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Leftover Agreement

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Abstract Based on data from number agreement in the four South Caucasian languages (Georgian, Laz, Megrelian, Svan), this paper argues that Vocabulary Insertion is only partially replacive: the exponent replaces only those features of the head which its specification matches exactly, whereas the remaining unlexicalized features—what we call *leftover features*—remain syntactically active. Our evidence comes from the fact that in South Caucasian languages the choice of the exponent for a lower agreement head can feed or bleed number agreement with a higher agreement head, depending on whether this exponent lexicalizes a plural feature. We argue that the cases of feeding arise from Leftover Agreement—agreement of a higher head with the number features on the lower head which were not lexicalized by its exponent—and we provide additional evidence from an intervention effect in Svan and a locality effect in Georgian for the syntactic nature of this process. An implication of our proposal is that the grammar allows for a certain kind of interleaving of syntax and spell-out, where accessibility of the uninterpretable features on the edge of a phase (on its head and specifier) depends on whether or not those features have been lexicalized within that phase.

Keywords agreement · South Caucasian · spell-out · Vocabulary Insertion

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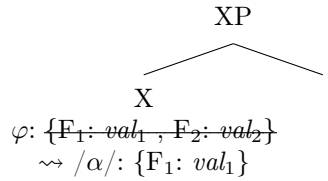
1 Introduction

It is often assumed within the Distributed Morphology framework that Vocabulary Insertion is fully replacive. For example, in Bobaljik (2000), rewriting is stated as one of the main assumptions (1), illustrated below in (2).[1]

(1) ***Rewriting*** (Bobaljik 2000:37):
As morphosyntactic features are *expressed* by vocabulary items, these features are *used up* and no longer a part of the representation.

(2)


Here we see that a head X has two features, F_1 and F_2, and the exponent α that has been matched with X lexicalizes only F_1.[2] The rewriting assumption ensures that once α has been matched with X, *all* of X's features are used up and are no longer part of the representation. Although F_2 has not been lexicalized by α, it counts as being used up as well. One consequence of rewriting is that X's features cannot be accessed by further operations.

In this paper we argue for a different version of rewriting. We propose that Vocabularly Insertion is only partially replacive:

(3) ***Partial Rewriting:***
1. Morphosyntactic features which are *lexicalized* by vocabulary items are *used up* and no longer a part of the representation.
2. Morphosyntactic features which are *not lexicalized* by vocabulary items (= *leftover features*) remain part of the representation.

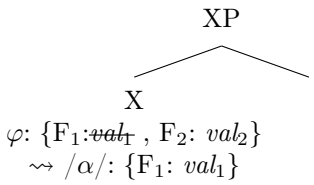
According to partial rewriting, not all the features of a head are regarded as used up after that head has been matched with an exponent, but only those features that match the specification of the vocabulary item exactly. (4)

[1] We thank Muhammet Bal, Hagen Blix, Jonathan Bobaljik, Steven Foley, Daniel Harbour, Laura Kalin, Léa Nash, Yakov Testelets, the audiences at MIT, *Linguistic Theory, Meet Languages of the Caucasus!*, WCCFL 38, LSA 94 and GLOW 43, as well as two anonymous reviewers, for their useful feedback. This paper follows the Leipzig glossing conventions with the following additions: ADDR = addressee; AOR = aorist; CONJ = conjunctive; DEP = dependent; EX = exclusive; FEM = feminine; IMPF = imperfect; IN = inclusive; IND = Independent; OBV = obviative; OPT = optative; π = person; PART = participant; PERF = present perfect; PRV = pre-radical vowel; PVB = preverb; S = subject; SPKR = speaker; STAT = stative; TS = thematic suffix; UCONJ = Unchanged Conjunct; UNM = unmarked; W = an agreement morpheme in Passamaquoddy that occurs in configurations with 2PL + 3rd proximate SG and 3rd proximate PL + 3rd obviative SG.

[2] In this paper we reserve the term *lexicalize* to refer to the features that fit an exponent's specification exactly. So, e.g., in (2) α *expones* the syntactic node that bears the feature bundle $\{F_1, F_2\}$, but it *lexicalizes* only F_1 and not F_2.

illustrates partial rewriting at work. In the exact same configuration as in (2) above, with the head X being matched with an exponent α that lexicalizes only one of its features, partial rewriting entails that only the feature that has been lexicalized by the exponent—F_1—is used up and becomes inaccessible for further operations. The feature F_2, which has not been lexicalized by α, remains visible as part of the representation.

(4)



A system in which Vocabulary Insertion is only partially replacive has a potential to interact with syntax in interesting ways. In particular, if we assume that syntactic operations can sometimes follow Vocabulary Insertion, partial rewriting predicts that spell-out should be able to affect syntax: the choice of the exponent for one head could either bleed or feed further syntactic operations, because it could render different features of the head (in)visible. In this paper we argue that this is a desirable prediction.

Our evidence comes from number agreement in South Caucasian languages, in which, we argue, the spell-out of a lower agreement probe affects agreement on a higher agreement probe. When the exponent that is matched with the lower probe lexicalizes a plural feature, the higher probe doesn't show plural agreement; when it doesn't lexicalize the plural feature, the higher probe agrees with it and spells it out. This pattern is known in the literature as *discontinuous bleeding* (Noyer 1992; Harley and Noyer 1999), and is usually treated with the help of *fission*—a morphological operation that splits some features of a syntactic head and discharges them in an additional position-of-exponence which is automatically made available. An analysis in terms of fission was proposed by Halle and Marantz (1993) for number agreement in Georgian. By contrast, we will argue that there are several advantages to viewing partial rewriting as an operation that can be followed by further syntactic operations, and propose that it is a general mechanism of how Vocabulary Insertion operates.

The paper is structured as follows. In section 2 we present the generalization about discontinuous bleeding in South Caucasian number agreement. In section 3 we provide some background on South Caucasian morphosyntax. In section 4 we present our proposal and discuss how partial rewriting as the mechanism of Vocabulary Insertion leads to the possibility of agreement with leftover features. Section 5 shows how the proposed theory accounts for the South Caucasian Discontinuous-Bleeding Generalization. Section 6 discusses evidence that the leftover features remain visible to syntactic operations, and thus argues against purely morphological accounts such as Halle and Marantz's (1993). Section 7 shows that the account can be extended with minimal assumptions to the so-called inverse paradigm of agreement (based on data from

Georgian), and moreover, that the inverse paradigm provides important support for some aspects of the analysis. Finally, section 8 summarizes the implications of our proposal and discusses its potential extensions to agreement patterns from other languages (Berber and Passamaquoddy).

2 The South Caucasian Discontinuous-Bleeding Generalization

The number-agreement pattern that is the focus of this paper is summarized in (5). All the four South Caucasian languages (Georgian, Laz, Megrelian and Svan) have both prefixal and suffixal agreement, and we see the following correlation: a PL feature is exponed as a suffix only if it is not lexicalized by a prefix.

(5) **The South Caucasian Discontinuous-Bleeding Generalization**
(to be slightly modified in (20))
A number agreement feature is exponed by the suffix only when it has not been lexicalized by the prefixal exponent.[3]

Examples (6)–(9) illustrate this generalization by showing how the four languages express configurations with 3rd-person singular subjects and participant plural objects. These sentences have only one plural argument, and what we see is that whether or not the prefix lexicalizes its plural feature determines whether suffixal number agreement will appear.

(6) **Georgian**
(Aronson 1990:172)

a. **gv**-nax-a
1PL-see-AOR
'(S)he saw us.'

b. **g**-nax-a-**t**
2-see-AOR-**PL**
'(S)he saw you (pl).'

(7) **Svan** (Gudjedjiani and Palmaitis 1986:63)

a. **gw**/**n**-amāre
1PL.IN/**1PL.EX**-prepare.PRS
'(S)he prepares us.'

b. **ʤ**-amāre-**x**
2-prepare.PRS-**PL**
'(S)he prepares you (pl).'

[3] Note that this correlation holds with respect to *a particular argument's number feature*—i.e., there is no general ban on the prefix and the suffix both lexicalizing plural. This is illustrated in (i), where the prefix expones the plural feature of the object, whereas the suffix expones the plural feature of the subject.

(i) **gv**-nax-e-**t** **Georgian** (Aronson 1990:172)
1PL-see-AOR-**PL**
'You (pl). saw us.'

The interaction between the prefix and the suffix will be discussed in detail in section 5.

(8) **Laz**
(Lacroix 2009:294)
a. **m**-dziom-**an**
1-see.PRS-**PL**
'(S)he sees us.'
b. **g**-dziom-**an**
2-see.PRS-**PL**
'(S)he sees you (pl).'

(9) **Megrelian**
(Kipshidze 1914:76)
a. **m/v**-č'arən-**a(n)**
1-write.PRS-**PL**
'(S)he writes us.'
b. **r**-č'arən-**a(n)**
2-write.PRS-**PL**
'(S)he writes you (pl).'

In particular, in sentences with 1PL objects there is a split across South Caucasian languages: Georgian and Svan have prefixes that lexicalize both 1st-person and PL features, whereas Laz and Megrelian have prefixes that lexicalize only 1st person. Evidence for this featural specification of prefixes comes from comparing the forms with 1PL objects to the forms with 1SG objects, (10)-(13). We see that Laz and Megrelian use the same prefixes (*m-* and *m-/v-*) independent of the plurality of the 1st-person object, suggesting that *m-* and *m-/v-* lexicalize 1st person only and do not lexicalize number. Georgian and Svan, on the other hand, exhibit different prefixes depending on the plurality of the 1st-person object: *gv-* and *gw-/n-* respectively for 1st-person plural objects, and *m-* for 1st-person singular objects. This suggests that *gv-* and *gw-/n-* lexicalize not only person, but number as well.[4]

(10) **Georgian**
(Aronson 1990:172)
m-nax-a
1-see-AOR
'(S)he saw me.'

(11) **Svan** (Gudjedjiani and Palmaitis 1986:63)
m-amāre
1-prepare.PRS
'(S)he prepares me.'

(12) **Laz**
(Lacroix 2009:294)
m-dziom-s
1-see.PRS-3
'(S)he sees me.'

(13) **Megrelian**
(Kipshidze 1914:76)
m/v-č'arən-s/c
1-write.PRS-3
'(S)he writes me.'

In sentences with 1PL objects (the (a)-examples in (6)-(9)), we see a correlation between the specification of the prefixal exponent and the presence of the suffix exponing a plural feature. Laz and Megrelian, in which the prefix only lexicalizes the 1st-person feature, have plural suffixes in this configuration, while in Georgian and Svan, in which the prefix lexicalizes both the 1st-person feature and the plural feature, there is no plural suffix present.

In sentences with 2PL objects (the (b)-examples in (6)-(9)), all the four languages display a uniform behavior: we see a prefix that lexicalizes only 2nd person, and a suffix that expones the plural feature of the object. The fact that in the configuration with a 3SG subject and a 2SG object, (14)-(17), we

[4] In Svan, the prefix also expresses whether the 1PL is inclusive (*gw-*) or exclusive (*n-*).

see the same prefixes as when the object is 2PL supports the analysis according to which these prefixes (*g-* in Georgian and Laz, *ʤ-* in Svan, *r-* in Megrelian) lexicalize 2nd person only and don't lexicalize number features.

(14) **Georgian**
(Aronson 1990:172)
g-nax-a
2-see-AOR
'(S)he saw you (sg).'

(15) **Laz**
(Lacroix 2009:294)
g-dziom-s
2-see.PRS-3
'(S)he sees you (sg).'

(16) **Svan** (Gudjedjiani and Palmaitis 1986:63)
ʤ-amāre
2-prepare.PRS
'(S)he prepares you (sg).'

(17) **Megrelian**
(Kipshidze 1914:76)
r-č'arən-s/c
2-write.PRS-3
'(S)he writes you (sg).'

