(j) a	-xøyu-t ^(j) a	-t ^(j) a	-t
3Du	-xøn	-t ^j in	-xøyu-t ^j in	-t ^j in	-xøn
3Pl	-t	-t ^(j) on	-xøyu-t ^(j) on	-t ^(j) on	-t-t

A list of the inventory of vocabulary items in Nenets is given in (52). Remember that v_t

encodes phi-features of the direct object of a transitive verb in the objective conjugation, v_i encodes the subjective conjugation in which v does not agree with the direct object (if one is present), and T encodes subject phi-features. To encode the differences between the subjective and the reflexive conjugation a third type of v is necessary, namely v_r for the reflexive conjugation. It differs from v_i in that it induces argument reduction of a transitive verb, which results in an intransitive verb. It resembles v_i in that it does not agree with a direct object (due to argument reduction).

(51) *Encoding of conjugation classes:*

- a. objective conjugation: $[v_t]$
- b. subjective conjugation: $[v_i]$
- c. reflexive conjugation: $[v_r]$

In order to avoid that the default person markers are inserted for object person, an impoverishment rule is needed which deletes object person in general before vocabulary insertion takes place. This seems natural since object person plays no role in the conjugation classes of Samoyedic languages. Furthermore, natural classes of conjugation classes as introduced in 3.3 are necessary because a few markers occur only in some of the conjugation classes.

(52) *Person and number exponents in Nenets:*

- a. $/m/ \leftrightarrow [1]$
- b. $/r/ \leftrightarrow [2]$
- c. $/t_1/ \leftrightarrow [3]$
- d. $/\emptyset_1/ \leftrightarrow [sg] / _ [T]$
- e. $/(^j)a/ \leftrightarrow [sg] / _ [3, v_t]$
- f. $/(^j)in/ \leftrightarrow [du] / _ [T]$
- g. $/at/ \leftrightarrow [pl] / _ [T]$
- h. $/(^j)on/ \leftrightarrow [pl] / _ [3, T]$
- i. $/x\emptyset yu/ \leftrightarrow [du, v_t]$
- j. $/[cor, -cont]/ \leftrightarrow [-sg]$
- k. $/t\emptyset m/ \leftrightarrow [1sg] / _ [v_i]$
- l. $/x\emptyset n/ \leftrightarrow [3 du] / _ [v_i]$
- m. $/n \sim t\emptyset/ \leftrightarrow [2sg] / _ [v_i, v_r]$
- n. $/\emptyset_2/ \leftrightarrow [3sg] / _ [v_i]$
- o. $/mt/ \leftrightarrow [1sg] / _ [v_r]$
- p. $/t_2/ \leftrightarrow [pl] / _ [3, v_r]$

ANALYSIS OF THE COALESCENCE PROCESS:

According to the analysis in section 3.3, the defective marker $/T/$ coalesces with the adjacent subject person marker thereby overwriting its place feature to $[cor]$ and setting the value of its feature $[\pm cont]$ to $[-cont]$. This happens because $/T/$ is defective, requiring a host, and because the sequence of $/T/$ and the sonorant subject marker leads to an impossible consonant cluster. This phonological process can be modeled in an optimality-theoretic framework with ranked and violable constraints (Prince and Smolensky 1993; 2004) in correspondence theory. The trigger for a change in the sequence of $/T/+m, r/$ is a phonotactic constraint against a sequence of a coronal and a sonorant consonant, expressed by the markedness constraint $*[COR, -CONT][+SON, +CONS]$.

(53) $*[COR, -CONT][+SON, +CONS]$: Count one $*$ for every consonant cluster CC in

which a coronal stop precedes a consonantal sonorant.

Since it is the highest-ranked constraint a violation of it is always fatal. In order to avoid this, repair strategies are induced, e.g. another segment could be inserted between /T/ and /m, r/ or one of the markers could be deleted. These repairs cause violations of the faithfulness constraints MAX and DEP:

(54) MAX: Count one * for every input segment without a corresponding output segment.