Thus, the dependence between the plural suffixal agreement and the exponent of the prefixal agreement is robust across the four languages, independent of the particular phonological realization of the morphemes, and only sensitive to what features are being lexicalized by the prefix. Why would such a generalization hold? Our answer to this question will be as follows. The prefix and the suffix realize two different probes, and because Vocabulary Insertion is only partially replacive, the unlexicalized plural features on the prefixal probe are accessible to and get agreed with by the suffixal probe. Thus, in the 3SG > 1PL configuration in Laz and Megrelian, and in the 3SG > 2PL configuration in all the four languages, the plural suffix appears because the probe that it realizes is able to find the leftover features of the prefixal probe. In the 3SG > 1PL configuration in Georgian and Svan the suffixal probe fails to agree (Preminger 2014) with a plural feature because it couldn't find one: the plural feature has been lexicalized by the prefixal exponent.

3 Background on South Caucasian

South Caucasian languages have intricate agreement systems, which have received extensive attention in descriptive (Aronson 1990; Hewitt 1995 on Georgian, Demirok 2013; Lacroix 2009; Öztürk and Pöchtrager 2011 on Laz, Kipshidze 1914 on Megrelian, Gudjedjiani and Palmaitis 1986; Testelets 1989; Tuite 1998a on Svan, among many other works) and theoretical literature (Béjar 2003; Béjar and Rezac 2009; Blix 2021; Foley 2017; Halle and Marantz 1993; Lomashvili and Harley 2011; McGinnis 2008, 2013; Nevins 2011; Socolof 2020; Thivierge 2021; Trommer 2001).

South Caucasian verbs have three slots in their word-forms that will be relevant to our discussion. We illustrate this with an example from Georgian:

(18) (isini) (šen) mo-**g**-k'lav-**d-nen** (Aronson 1990:171)
(3PL.NOM) (2SG.ACC) PVB-**2**-kill-**IMPF-3PL**

'They would kill you (sg).'

In (18) we see three morphemes that surround the verbal stem.[5] The prefix *g-* encodes the fact that the object is 2nd-person. The suffix *d-* encodes T(ense)A(spect)M(odality) information: it occurs in conditional and imperfect forms.[6] The suffix *-nen* encodes the fact that the subject is 3PL.

Many previous works on Georgian agreement have posited at least two probes: a *v*-probe realized by the prefix and a higher probe realized by the plural suffix (Béjar 2003; Béjar and Rezac 2009; McGinnis 2013). We will follow this idea and assume that the agreement prefix realizes a probe on *v*, and that the plural agreement suffix realizes a probe on C.[7] In so doing, we will most notably differ from Demirok (2013), who, in contrast to the abovementioned literature, situates the prefixal probe immediately higher than T. The main reason why we depart from Demirok in this respect has to do with the Mirror Principle: at least in Georgian, the agreement prefix appears closer to the root than certain aspectual preverbs, which are typically analyzed as *Aktionsart*-related and thus as quite low within the *v*P; on that assumption, any treatment of the agreement prefix as realizing a node higher than T would therefore run into a violation of the Mirror Principle, which we are instead able to avoid.[8, 9]

[5] The stem here in fact consists of two morphemes, the root *k'l-* 'kill' and the thematic suffix *-av*. We will not separate thematic suffixes from roots in this paper for simplicity.

[6] Conditional and imperfect forms are distinguished by the presence of the preverb; the form in (18) is conditional because it has one.

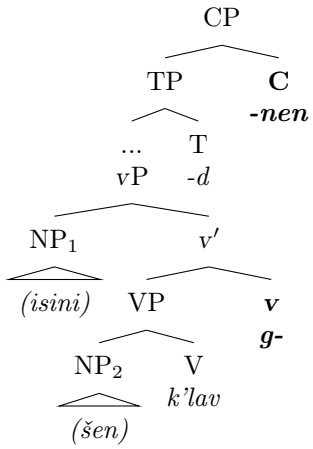
[7] The concrete label of this probe is not crucial to us. We label it C for convenience, but it should not be confused with bona fide complementizers such as Georgian *rom* 'that' or *tu* 'if', because, as an anonymous reviewer points out, these are words distinct from the verb and do not display agreement.

[8] To capture the fact that some morphemes precede the verbal root while others follow it, one can assume that after the first verbal phase is built, the headedness is flipped: the morphemes we see to the left of the root are within the first verbal phase ("low" aspectual prefixes, *v* agreement, applicative morphology), the ones to the right (thematic suffix, causative markers, tense/aspect markers, further agreement markers) are merged later. An alternative way to derive this fact could be via verb movement. We leave the choice between these options open.

[9] An anonymous reviewer raises the question of why, if the prefixal probe is indeed located low within the *v*P, non-finite verbal forms in Georgian have preverbs, but lack agreement. We believe that this is a very interesting puzzle, but does not constitute a problem for our Mirror-Principle-based argument: the Mirror Principle regulates how the order of the syntactic projections relates to the order of morphological exponents, but it doesn't necessitate that syntactic projections have exactly the same featural content in all environments. In other words, it doesn't prevent *v* from having distinct properties in finite and non-finite clauses, and thus exhibiting agreement in the former but not the latter. Georgian, in this respect, seems to behave like Basque (Coon and Keine 2021; Preminger 2011), which has an agreement probe in finite clauses but not in non-finite clauses.
That being said, of course, there is still an open question of why *v* has distinct properties in different environments. It seems to us that this question is related to an even bigger puzzle: why can't Georgian non-finite clauses license nominals in the same way as finite ones do? There is evidence suggesting that Georgian non-finite forms ("masdars") contain quite a big amount of verbal structure, most likely AspP: as Bondarenko (2017) discusses, these nominalizations are compatible with a variety of adverbs, and show distinctions in (a)telicity, as well as (im)perfectivity, suggesting the presence of viewpoint aspect. But despite this structure, these clauses are not capable of licensing nominals in the same way

We will treat T as a TAM head that does not have a probe of its own, but which can in some cases have several allomorphs that are conditioned by C (see section 5.2.2 for discussion).[10] Thus, (18) will have the structure in (19).

(19) **Two agreement probes: *v*, C**



Given these assumptions, we can restate the South Caucasian Discontinuous-Bleeding Generalization in the following way:

(20) **The South Caucasian Discontinuous-Bleeding Generalization** *(final version)*
Number agreement on the C probe appears only when the number has not been lexicalized by the exponent that expones the *v* probe.

The choice of TAM of the verb in South Caucasian languages has far-reaching consequences for the morphosyntax of the clause. Here we will briefly note two such consequences. First, case alignment depends on TAM. There are three main patterns: (i) nominative (subject) — accusative (object), (ii) ergative (subject) — nominative (object), (iii) dative (subject) — nominative (object).[11] Second, there are two agreement paradigms: the so-called *direct*

as purely verbal environments are: only one argument can be expressed (the object of a transitive verb or the subject of an intransitive one), which receives genitive case and can't be agreed with; indirect objects are never possible in these nominalizations. This creates a puzzle: the positions in which these arguments should be introduced are present in the masdar, so why can't these arguments be licensed? If agreement were introduced high, we would just expect these NPs to not be agreed with, but to be present in the structure, contrary to fact. Intuitively, it seems that the issue is the absence of TP in the structure of the non-finite forms: without knowing which "tense" the clause is, case alignment, as well as agreement, can't be decided, and nominal licensing does not seem possible, even if all the lower structure for it is in place.

[10] In this aspect we depart from the recent proposals (Foley 2017; Socolof 2020) that assume two separate high probes in the structure.

[11] Accusative and dative case markers are systematically syncretic in the family.

and *inverse*.[12] The choice between them is again determined by TAM. The table in (21) shows how the choice of agreement paradigm correlates with case alignment: the inverse paradigm is used in forms that have dative subjects and nominative objects, whereas the direct paradigm is used otherwise (Aronson 1990, among many others).

(21) **Agreement paradigm depends on case alignment**

Agreement	Case alignment	Example forms from Georgian
Direct	NOM-ACC, ERG-NOM	Present, Imperfect, Aorist
Inverse	DAT-NOM	Present Perfect, Pluperfect

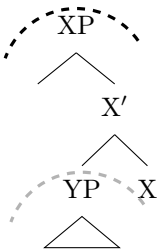
Our primary focus will be the direct paradigm, but in section 7 we will discuss in detail how our account extends to the Georgian inverse, and how that paradigm in fact provides additional support for parts of our analysis.

4 The proposal: Leftover Agreement

We propose that the South Caucasian Discontinuous-Bleeding Generalization arises due to the general principles of how Vocabulary Insertion and spell-out work. More concretely, we argue that syntax and spell-out are interleaved in a particular way, such that the choice of an exponent for one syntactic head can either feed or bleed further syntactic operations.

Consider (22), for example, where X is a phase head that takes YP as its complement. We propose that the whole XP undergoes Vocabulary Insertion in the same cycle, after all syntactic processes within XP have been completed. After that, the complement of the phase head YP becomes completely inaccessible to further syntactic operations.

(22)



- - - - - - : **the phase (XP)** — the chunk of structure that undergoes Vocabulary Insertion together;
- - - - - - : **the complement of the phase head (YP)** — the chunk of structure that becomes completely inaccessible once the phase is completed.

We propose that the accessibility of the uninterpretable features of the phase head X and of its specifier, unlike the completely inaccessible features of the complement YP, depends on exponence in the following way:

[12] As we will see in the upcoming sections, this name arose due to the fact that the exponents of *v* agreement change in the inverse paradigm: the exponents that would otherwise realize agreement with subjects switch to realizing agreement with objects, and vice versa.

(23) **The uninterpretable features of X and Spec,XP:**

a. uninterpretable features that have been lexicalized by exponents become inaccessible to further syntactic operations;

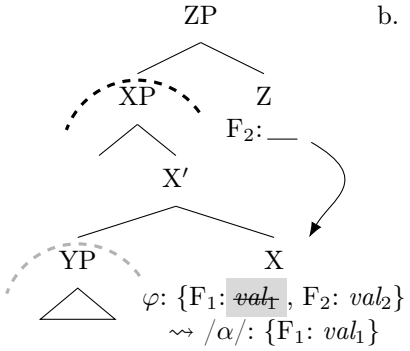
b. uninterpretable features that have not been lexicalized by exponents — ***leftover features*** — are still visible to higher heads and can be interacted with within further syntactic operations.

Thus, the phase head X and its specifier have a unique position within the phase: they undergo Vocabulary Insertion with the rest of the phase, but at the same time their uninterpretable features don't necessarily become completely inaccessible after that. If some uninterpretable feature of theirs is not lexicalized by their exponent, it will remain visible to syntax.

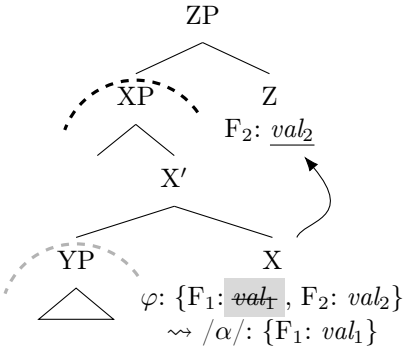
Many parts of this proposal have precedents in the literature. The idea that a phase head and its complement undergo spell-out together is not new. For example, the theory of Cyclic Linearization (Fox and Pesetsky 2005) claims that the whole phase undergoes spell-out and linearization at the same time. Newell (2008) also proposes that some phase heads are interpreted at PF together with their complements.[13] Inaccessibility of the phase head's complement has also been proposed before. It has been proposed that due to the Phase Impenetrability Condition (Chomsky 2000, among many others), the complement of the phase head undergoes Transfer to PF and thus becomes inaccessible. The main contribution of our proposal is thus the claim that the accessibility of the phase head and its specifier depends on exponence: among the uninterpretable features, only those that are not lexicalized by exponents remain accessible.

Leftover Agreement (LA) is agreement of a higher probe with the features on a lower probe that have not been lexicalized by exponents. To see how LA works, consider (24). In (24) X is the lower probe; it is a phase head which has copied the feature bundle φ (consisting of features F_1 and F_2) via agreement with noun phrases within XP.[14]

(24) a.



b.



[13] However, on Newell's (2008) account, *v* is not a phase head.

[14] We do not assume, of course, that XP needs to be a complement of Z; an arbitrary number of non-phasal projections may intervene between them.

Once all syntactic operations within XP have been completed, XP, being a phase, undergoes Vocabulary Insertion. During this process, the head X gets matched with the most specified eligible exponent available in the vocabulary, /α/. It turns out that /α/ lexicalizes only a subset of the features present in the bundle φ: φ in (24a) contains two features, F_1 and F_2, but /α/ lexicalizes only F_1. F_2 is an unlexicalized (*leftover*) feature. According to our proposal, such features on phase heads remain accessible to further syntactic operations.

Now, if there is a higher probe Z searching for F_2, as is the case in (24), then Z will be able to find the leftover feature on X, agree with it, and expone it (24b). This is Leftover Agreement. In order for LA with a lower phase head to succeed, two conditions have to be met. First, the lower phase head needs to have the relevant features that the higher probe is searching for. Second, these relevant features must not have been lexicalized by the exponent that has been matched with X. If either of these conditions fail, and if there is no independent source for the feature that the higher probe is searching for, then this higher probe will fail to agree—an outcome that we assume to be grammatical, following Preminger (2014).

There are two important things to note about the system proposed here. First, the rules of accessibility for lexicalized features that we present in (23) concern only *uninterpretable* features. For example, interpretable features like number or person on noun phrases do not appear to be used up when we match a vocabulary item with the noun. Conceptually, we hypothesize that the grammar makes a distinction between the original, source features—*interpretable features*—on the one hand, and features that get values during the derivation—*uninterpretable features*—on the other hand. The former can never be erased, and only become inaccessible if they are in the complement of a phase head. The latter features are used as the glue of the syntactic derivation, and so once all syntactic processes within the phase are completed, and Vocabulary Insertion lexicalized them, they have, as it were, fulfilled their purpose, and are therefore removed. Empirically, we need the distinction to account for the fact that noun phrases that are on the edge of a phase XP, or move via the edge of XP into the higher phase (see the discussion of scrambling in section 6), can always be the source of features for probes, regardless of what exponents they were matched with within the XP phase.

Second, note that this system does not ban multiple exponence across the board. The restriction on the same feature being lexicalized twice only emerges when two conditions are met: (i) the higher probe does not have direct access to the original source of the feature (the nominal), and thus has to get the feature from another (lower) probe; (ii) the higher probe and the lower probe are separated by a phase boundary. Unless both of these conditions hold, multiple exponence will be possible: for example, if a nominal that a lower probe agreed with moves and gets to be within the accessibility range of a higher probe, that higher probe could agree with it, potentially leading to a situation where both the lower and the higher probe expone exactly the same features; likewise, if the higher probe and the lower probe are within one phase, Vocabulary Insertion into the lower probe will not precede

agreement with the higher probe, and thus will not bleed it.[15] Finally, it should not be forgotten that, alongside agreement, there is still another source for what superficially looks like multiple exponence, namely morphosyntactically conditioned allomorphy, which our system continues to allow for: a root, for example, may have a suppletive allomorph whose insertion is conditioned by the presence of some feature on the probe immediately above it, and that probe may then be matched with an exponent that lexicalizes that feature, thus leading to the same feature ultimately having a reflex in the exponence of multiple morphemes (i.e. both the root and the probe); once again, nothing in our system forbids this.[16]

Thus, the system we propose, first, differentiates between the interpretable features found on nominals and their uninterpretable counterparts found on functional heads, and second, has directionality built into it: exponence of lower heads is expected to feed or bleed exponence of higher heads, but not vice versa.

5 Explaining the Discontinuous-Bleeding Generalization with LA

In this section we argue that the South Caucasian Discontinuous-Bleeding Generalization is a result of Leftover Agreement between *v*, which is the lower phasal probe, and C, which is the higher probe. To show that this is indeed the

[15] An anonymous reviewer has brought to our attention a case of multiple exponence in South Caucasian which seems to instantiate this second, "two probes within one phase" scenario. Old Georgian and some dialects of Modern Georgian have a plural-marking suffix *-(e)n* that can co-occur with Leftover Agreement:

(i) a. *Old Georgian*
ʒil-sa da-**v**-e-p'q'r-**en**-i-**t** (čwen)
sleep-DAT PVB-**1**-PRV-overcome-**PL**-PERF-**PL** (we.NOM)
'Sleep had overcome us.' (Tuite 1998b:71)

b. *Pshavian dialect*
ɣmert-ma **g**-a-mq'op-**n**-es-**t**, da-**g**-loc-**n**-es-**t**.
God-ERG **2**-PRV-sustain-**PL**-OPT-**PL** PVB-2-bless-**PL**-OPT-PL
'May God sustain you (pl) and bless you (pl).' (Tuite 1998b:142)

We would like to suggest that in these cases the locus of additional number features is on a low head within the same phase as *v* (possibly on a categorizing head, to be distinguished from the phasal Voice head we have been referring to as *v* so far), and thus is not expected to exhibit a Leftover-Agreement-like interaction with it. The low position of the probe exponed by *-(e)n* is supported, first, by the fact that this suffix is immediately adjacent to the verbal root, and second, by the fact that it can only agree with nominative objects (i.e. plural NOM underlying objects of series-II verbs and series-III verbs; Tuite 1998b:68–71). If this much is on the right track, then the possibility of multiple exponence of plural features is expected, as both *v* and the lower probe can get PL directly from nominals within the first phase.

[16] We are once again thankful to an anonymous reviewer for bringing this scenario to our attention by pointing out concrete examples, such as the Georgian number-suppletive verb *da-v-**jek**-i* (PVB-1-**sit.SG**-AOR) 'I sat down' vs. *da-v-**sxed**-i-t* (PVB-1-**sit.PL**-AOR-PL) 'we sat down' (Aronson 1990:243). If we analyze such suppletion as verbal-root allomorphy conditioned by the agreement features on *v*, the appearance of multiple exponence comes as no surprise within our system.

case (section 5.2), we will have to explore the question of how agreement on *v* (section 5.1) proceeds. But first let us comment on some general assumptions about agreement that we will employ. We assume that Agree is an operation that can proceed both downward and in a Spec-Head configuration (e.g., Béjar 2003, among many others). Following Deal (2015), we differentiate two operations within Agree: *interaction* is the process whereby a probe finds goals that have some relevant features and agrees with them; *satisfaction* occurs when the features that the probe has found stop its search. Probes differ in which features they interact with, and which features, if any, will stop their search process. Finally, we will assume that agreement can be *coarse*: some probes can copy more features from their goals than they were searching for. Finally, the only thing we will need to assume about phasehood is that *v*P is a phase.

5.1 *v* agreement

In this section we will outline our analysis of how *v* agreement proceeds. Many details of this analysis are tangential to our proposal about Leftover Agreement: the LA account of South Caucasian number agreement relies on *v* being matched with the correct exponents, but it does not depend on how exactly the exponents are determined or how the relevant features get onto *v*. Our story about *v* agreement will be quite similar to Béjar and Rezac's (2009) proposal, but with a twist: we will employ Yuan's (2020) recent proposal about dependent-case assignment within agreement to explain the fact that *v*'s exponents depend on whether the features to be exponed come from the subject or from the object.

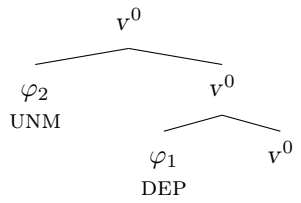
Following Béjar and Rezac (2009), we assume that *v* first searches in its complement, and then in its specifier. We propose that *v* interacts only with participant NPs, and that when it does, it copies their features ***coarsely***—copies the whole φ-bundle of the NP.[17] We also assume that *v* is insatiable (Deal 2017; Hiraiwa 2005): it is a probe that is never satisfied, and therefore does not stop searching for φ-features until it runs out of possible goals to interact with within its accessible search domain.[18] Furthermore, *v* organizes the φ-feature bundles that it copies into a hierarchical structure, such that the bundles that are copied later are head-adjoined higher than those copied earlier. So, for example, when *v* agrees with two NPs, we will get a representation as in (25) for a configuration where φ_1 are the features from the first NP that *v* interacted with and φ_2 are the features from the second NP. Crucially, we assume that although *v* cannot copy the features of 3rd-person noun phrases, its failed attempts to agree with them still contribute to the structural repre-

[17] We don't commit ourselves to the view that South Caucasian prefixes are clitics (see, e.g., Nash 1992 and Halle and Marantz 1993), although such a view is compatible with our proposal.

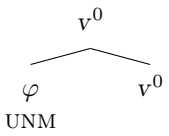
[18] As far as we can tell, analyzing *v* as an insatiable probe in this case does not make testably different predictions than analyzing it as a satiable probe that is satisfied when it gets both an addressee and a speaker features. We leave this option as a possible alternative.

sentation of the φ-feature bundles; we will represent such failed attempts as $\varnothing$ nodes.

(25)



(26)



We propose that v's exponence is governed by a dissimilation process akin to ***dependent case***: a feature bundle that is head-adjoined to v is dependent (DEP) if it is c-commanded by another feature bundle head-adjoined to v; otherwise it is unmarked (UNM). When only one φ-feature bundle gets head-adjoined to v, that bundle is thus unmarked regardless of whether it comes from v's complement or specifier (26)—just as with unmarked case on NPs in intransitive structures. Crucially, v's exponence is sensitive to whether a φ-feature bundle is dependent or unmarked (27): there is only room for one v exponent,[19] and the dependent φ-feature bundles take priority in being exponed.

(27) **Rule of exponence: DEP > UNM**

1. If there is a non-null DEP bundle, expone it.
2. If there is no non-null DEP bundle, expone the UNM bundle.

Whether a φ-feature bundle is dependent or unmarked also determines what exponents it can be exponed by. We provide the lists of DEP and UNM exponents for the four South Caucasian languages below.[20]

(28) **Georgian**
DEP-labeled φ-feature bundle:
a. $\{$1PL$\} \rightsquigarrow$ *gv-*
b. $\{1\} \rightsquigarrow$ *m-*
c. $\{2\} \rightsquigarrow$ *g-*

(29) **Georgian**
UNM-labeled φ-feature bundle:
a. $\{1\} \rightsquigarrow$ *v-*
b. $\{2\} \rightsquigarrow \varnothing$

(30) **Laz**
DEP-labeled φ-feature bundle:
a. $\{1\} \rightsquigarrow$ *m-*
b. $\{2\} \rightsquigarrow$ *g-*

(31) **Laz**
UNM-labeled φ-feature bundle:
a. $\{1\} \rightsquigarrow$ *v-*
b. $\{2\} \rightsquigarrow \varnothing$

[19] We take the inability to expone two φ-feature bundles at once to be an idiosyncratic property of South Caucasian. Contrast Yuan (2020) on verbal agreement in Yimas.

[20] We do not see an overt UNM-labeled 2nd-person prefix in Georgian, Laz and Megrelian: we assume that there exists a null exponent that lexicalizes UNM 2nd-person features. Note that in Svan there is an overt UNM 2nd-person exponent (*x-*).