(55) DEP: Count one * for every output segment without a corresponding input segment.

A third repair option is the coalescence of the two markers into a single segment, which causes a violation of the constraint NVC, *Non-Vacuous Coalescence*, suggested by de Lacy (2008), iff the resulting segment does not contain features of each of its input segments:

(56) *No Vacuous Coalescence (NVC)*:¹⁷

For every output segment x:

For every input correspondent x' of x:

there is some feature [α F] s.t.

x' is [α F] and there is no input correspondent of x'' (x' \neq x'') that is [α F].

This constraint demands that each output segment of a coalescence process must have a phonological feature from each of its input segments such that this feature is to be found in only one of its input segments, but not in both. The constraint is evaluated as follows:

(57) NVC: Count one * for every output segment x without a feature [α F] s.t. x' is [α F] and there is no x'' that is [α F].

Two other faithfulness constraints guarantee that the segment resulting from coalescence keeps a place feature from (one of) its input segments and the nasality feature of the subject marker if it is [+nasal], namely the IDENT-constraints ID_N and ID_{PLACE}.

(58) IDENT-*constraints*:

a. ID_N: Count one * for every [+nasal] input segment whose value for [\pm nasal] is changed in the output.

b. ID_{place}: Count one * for every segment which doesn't have identical values for [place] in the input and the output.

The ranking of the constraints is shown in (59):

(59) *[COR,-CONT][+SON,+CONS] \gg ID_N \gg MAX \gg DEP \gg NVC \gg ID_{place}

Since the constraints which prohibit epenthesis (DEP) and deletion (MAX) of segments outrank the constraint against coalescence (NVC), coalescence is the least costly repair operation and it will thus surface. ID_N provokes that the resulting segment is a nasal if /T/ and /m/ are coalesced and ID_{place} in conjunction with NVC forces it to have the place feature [cor] resulting in /n/: it must have a place feature which is non-identical between the input segments (which is fulfilled by the place feature of both /m/ and /T/

¹⁷We have slightly adapted de Lacy's formal definition of the constraint to make it consistent with its informal specification.

since they are not identical, [lab] vs. [cor]) and NVC decides that it must be the place feature of the defective marker since nasality is taken from the intact marker and the resulting segment must have features from both input segments. If the resulting segment was /m/, NVC would be violated because the only feature it could have from /T/ is [-cont] but both input segments have this feature and it is thus not contrastive.

If the two markers /T/ and /r/ are coalesced, the segment /t/ results which surfaces as /d/ due to voicing processes. This output does not violate ID_{place} because both input segments are coronal and the output is coronal, too. ID_N is vacuously fulfilled since none of the input segments is [+nasal]. NVC is also not violated because /d/ realizes the feature [-cont] of /T/, which the other input segment /r/ does not possess, and e.g. the value [+son] of /r/. The following tableau illustrates the competition for the input /T+m/. Corresponding input/output segments are indicated by the indices 1 and 2:

(60) *Deriving coalescence of /T/ and the subject marker in OT:*

T_1m_2	*[COR,-CONT][+SON,+CONS]	ID_N	MAX	DEP	NVC	ID_{place}
t_1m_2	*!					
t_1			*!			
m_2			*!			
$t_1\emptyset_3m_2$				*!		
$t_{1,2}$		*!			*	*
$m_{1,2}$					*!	*
$n_{1,2}$						*
$d_{1,2}$		*!				

Nganasan

The defective markers in Nganasan are the defective number marker (abbreviated as /T/) and the non-singular object marker which causes palatalization of the following consonant (abbreviated as /J/):

(61) *Defective markers in Nganasan:*

- a. /T/ ↔ [-sg]
- b. /J/ ↔ [-sg P]

They realize the following distinctive features:

(62) *Features realized:*

- a. /T/: [cor,-cont]
- b. /J/: [-ant,-apic]

Coalescence is analysed in the same way as in Nenets, see the detailed OT-analysis above: A coalescence process results in a single surface segment bearing relevant features of both of the input segments.

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