(32) **Megrelian**
DEP-labeled φ-feature bundle:
a. {1} ⇝ *m-/b-/v-*
b. {2} ⇝ *r-*

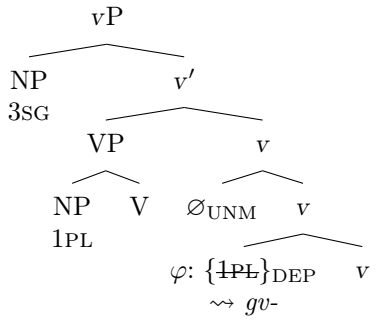
(33) **Megrelian**
UNM-labeled φ-feature bundle:
a. {1} ⇝ *b-/v-* [21]
b. {2} ⇝ ∅

(34) **Svan**
DEP-labeled φ-feature bundle:
a. {1+2,PL} ⇝ *gw-*
b. {1PL} ⇝ *n-*
c. {1} ⇝ *m-*
d. {2} ⇝ *ɕ-*

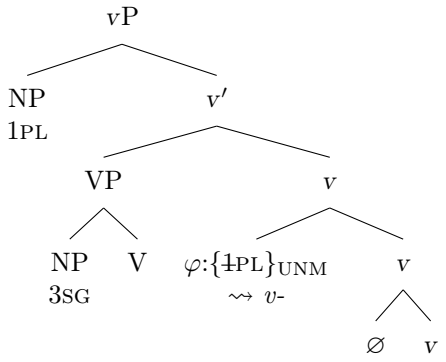
(35) **Svan**
UNM-labeled φ-feature bundle:
a. {1+2,PL} ⇝ *l-*
b. {1} ⇝ *xw-*
c. {2} ⇝ *x-*

Let us now illustrate how the *v* agreement outlined above works by comparing two examples from Georgian: a configuration with a 3rd-person singular subject and 1st-person plural object, 3SG > 1PL (36), and the reverse configuration, with a 1st-person plural subject and 3rd-person singular object, 1PL > 3SG (37). In both configurations *v* will first probe downwards. In 3SG > 1PL, it will find a participant object, whose features it will copy onto itself. In 1PL > 3SG it will find a 3rd-person NP, whose features it won't copy onto itself (recall that *v* can only copy features of participant NPs). As we see in (37), a ∅-node will head-adjoin to *v*, marking this failed attempt.

(36) (man) (čven)
(3SG.ERG) (1PL.NOM)
gv-nax-a
1PL-see-AOR
'(S)he saw us.'
(Foley 2020:871)



(37) (čven) (mas)
(1PL.NOM) (3SG.ACC)
v-nax-e-t
1-see-AOR-PL
'We saw it/him/her.'
(Foley 2020:871)



[21] From the Megrelian data available to us, it is not clear whether there are two separate 1st-person exponents or a single one, possibly underspecified for DEP/UNM-marking. We assume two separate exponents just for the sake of concreteness.

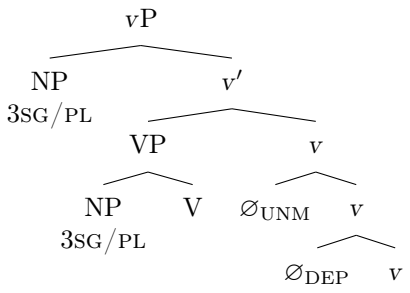
Since *v* is an insatiable probe, it will continue to search. There are no more NPs in *v*'s c-command domain, so it will attempt to agree with its specifier. In the 3SG > 1PL configuration (36), *v* will find a 3rd-person NP, which will lead to it creating a ∅-node, because *v* cannot copy features from non-participants. By contrast, in the 1PL > 3SG configuration (37), it will find the participant subject and copy its features onto itself.

Thus, in both configurations, *v* will build a hierarchical structure during agreement, but the placement of the participant features in the two structures will be different. In 3SG > 1PL, the features of the 1PL NP are structurally lower (dependent) within the *v* head complex. In 1PL > 3SG, the features of the 1PL NP are structurally higher (unmarked) within the *v* head complex. Given the rules of exponence in (27), in the 3SG > 1PL configuration the DEP-marked feature bundle will be exponed, but in the 1PL > 3SG configuration, the UNM-marked feature bundle will be exponed. More specifically, the DEP-labeled bundle in (36) is exponed with *gv-*, which lexicalizes both 1st-person and plural features, whereas the UNM-labeled bundle in (37) is exponed with *v-*, which lexicalizes just the 1st-person feature. Thus, in both (36) and (37) the 1PL bundle will be exponed, but the exponents will be different due to the different structural position of that bundle. Laz, Megrelian and Svan behave just like Georgian in how *v* agreement proceeds, and in how the exponents for *v* are chosen: the DEP-labeled exponents will be used in the 3SG > 1PL configuration (*m-* for Laz, *m-/b-/v-* for Megrelian, *n-* or *gw-* in Svan, depending on the clusivity of the plural), and the UNM-labeled exponents will be used in the 1PL > 3SG configuration (*v-* for Laz, *b-/v-* for Megrelian, *xw-* or *l-* in Svan, depending on clusivity again).

So far we've only looked at a configuration with a 3rd-person and a participant argument, where we always see agreement with the participant argument (no matter whether it's a subject or an object) due to *v*'s inability to copy features from 3rd-person NPs. Now we turn to the two other cases: the one where both arguments are 3rd-person and the one both arguments are participants.

When both arguments are 3rd-person, our analysis of *v* agreement predicts that *v* should fail to copy any features, due to its inability to agree with 3rd-person NPs (38). This is borne out: we do not see any prefixal agreement in 3SG/PL > 3SG/PL configurations, (39)-(40). This result is expected if *v* agreement fails (Preminger 2014), without finding any features to copy.

(38) **3SG/PL > 3SG/PL configuration**



(39) **Georgian**
(Aronson 1990:43)
da-c'er-s
PVB-write.PRS-3
'(S)he will write it/them.'

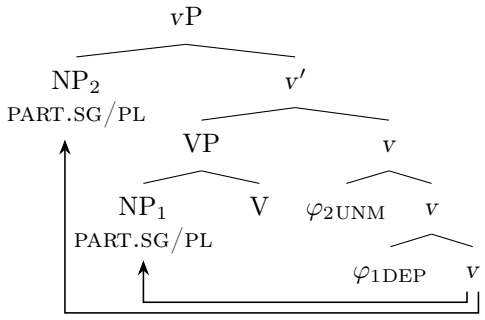
(40) **Laz**
(Lacroix 2009:289)
dzirom-s
see.PRS-3
'(S)he sees her/him/it/them.'

(41) **Svan** (Gudjedjiani and Palmaitis 1986:63)
amāre
prepare.PRS
'(S)he prepares her/him/it/them.'

(42) **Megrelian**
(Kipshidze 1914:76)
č'arən-s/c
write.PRS-3
'(S)he writes it/them.'

Let us now consider configurations where both arguments are participants:

(43) **PART.SG/PL > PART.SG/PL configuration**



First v will look in its c-command domain and find NP_1. Since it's a participant noun phrase, it will copy its features onto itself (φ_1). Given that v is an insatiable probe, it will search again, now in its specifier, and find NP_2. Since NP_2 is also a participant NP, v will copy its features onto itself (φ_2). Thus, a hierarchical structure with two feature bundles, φ_2 c-commanding φ_1, is created. In this structure, φ_2 is the unmarked (UNM) bundle; φ_1 is the dependent one (DEP). The rule of exponence in (27) declares the priority of exponing DEP-labeled features if there are any on v. This means that we will always see object agreement in the configuration with two participant NPs. This is indeed the case, as is illustrated for the four languages in (44)-(51) by comparing the 1SG > 2SG and 2SG > 1SG configurations.

(44) **Georgian** 1SG > 2SG
(Aronson 1990:172)
g-nax-e
2-see-AOR
'I saw you (sg).'

(45) **Georgian** 2SG > 1SG
(Aronson 1990:172)
m-nax-e
1-see-AOR
'You (sg) saw me.'

(46) **Laz** 1SG > 2SG
(Lacroix 2009:294)
g-dziom
2-see.PRS
'I see you (sg).'

(47) **Laz** 2SG > 1SG
(Lacroix 2009:294)
m-dziom
1-see.PRS
'You (sg) see me.'

(48) **Megrelian** 1SG > 2SG
(Kipshidze 1914:76)
r-č'arənk
2-see.PRS
'I see you (sg).'

(49) **Megrelian** 2SG > 1SG
(Kipshidze 1914:76)
m/b/v-č'arənk
1-see.PRS
'You (sg) see me.'

(50) **Svan** 1SG > 2SG
(Gudjedjiani and Palmaitis 1986:63)
ʤ-amāre
2-prepare.PRS
'I prepare you (sg).'

(51) **Svan** 2SG > 1SG
(Gudjedjiani and Palmaitis 1986:63)
m-amāre
1-prepare.PRS
'You (sg) prepare me.'

As we can see from comparing the *v* exponents in (44)-(51) to the ones presented in (28)-(35), the DEP-labeled exponents are used in the 1SG > 2SG and 2SG > 1SG configurations in all the four languages. In the 1SG > 2SG configuration the *v* exponent lexicalizes the 2nd-person feature; in the 2SG > 1SG configuration the *v* exponent lexicalizes the 1st-person feature. Thus, it is the features of the object that get exponed. The reader can confirm that this generalization also holds for other PART > PART combinations in the charts presented in appendix A: in the direct paradigm, prefixal agreement is always with the object, and the exponents are always picked from the DEP-labeled set.[22]

Let us now summarize how *v* agreement proceeds. We have observed that in both PART > NON-PART and NON-PART > PART configurations, we see the features of the participant argument on *v*; in PART > PART configurations we see the features of the object on *v*, and in NON-PART > NON-PART configurations we see no *v* agreement at all. Moreover, we have proposed to view the choice of exponence as being governed by a dependent-case-like dissimilation process within the structure built by the probe. This proposal comes with the advantage of making a straightforward and correct prediction about unaccusative and unergative verbs. The empirical observation about these verbs is that they do not differ in their agreement.[23] For example, compare an unac-

[22] One might wonder whether there is a reason to think that *v* agrees with both arguments in PART > PART configurations, given that we never see the features of both arguments being exponed. We will see in section 7.4 that the inverse paradigm of Georgian provides evidence that *v* in fact agrees with both arguments in these cases.

[23] An anonymous reviewer points out that there is one apparent exception to the pattern. This involves verbs that take only one dative argument, like *m-šia* 'I am hungry'—which,

cusative verb 'blush' and an unergative verb 'roll' in Georgian when they take a 1st-person argument:

(52) **unaccusative** (Class 2)
ga-**v**-c'itldebi
PVB-**1(UNM)**-blush.PRS
'I'll blush.' (Aronson 1990:62)

(53) **unergative** (Class 3)
v-gorav
1(UNM)-roll.PRS
'I roll.' (Aronson 1990:204)

With both verbs we see the 1st-person exponent from the UNM-labeled exponent set. This is an unexpected result for a system like Béjar's (2003) or Béjar and Rezac's (2009) (as is noted in Béjar 2003:130 and further discussed in Demirok 2013:137ff), which views what we have called DEP-labeled exponents as exponents that are used for features copied in the first cycle of probing. If arguments of unaccusatives originate as objects, we would expect them to be agreed with in the first cycle of probing, and would therefore expect unaccusative verbs to use first-cycle agreement exponents (i.e. what we referred to as DEP-labeled exponents), contrary to fact. Our analysis does not run into the same problem, because for us, whenever there is only one NP in the structure (unergative or unaccusative), *v* will only copy one φ-feature bundle, consistently leading to UNM-labeled exponents.

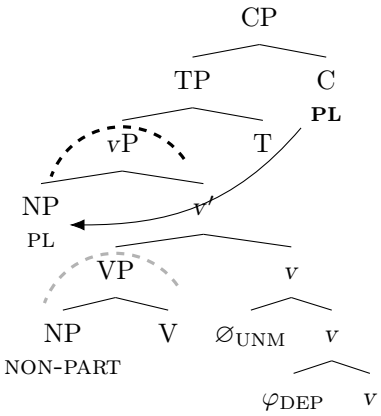
5.2 C agreement and Leftover Agreement

Let us start by laying out some general properties of C agreement. As we will see shortly, C probes in the four South Caucasian languages have partly different properties, but all of them have the following in common: (i) they search for PL features, and (ii) they make use of Leftover Agreement. Due to *v* being a phase head, the VP will be totally inaccessible for the C probe (- - - - - in (54)–(55)). The subject in Spec,*v*P however, as well as any leftover features on *v*, are within reach.

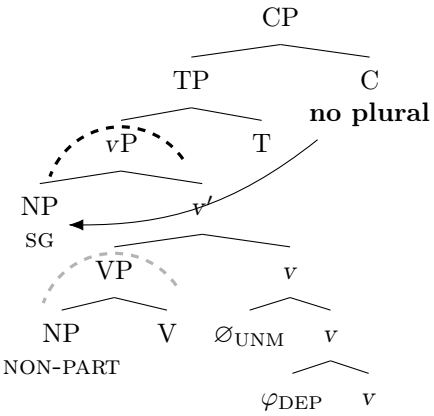
Let us first observe what happens in the absence of leftover features on *v*, i.e. in configurations where the object is a 3rd-person noun phrase (singular or plural). In such a situation the only possible agreement target for C is the subject. If the subject is plural, (54), C will agree with it, and be able to expone this plural feature. But if the subject is singular, (55), C won't be able to find any features. Hence, agreement will fail without leading to ungrammaticality (Preminger 2014).

despite their apparent intransitivity, display DEP-labeled exponents rather than UNM-labeled ones. The exception disappears, however, if we analyze these verbs as lexically selecting for a null 3rd-singular expletive subject (cf. e.g. German *es hungert mich*, lit. 'it hungers me', with much the same meaning as *m-šia*).

(54) *No LA with v,* PL *subject*



(55) *No LA with v,* SG *subject*



For example, if we consider the forms with 3SG subject and a 3rd-person object that we find in the four South Caucasian languages, (56)-(59), we notice that none of them have suffixes exponing plural features, even if the object is plural. We'll return to the question of 3rd-person suffixes in section 5.2.2.

(56) **Georgian**
(Aronson 1990:172)
da-c'er-s
PVB-write-3
'(S)he writes it/them.'

(57) **Svan** (Gudjedjiani and Palmaitis 1986:63)
amāre
prepare.PRS
'(S)he prepares it/them.'

(58) **Laz**
(Lacroix 2009:341)
çarum-**s**
write.PRS-3
'(S)he writes it/them.'

(59) **Megrelian**
(Kipshidze 1914:76)
č'arən-**s**/**c**
write.PRS-3
'(S)he writes it/them.'

In the next section (5.2.1), we put forward a general proposal about how C gets features from *v* via Leftover Agreement. In section 5.2.2, we elaborate on how this proposal instantiates itself in the four languages, and what points of variation we observe across them.

5.2.1 Leftover Agreement: the core idea

Let us illustrate the core idea of Leftover Agreement in C by looking at plural agreement in 3SG > 1PL and 3SG > 2PL configurations. All C probes in South Caucasian languages are specified to search for plural features, but in these configurations the subject, which is accessible to C but singular, cannot provide such features. This means that the only possible source of plural features

is *v*. However, accessibility of features on *v* to C depends on exponence: only ***leftover*** (= unlexicalized) features are accessible to it (- - - - -). Let us consider what happens in the 3SG > 1PL case, (60)-(63).

(60) **Georgian**
(Aronson 1990:172)
gv-nax-a
1PL-see-AOR
'(S)he saw us.'

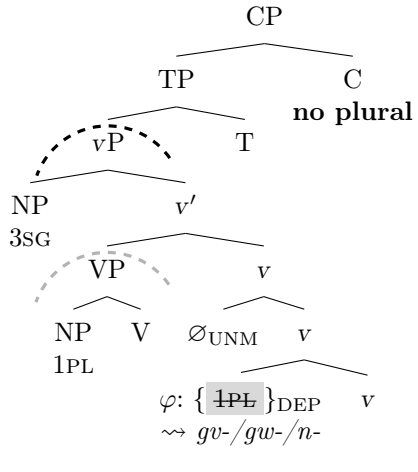
(61) **Laz**
(Lacroix 2009:294)
m-dziom-**an**
1-see.PRS-**PL**
'(S)he sees us.'

(62) **Svan** (Gudjedjiani and Palmaitis 1986:63)
gw/**n**-amāre
1PL.IN/**EX**-prepare.PRS
'(S)he prepares us.'

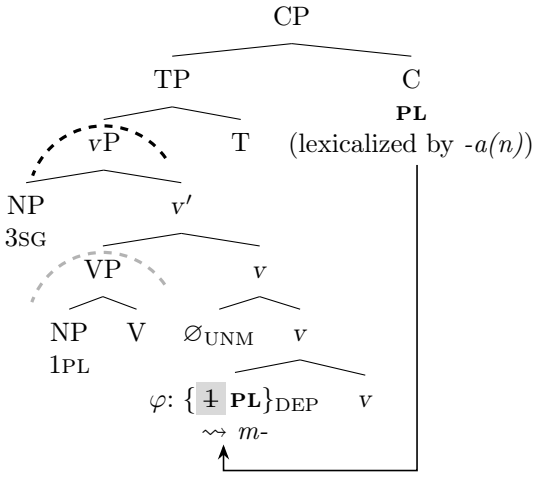
(63) **Megrelian**
(Kipshidze 1914:76)
m/**v**-č'arən-**a(n)**
1-write.PRS-**PL**
'(S)he writes us.'

Georgian and Svan on the one hand and Megrelian and Laz on the other hand differ in which features of *v* have been lexicalized: as discussed in section 5.1, Georgian and Svan have DEP-labeled exponents that lexicalize both 1st person and PL (*gv-/gw-/n-*), which they use in this case, whereas Laz and Megrelian lack such exponents, and thus lexicalize only 1st person (*m-*). This has a consequence for C agreement. In Georgian and Svan, C fails to find plural features on *v* due to them already being lexicalized, and thus we don't see PL features lexicalized in C in this configuration (64). By contrast, in Laz and Megrelian, C will find the unlexicalized PL feature on *v*, copy it and expone it (65).

(64)



(65)



The inaccessibility of VP derives the fact that C cannot agree directly with a plural object and copy the features from it. This fact is exemplified by sentences like (66), where we have a singular subject and a 3PL object. Recall

that *v* does not agree with non-participant noun phrases. Thus, there are no PL features on *v* in (66). If C could agree with the plural object directly, we would expect a plural suffix to occur in this form. The fact that no such suffix can occur here suggests that C has no direct access to the object, and that it can only get features from *v* and its specifier.[24]

(66) da-v-c'er-di-**(*t)** **Georgian** (Aronson 1990:45)
PVB-1-write-IMPF-**(PL)**
'I would write them.'

Thus, 3SG > 1PL is a configuration in which we see Leftover Agreement occur in Laz and Megrelian, but not in Georgian and Svan.

Let us now turn to the 3SG > 2PL configuration, where all the four languages show Leftover Agreement. All four languages lack a DEP-labeled *v* exponent that would lexicalize both 2nd-person and PL features; thus all of them have to use *v* exponents that only lexicalize the 2nd-person feature, so that the PL feature on *v* is left over. C is able to find this feature, copy it onto itself and expone it (71).

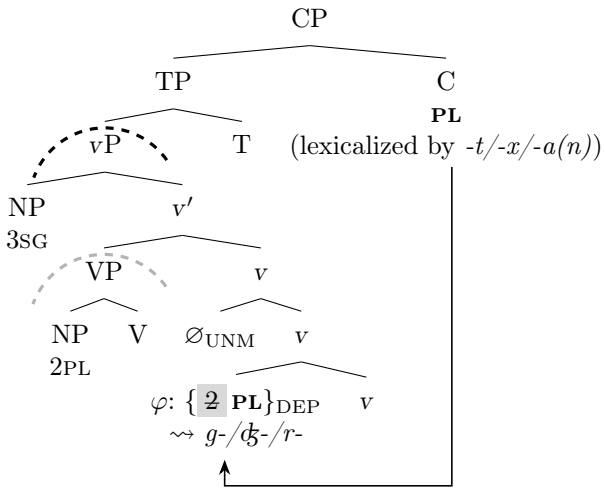
(67) **Georgian**
(Aronson 1990:172)
g-nax-a-**t**
2-see-AOR-**PL**
'(S)he saw you (pl).'

(68) **Svan** (Gudjedjiani and Palmaitis 1986:63)
ʤ-amāre-**x**
2-prepare.PRS-**PL**
'(S)he prepares you (pl).'

(69) **Laz**
(Lacroix 2009:294)
g-dziom-**an**
2-see.PRS-**PL**
'(S)he sees you (pl).'

(70) **Megrelian**
(Kipshidze 1914:76)
r-č'arən-**a(n)**
2-write.PRS-**PL**
'(S)he writes you (pl).'

(71)



[24] *Da-v-c'er-di-t* is fine (as we predict) under a different meaning: '*we* would write it/them'.

Thus, our proposal captures the dependence between *v*'s exponence and C agreement by appealing to a certain implementation of *v*'s phasehood together with the possibility of agreement between these two functional heads. C's search is limited by *v*'s phasehood, so that C can search into *v*'s specifier and *v* itself, but no further. When the subject in Spec,*v*P is plural, C will be able to agree with the subject itself.[25] When the subject in Spec,*v*P is singular, C's only potential access to plural features is via Leftover Agreement with *v*. Given that *v* agrees only with participants, C agrees with the plural features of objects only if they are participants as well. The fact that C can only find object features that were not lexicalized by *v* itself derives the interaction between *v* agreement and C agreement—the Discontinuous-Bleeding Generalization. This is the core of our proposal.

5.2.2 C agreement: points of variation

While the general mechanism of interaction between *v* agreement and C agreement is the same in all four South Caucasian languages, these languages vary in the details of C agreement. Specifically, we propose that there are two main points of variation concerning C: (i) the featural specification of the C probe; (ii) the mechanics of C exponence. In addition, we propose one more point of variation concerning T: (iii) whether the exponence of T is allomorphically conditioned by the φ-features on C or not. In this section, we will examine how these points of variation play out together, by starting with Svan, then moving on to Georgian, Laz and Megrelian.

Svan Let us begin with Svan, where the situation is comparatively simple. In this language, the only suffixal morpheme we need to worry about is C,

[25] This case might look like Leftover Agreement. For example, in the 1PL > 3SG configuration in Georgian we see a prefix lexicalizing 1st person and a suffix lexicalizing plural:

(i) **Georgian** (Aronson 1990:43)
da-**v**-c'er-**t**
PVB-**1**-write.PRS-**PL**
'We will write it.'

However, the intervention effect in Svan (to be discussed in the section 5.2.2 and in section 6) suggests that subjects should be regarded as structurally higher than *v* when it comes to agreement with the higher probe. Thus, we hypothesize that in cases like (i) the higher probe agrees with the subject directly, and the leftover plural feature on *v* remains unlexicalized. Allowing C to directly agree with the subject is also important for the treatment of cases of ostensible multiple exponence such as (ii) from Svan.

(ii) **Svan** (Gudjedjiani and Palmaitis 1986:63)
l-amāre-**d**
1INCL-prepare.PRS-**PL**
'We (incl.) prepare it.'

Here, under the natural assumption that the UNM-labeled prefix *l*- lexicalizes both 1+2 and PL (as does its UNM-labeled counterpart *gw*-), we would incorrectly predict that the C probe should never find PL if it were to only rely on the leftovers on *v* (of which there would be none). By contrast, granting the C probe direct access to the subject nominal itself correctly derives the observed pattern of multiple plural agreement.

given that the form of the T morpheme never co-varies with any argument's φ-features.[26] Focusing on C, the first basic observation is that it appears to lexicalize PART and PL features, as is illustrated in (72).

(72) **C exponents in Svan**

a. {PART, PL} ⇝ *-d*

b. {PART} ⇝ ∅/__ T_{PRS} __
⇝ *-äs* ∼ *-sgw* ∼ ∅ ∼ *-is* / T_{IMPF} __[27]

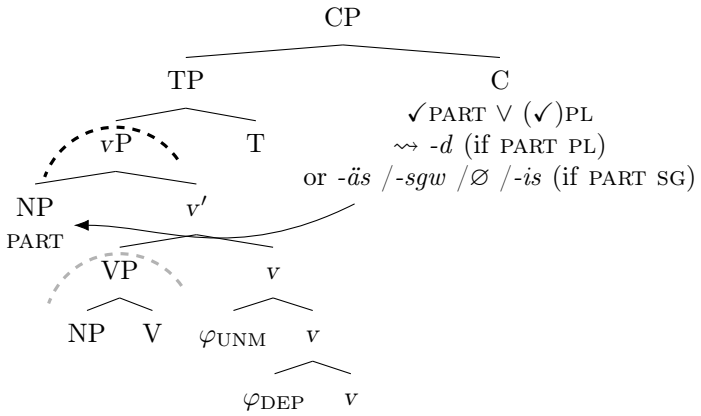
c. {PL} ⇝ *-x*

What makes the Svan C probe interesting (and unique in the current South Caucasian context), however, is that it turns out to bear a *disjunctive* featural specification—a possibility independently argued to be available by Roversi (2020) for Äiwoo.

(73) **C probe in Svan**: PART ∨ PL

To appreciate the empirical consequences of this disjunction, consider the following three configurations: participant subject, 3PL subject and 3SG subject. If the subject is a participant, the probe will be satisfied as soon as it agrees with the subject:

(74)



More specifically, if the participant subject is plural, then C will get both features and be exponed by *-d*. By contrast, if the participant subject is singular, C will only copy the PART feature, but this will be enough to satisfy

[26] Instead, the exponence of T in Svan appears to be conditioned solely by the conjugation class of the verb stem, as outlined in (i).

(i) **T exponents in Svan** (Testelets 1989:13)

a. {PRS} ⇝	*-e, -i, ∅*	depending on the verb
b. {IMPF} ⇝	*-a*	if the verb ends with *-e* in present
⇝	*-da*	elsewhere

[27] These different allomorphs occur in different dialects (Tuite 1998a).

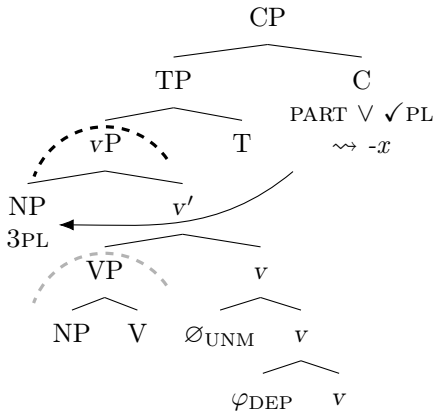
the disjunctive probe, and thus C will search no further, ending up with only participant features. The ultimate exponent of C in such a configuration may differ depending on the TAM form of the verb, and it also varies across different Svan dialects: for the imperfect, for example, Tuite (1998a) reports the exponent *-äs* in the Upper Bal and Lent'ex dialects, *-sgw* in the Becho dialect, ∅ in the Etser and Laxamul dialects, and *-is* in the Lashx dialect. What is interesting, however, is that in all the dialects the C exponent in the imperfect is different from all the rest of the paradigm only in forms with 1SG and 2SG subjects—and in exactly these forms we predict an intervention effect for Leftover Agreement. This effect is illustrated in (75).

(75) **Svan** 1SG > 2PL (Gudjedjiani and Palmaitis 1986:63)
ʤ-amāre
2-prepare.PRS
'I prepare you (pl).'

In (75) the object is a plural participant, and *v* does not lexicalize its plural feature, which means that plural is a leftover feature on *v*. Thus, we might have expected C to be able to find this feature and agree with it. However, that does not happen: we do not see an exponent lexicalizing PL on C. This effect is accounted for under our proposal: C finds the participant subject first, and because it is a disjunctive probe, it is satisfied immediately and searches no further, blocking Leftover Agreement.

Now let's consider the configuration with a NON-PART PL subject. Our proposal predicts that due to the disjunctive nature of the C probe, C should find the plural subject, copy its PL feature, and be immediately satisfied:

(76)

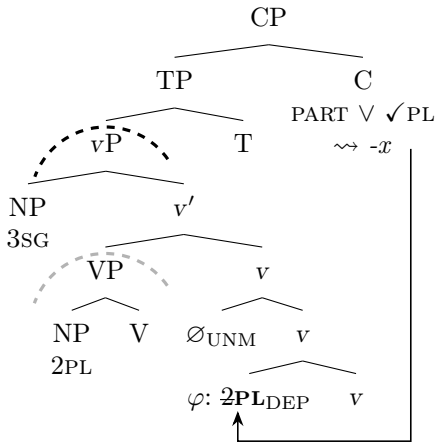


The data is in line with this prediction: in all the forms where the subject is 3PL we see the plural marker *-x*.[28]

[28] But note that in this case we cannot distinguish C not searching further (which is what our proposal predicts) and C searching further but not finding anything. This is so because *v* always lexicalizes the participant features that it gathers from the object when the subject is 3rd-person. Thus, there are no leftover participant features on *v* that C could agree with.

Finally, let's look at what happens when the subject is a singular non-participant NP. The subject in this case has no features that are of interest to C, and thus C does not agree with it. This means that the only way for C to find any feature is via Leftover Agreement with *v*. In particular, since *v* always lexicalizes the object's participant features, the only leftover feature that C has a chance to find is plural. Such a feature is present on *v* in Svan only in one configuration: when the object is 2PL, and the prefix does not lexicalize the plural feature:

(77)



In exactly this configuration we do see Leftover Agreement, and we see the expected plural exponent *-x*. Despite the fact that the plural feature is originally from a participant NP, when C reaches it on *v*, it does not have access to the participant feature due to the fact that *v* has lexicalized this feature with its exponent. Thus, C does not copy PART onto itself and therefore cannot use the PART.PL exponent *-d*; rather, it has to use the underspecified PL exponent *-x*. Unless the object is 2PL, we will not find any agreement on C when the subject is 3SG, as C's search will fail.[29]

[29] An anonymous reviewer notes that the disjunctive probe that we postulate for Svan might be problematic for the inverse, where 2PL > 1SG verbs lack plural agreement, (i).

(i) sgäy mi ʤ-alät'-xwi /*...-d
2PL(.DAT) 1SG(.NOM) 2-love.PRS-STAT.1 /*...-PART.PL
'You (pl) love me.' (Lent'ex dialect, Topuria 1967:21, via Foley 2020:868; glosses adapted)

Indeed, if the dative argument is higher than the nominative, we would expect the number probe to agree with the plural dative subject. We need to leave this construction for further research, as the details of the syntactic configuration might matter for why PL agreement is blocked. But we'd like to briefly mention a couple of things.

First, according to Kibrik (1996:490), there is variation among the speakers of Svan in such configurations, with some speakers finding the presence of plural acceptable (the data he reports were gathered in 1989 in the village Cholash in Mestia Municipality, Georgia). Without knowing more about this variation (e.g., could it be driven by syntactic differences?), it is difficult to draw any conclusions about how best to analyze this pattern. Second, one

Georgian, Laz and Megrelian: the commonalities Let us now move on to Georgian, Laz and Megrelian, which provide a somewhat more complex picture. We propose that the C probe in all three of these languages searches for both NON-PART[30] and PL—by which we simply mean that the probe continues its search until it finds both features, but that it needn't necessarily find them both on one and the same goal (cf. especially Scott 2021 for clarification on this point). As for C exponence, we adopt the preliminary exponent list in (79)–(81)—but see shortly below for some further discussion, as well as for an explicit account of the interactions between C and T.

(78) **C probe in Georgian, Laz and Megrelian**
NON-PART & PL

(79) **C exponents in Georgian**
a. {NON-PART, PL} ⇝ *-en* /T_{PRS} ___
⇝ *-nen* /T_{IMPF} ___
b. {NON-PART} ⇝ *-s* /T_{PRS} ___
⇝ *-a* /T_{IMPF} ___
c. {PL} ⇝ *-t*

(80) **C exponents in Laz**
a. {NON-PART, PL} ⇝ *-an* / T_{PRS} ___
⇝ *-es* /T_{PAST} ___
b. {NON-PART} ⇝ ∅
c. {PL} ⇝ *-t*

(81) **C exponents in Megrelian**
a. {NON-PART, PL} ⇝ *-a(n)* /T_{PRS} ___
⇝ *-es* /T_{IMPF} ___
b. {NON-PART} ⇝ ∅
c. {PL} ⇝ *-t*
d. { } ⇝ *-k* / T_{PRS} ___
⇝ ∅ / T_{IMPF} ___

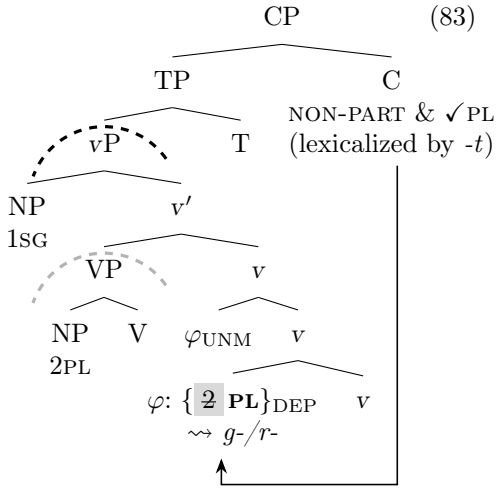
In order to see how this works, there are once again three key configurations to consider: the subject is a participant, the subject is 3PL, and subject is 3SG.

hypothesis about the ban on plural agreement could be that perhaps the C probe in the inverse is case-discriminating and cannot interact with dative arguments. Finally, yet another possibility is that there might be an additional probe in the inverse configurations—one which, by virtue of being lower than the C probe, still has access to the direct object and gathers its features. If that probe is the first thing that C can find, and if there are leftover PART features on it, then the C probe will be immediately satisfied and won't probe any further.

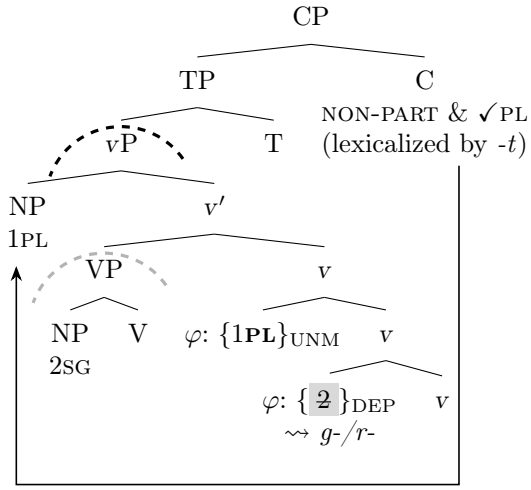
[30] On NON-PART, cf. Harbour (2016), Nevins (2007) and Trommer (2008), all of whom argued that 3rd person is not reducible to the mere absence of person features, and see especially Grishin (2023) for evidence for omnivorous 3rd-person agreement from Algonquian (cf. also Francis and Leavitt 2008; Oxford 2020).

If the subject is a participant, then C will never find a NON-PART feature, as *v* never copies such features to begin with and thus cannot have them as leftovers. Therefore, in this configuration, the only feature that C may agree with is the plural, to be ultimately lexicalized by *-t*. Notice that, in some of these configurations, C may in principle get its plural feature from either the subject itself or leftovers unlexicalized on *v*. In particular, in the 1SG > 2PL configuration in (82) C unambiguously gets it from the leftovers of *v* agreement with the object, while in the 1PL >2SG configuration in (83) C could in principle get its plural either from the subject itself or from the leftovers of *v* agreement with the subject; and similarly, in the 1PL >2PL configuration in (84), C could in principle get PL from as many as three potential sources—the subject itself, the leftovers of *v* agreement with the subject, and the leftovers of *v* agreement with the object. In all of these cases, bearing in mind the Svan intervention data discussed above, we will assume that the subject should be regarded as structurally higher than *v* for the purposes of C agreement, and therefore that C consistently favors agreeing directly with the subject whenever possible (cf. also fn. 25). In both (83) and (84), the leftover features on *v* will therefore remain unlexicalized by the end of the derivation.

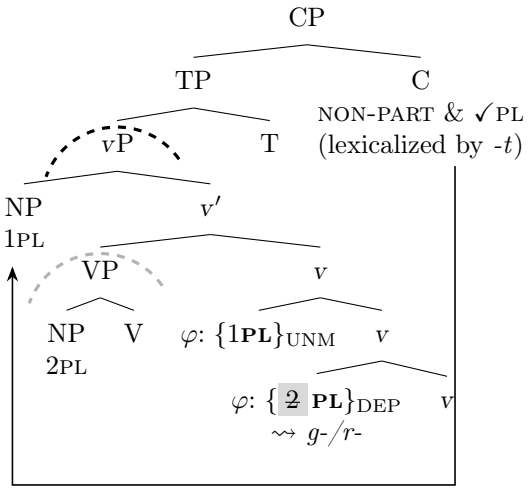
(82)



(83)

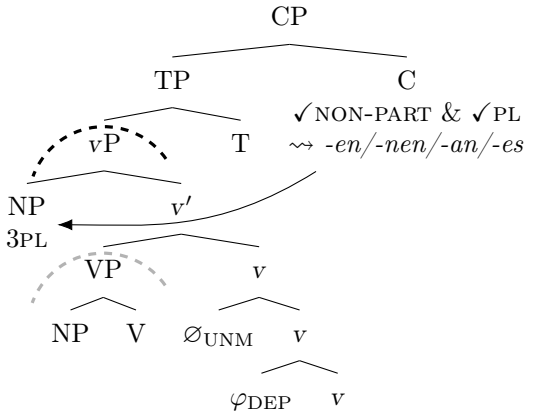


(84)



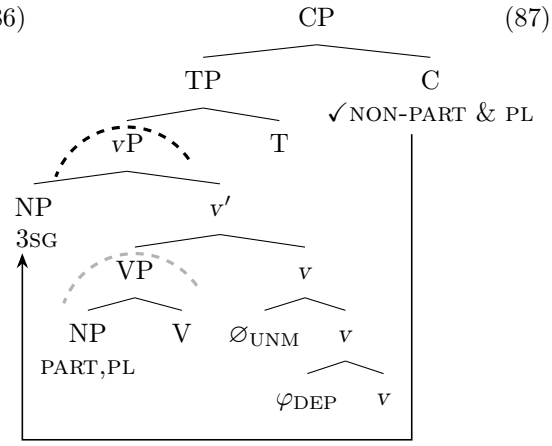
If the subject is 3PL, (85), then C will agree with it and satisfy both of its features, finishing its search. C will then be matched with exponents *-en/-nen*, which can lexicalize both NON-PART and PL features. When the subject is 3PL, it doesn't matter for C agreement what the features of the object are, and our account captures this.

(85)

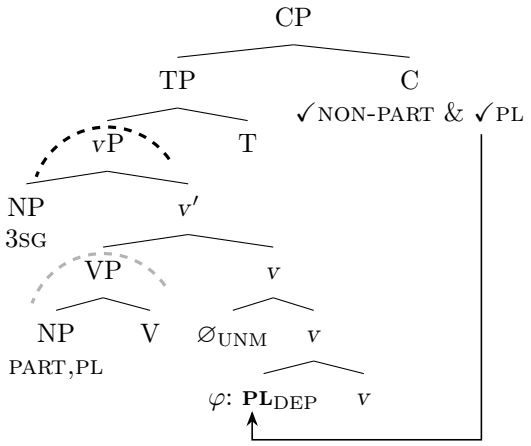


Finally, if the subject is 3SG, then C will first agree with it, (86), and then also check if *v* has any leftover PL features. If there are no such features, C's search for PL will fail (Preminger 2014), but if there do exist leftover PL features, C will agree with them and be satisfied, (87).

(86)



(87)



In this particular configuration, however, the way NON-PART and PL are exponed on C displays some variation across the three languages. We turn to this variation in the next section.

Georgian, Laz and Megrelian: the differences Now that the syntactic commonalities shared by Georgian, Laz and Megrelian C agreement are in place, we can turn to their relevant differences, which in our view are restricted to matters of exponence. First, something needs to be said about the exponence of C in the configuration in (86)–(87), where C gathers its NON-PART and its PL features from different sources (the subject and the leftovers on *v*, respectively). In this configuration, as illustrated in (88)–(90), Georgian on the one hand and Laz and Megrelian on the other hand turn out to behave differently. In Georgian, the two features on C are exponed separately: the NON-PART feature is exponed by ∅ in the present tense and as *-a* in the imperfect, while the PL feature is exponed by *-t*. In Laz and Megrelian, however, the two features are exponed by a single exponent: *-a(n)* in the present tense and *-es* in the past—i.e. the same exponents that would be used if the NON-PART and PL features had been copied from one and the same source (a 3PL subject). What is the source of this variation?

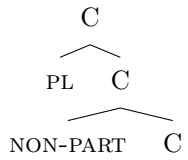
(88) **Georgian**
(Hewitt 1995:227)
g-arčen-d-**a-t**
2-save-IMPF-**3-PL**
'(S)he was saving you (PL).'

(89) **Laz**
(Lacroix 2009:294)
g-dziom-**an**
2-see.PRS-**3PL**
'(S)he sees you (PL).'

(90) **Megrelian**
(Kipshidze 1914:76)
r-č'arən-**a(n)**
2-write.PRS-**3PL**
'(S)he writes you (PL).'

As the reader might recall, we have so far been assuming that when *v* copies features onto itself in successive cycles of agreement, it organizes those features into a hierarchical structure. Now we suggest that the same is also true of C, as is illustrated in (91).

(91)



From this perspective, we may then start to make sense of the variation in (88)–(90) in the following terms: while Georgian maps each probe-internal node onto its own locus of exponence, Laz and Megrelian appear to map the whole probe onto a single exponence locus, containing both NON-PART and PL at once. This intuition might then be implemented in various possible ways—e.g. in terms of fusion, feature percolation or some other such device. Since this is not the main empirical focus of our paper, we leave the choice of an explicit implementation as a task for future research, but whatever the concrete details might ultimately be, we believe that the idea of an internally structured probe might hold the key to the puzzle.

Finally, the last domain where we can observe some subtle variation across Georgian, Laz and Megrelian is the exponence of T. We propose that in each of these three languages (in contrast to Svan) the exponence of T is sometimes allomorphically conditioned by φ-features of C—albeit not always by the same φ-features across all tenses or across all languages. Specifically, we adopt the rules of exponence in (92) for Georgian, those in (93) for Laz and those in (94) for Megrelian.[31]

(92) **T exponents in Georgian**

a. $\{\text{IMPF}\} \rightsquigarrow$ *-d* / $\_\_$ $\text{C}_{\text{NON-PART}}$
$\rightsquigarrow$ *-di* elsewhere

b. $\{\text{PRS}\} \rightsquigarrow \varnothing$

(93) **T exponents in Laz**

a. $\{\text{PAST}\} \rightsquigarrow$ *-e* / $\_\_$ $\text{C}_{\text{NON-PART, PL}}$
$\rightsquigarrow$ *-u* / $\_\_$ $\text{C}_{\text{NON-PART}}$
$\rightsquigarrow$ *-i* elsewhere

[31] While there are alternative ways of capturing T's sensitivity to φ-features, we adopt the allomorphy analysis because it straightforwardly captures the fact that the realization of T is systematically insensitive to the distinction between 1st- and 2nd-person arguments across different Series I and II TAM forms in these languages.
An alternative, pointed out to us by a reviewer and also proposed in the literature (Demirok 2013; Foley 2017; McGinnis 2008, 2013; Socolof 2020), is to analyze T as having its own probe agreeing in φ-features with the clausemate subject. This alternative would be compatible with our assumption that the subject nominal's interpretable features (e.g. PART) do not get used up by Vocabulary Insertion; however, it would not capture the generalization that T in Series I and II never expones features of different kinds of participants by distinct exponents.

b. {PRS} ⇝ ∅ / ___ $C_{\text{NON-PART, PL}}$
⇝ *-n* / $TS_{\text{-}ur/er\text{-}}$ ___ $C_{\text{NON-PART}}$
⇝ *-s* / ___ $C_{\text{NON-PART}}$
⇝ ∅ elsewhere

(94) **T exponents in Megrelian**

a. {PAST} ⇝ *-d-* / ___ $C_{\text{NON-PART, PL}}$
⇝ *-du/də* / ___ $C_{\text{NON-PART}}$
⇝ *-di* elsewhere

b. {PRS} ⇝ ∅ / ___ $C_{\text{NON-PART, PL}}$
⇝ *-s/-c* / ___ $C_{\text{NON-PART}}$
⇝ ∅ elsewhere

In particular, two noteworthy properties in this domain appear to be unique to Laz.[32] First, the present-tense morpheme in Laz 3SG-subject forms (where C has only agreed with NON-PART) is exponed differently depending on the verb's so-called thematic suffix, specifically as *-n* if the thematic suffix is *-ur-* or *-er-* and as *-s* otherwise (Öztürk and Pöchtrager 2011; Öztürk and Taylan 2017)—a fact that indicates that allomorphy on T might sometimes be both inward- and outward-sensitive at once.[33] Second, the past-tense exponent *-e*, while normally inserted right before the C-exponent *-es* and hence deleted for hiatus-avoidance purposes, does surface overtly in counterfactual conditional forms such as (95), where it is both linearly and structurally separated out from C by the intervening conditional suffix *-k'(o)*.[34]

(95) a. ke-∅-çop-**e**-k'-es
PVB-3-buy-PST-COND-NONPART.PL
'(if) they had bought it' (Öztürk and Pöchtrager 2011:81)

b. g-dzir-**e**-k'-es
2_{DEP}-see-PST-COND-NONPART.PL
'(if) s/he had seen you (PL)' (Muhammet Bal, p.c.)

We take such forms, while interesting and unique in the broader South Caucasian context, to be ultimately unproblematic for our account: they simply demonstrate that C agreement may condition allomorphy on T even in

[32] Many thanks to an anonymous reviewer for calling both properties to our attention.

[33] This creates a minor technical difficulty insofar as the first two exponents in (93b), ∅ and *-n*, remain unordered relative to each other by the Elsewhere Principle (neither context being strictly larger than the other). We will thus assume that the ∅-exponent is simply extrinsically ordered to take priority, so as to capture the fact that in the presence of $C_{\text{NON-PART, PL}}$ present-tense T is always exponed as ∅, irrespective of the thematic suffix that precedes it.
Unrelatedly, the final *-r* of both thematic suffixes *-ur* and *-er* is exceptionally dropped before the *-n* exponent—a fact we will tentatively analyze as morphologically restricted phonological deletion (i.e. readjustment).

[34] This is, incidentally, not the only pattern found in such counterfactual conditionals across Laz dialects: Muhammet Bal (p.c.) informs us that in certain Eastern Laz dialects, for example, the counterpart of (95b) would be *g-dzir-es-k'o*, with the conditional morpheme following (what on our account would be) both T and C.

the absence of linear or structural adjacency—a finding in line with an ever-growing body of cross-linguistic evidence against such strict adjacency constraints (Bobaljik 2000; Bonet and Harbour 2012; Božič 2019; Moskal and Smith 2016).

Summary To summarize, in this section we saw that there is something uniform across all the four South Caucasian languages when it comes to C agreement: there is a correlation between *v* lexicalizing plural and C showing plural agreement. We argued that Leftover Agreement—agreement of a higher head with the unlexicalized features of the lower head—can capture this dependence. Furthermore, we observed that in all four of the languages the C probe seems to be more complex than just a plural probe. We proposed that there are two parameters of variation. First, the exact specification of the probe varies: in Georgian, Laz and Megrelian the probe is searching for NON-PART & PL, while in Svan it is searching for PART ∨ PL. Second, languages in which the probe sometimes gets the features from two different sources (the subject and *v*) differ in how they expone the complex C head that is created in the process of copying such features: in Georgian, each probe-internal node bearing features is exponed separately, whereas in Laz and Megrelian the whole probe is exponed as a whole. Finally, we provided an explicit account of the formal interactions between T and C across Georgian, Laz and Megrelian, in terms of contextual allomorphy conditioned by the latter on the former.

6 Some evidence and comparison to previous proposals

On our account, the dependency between the prefix and the suffix arises from a genuine instance of syntactic agreement. It can be fed or bled by Vocabulary Insertion at the level of the lower probe, thanks to the cyclic interleaving of syntax and spell-out. Here we contrast our proposal with some prominent alternatives, which deal with instances of discontinuous agreement entirely within the post-syntactic component.

Let us first consider Halle and Marantz's (1993) treatment of Georgian in terms of fission. Following Nash (1992), Halle and Marantz assume that what we've referred to as the agreement prefix in Georgian is in fact a clitic, and they take it to always initially bear both the person and number features of participant objects. However, they assume that the clitic then undergoes the fission rule in (96), splitting any plural feature off of it *unless that feature comes from a* 1PL *object*. It's as a result of this post-syntactic rule that the now stray plural feature can ultimately be realized as a *-t* suffix.

(96) From Halle and Marantz (1993:118):

$$\begin{array}{l} \text{Cl} \quad + \text{Stem} \rightarrow \text{Cl} + \text{Stem} + [+\text{pl}] \qquad (\textit{linear order irrelevant}) \\ \quad | \\ [+\text{pl}] \end{array}$$

unless the [+pl] is part of a [+1], DAT [*in our terms,* ACC] argument

Notice that Halle and Marantz (1993) take fission to precede Vocabulary Insertion and hence to be blind to its eventual outcomes. This property is shared by a recent approach to discontinuous agreement in Semitic by Hewett (2020, 2023), who argues for a modular postsyntax with the following three autonomous ordered operations: Fission $\prec$ Displacement $\prec$ Vocabulary Insertion. This order is motivated by the observation that fissioned agreement suffixes only exhibit allomorphy sensitive to surface-linearly adjacent material. This suggests that the displacement operation applies to features, not exponents. While these accounts successfully capture the allomorphy patterns, they are forced to stipulate by brute force which features gets fissioned and then displaced. For example, Halle and Marantz (1993) need to stipulate the 1PL exception in Georgian rather than derive it from the fact that 1PL object agreement (unlike 2PL) is lexicalized by a portmanteau.[35] Thus, these accounts miss the generalization that there is a connection between the features of the available exponents and the features undergoing fission.

There is another approach to discontinuous agreement that does not face this criticism. Harbour (2007, 2008, 2016, 2023) argues for a Vocabulary-centric approach that shares with our proposal the idea that Vocabulary Insertion is only partially replacive: for him, Vocabulary Insertion can map exponents onto part of a φ-structure present on a given syntactic node, and then the residual features remain active for further exponence. Thus, his account is able to capture the connection between which features are lexicalized by exponents and which features undergo fission. One question that arises for this account is how it can capture cases of non-local allomorphy, where the allomorph choice of the displaced exponent is conditioned by the environment at the post-displacement site (Hewett 2023). Harbour (2023) argues that the timing of allomorphy can provide a solution for such cases: it's possible to defer the allomorph choice if an allomorph is sensitive to structure that has not yet been established (Mascaró 1996, 2007). As we will see, our account does not require a mechanism of deferring allomorph selection.[36]

Our proposal inherits features of both kinds of approaches to discontinuous agreement. Like Halle and Marantz (1993) and Hewett (2020, 2023), we expect the displacement operation to feed Vocabulary Insertion. For us, displacement involves feature copying in the process of Agree, and so we expect the copied features to be subject to allomorphy and condition allomorphy at their "new" location. On the other hand, just like Harbour (2007, 2008, 2016, 2023), we capture the generalization that displacement is contingent on Vocabulary Insertion—i.e., that there is a connection between the features that have been already lexicalized by exponents and the features that will be displaced. Thus, by assuming an architecture in which syntax and post-syntax are interleaved, we can capture what looks like a paradoxical state of affairs: both

[35] This problem has already been noted by Trommer (1999), Lomashvili and Harley (2011) and Blix (2021). Moreover, notice that the exception should not refer just to 1PL dative (or accusative) arguments, but also to 1PL objects in the ergative-nominative case alignment.

[36] We leave it for the future work to explore how our proposal applies to the languages discussed by Harbour (2007, 2008, 2016, 2023), e.g. Afroasiatic languages.

displacement feeding Vocabulary Insertion, and at the same time Vocabulary Insertion feeding displacement.

Furthermore, viewing displacement in discontinuous agreement as a syntactic operation—as feature copying in the process of Agree—makes some additional predictions that accounts relying on morphological operations do not make. Our assumption that the suffixal agreement corresponds to a distinct probe makes us expect that the syntactic structure intervening between the two probes is in principle able to affect the observed agreement dependency in just the same way as intervening structure affects agreement dependencies more generally.

We believe that this expectation is borne out—in fact, by evidence we've already seen in section 5.2.2. In that section, we saw that in Svan, *v* agreement with 2PL objects leaves a leftover plural feature, which C can then agree with, as expected ((7b), repeated here as (97)). However, this normal Leftover Agreement gets disrupted whenever the subject is a participant—even if it is singular ((75), repeated here as (98)).[37]

(97) **Svan** 3SG > 2PL (Gudjedjiani and Palmaitis 1986:63)
ʤ-amāre-**x**
2-prepare.PRS-**PL**
'(S)he prepares you (pl).'

(98) **Svan** 1SG > 2PL (Gudjedjiani and Palmaitis 1986:63)
ʤ-amāre
2-prepare.PRS
'I prepare you (pl).'

This pattern is largely mysterious under fission-based accounts: why should the features of the subject condition fission of the object-agreement or object-clitic node?[38] The pattern is easier to make sense of on our account, since we take the participant subject to stand in the way between a higher suffixal probe and a lower prefixal probe. In particular, for us the higher probe is disjunctively specified to search for participant or plural features, and therefore a singular

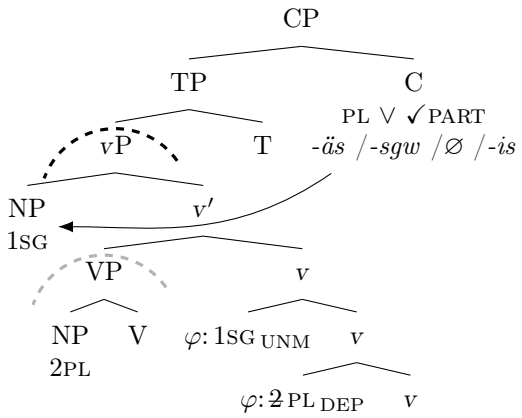
[37] Notice that we cannot meaningfully test the other potential case of singular-participant intervention: in a configuration like 2SG > 1PL.EX (i), *v* agreement with the 1PL object is fully lexicalized by the portmanteau prefix *n-*, so we don't expect any Leftover Agreement to be possible anyway, regardless of whether the subject intervenes or not.

(i) n-amāre **Svan** (Gudjedjiani and Palmaitis 1986:63)
1PL.EX-prepare.PRS
'You (sg) prepare us (ex.).'

[38] Although space limitations prevent us from a detailed review of alternative approaches, we should note that this counterargument also extends to some other post-syntactic accounts that do not make use of fission, such as e.g. the templatic account advocated by Lomashvili and Harley (2011). However, other post-syntactic approaches to discontinuous bleeding, such as Foley's (2017), parallel ours in positing both a low prefixal probe and a high suffixal probe, and might therefore capture the Svan facts in much the same way as we do.

participant argument will suffice to halt its search and hence to prevent it from copying the leftover plural feature on the lower probe, (99).

(99)



Another argument for taking the agreement suffix to realize its own probe in the syntax, as we have been assuming throughout, comes not from intervention or relativized locality but rather from the absolute locality restrictions imposed by phases. Recall that on our account, 3PL objects generally fail to control C agreement due to the interaction between two facts: on the one hand, such objects are themselves not directly accessible to C, because they are contained in the complement of the phase head *v*; on the other hand, *v* also cannot bear any of those objects' features as leftovers, because *v* is itself constrained to only agree with participant noun phrases.

(100) da-c'er-a-**(*t/*es)** **Georgian** (Aronson 1990:114)
PVB-write.AOR-3-(**PL**/**3.PL**)
'(S)he wrote them.'

A prediction of this account, however, is that C *should* be able to agree with 3PL objects as soon as such objects manage to escape the *v*P phase. This prediction appears to be borne out. As noted by Blix (2021:32), 3PL objects in Georgian can exceptionally trigger plural agreement if they scramble (101)[39]—a movement which we assume can land into a position in between C and *v*.

(101) **Georgian** (p.c. Léa Nash, building on observations reported in Blix 2021:33, fn. 19)

a. [OBJ mesame seri-is nakt'v-eb-s] [SUBJ saerto punkcia]
third series-GEN form-PL-ACC common function.NOM
a-ertianeb-{**t**}/{?s}
PRV-unite-{**PL**}/{?3}

[39] Blix (2021) reports that this is only possible if the subject is inanimate. Neither Blix nor us have an explanation for this restriction.

b. [SUBJ saerto punkcia] [OBJ mesame seri-is nakt'v-eb-s]
common function.NOM third series-GEN form-PL-ACC
a-ertianeb-{**s**}/{?*t}
PRV-unite-{**3**}/{?*PL}
'A common function unites the forms of the third series.'

Moreover, our account allows us to extend this kind of reasoning further: we expect C agreement to generally be more flexible than agreement by other probes, because the C probe's relative height makes it potentially sensitive to a larger number of movement operations taking place in the structure underneath it. This, too, appears to be correct: Kibrik (1996), for example, reports variability in the suffixal plural agreement of Svan perfect tenses, and Tuite (1998b) documents variability in "exceptional" number agreement with 3PL direct and indirect objects across South Caucasian. Although the details of the factors governing such variability are beyond the scope of our current research (Tuite 1998b mentions not only word order, but also topicality, animacy, etc.), the pattern in outline is the one we would expect to find.[40]

7 The inverse paradigm

It is now time to extend our analysis to the other agreement paradigm of South Caucasian—the so-called inverse.[41] Recall from (21) in section 3 that in Georgian the inverse paradigm is found in the present perfect and the pluperfect—the two tenses where subjects are marked as datives and objects are marked as nominatives. As hinted at in fn. 12, this agreement paradigm is called inverse because the prefixal exponents that would normally expone (v) agreement with the subject are here used to expone (v) agreement with the object, and vice versa—as if the mapping between probes' exponents and goals' grammatical functions were flipped around with respect to the direct paradigm we've been looking at so far (cf. (102) vs. (103)).

[40] Space limitations prevent us from thoroughly discussing in the main text two other alternatives to our proposal—Foley (2017) and Blix (2021). On the one hand, Foley captures discontinuous bleeding by positing multiple agreement probes in the syntax (not unlike ourselves) and by then having an Optimality-Theoretic morphological component get rid of redundancy in number agreement. While sharing some of the advantages of our approach (cf. fn. 38), his account differs from ours in that it would in principle allow redundancy avoidance to be symmetric (i.e. both lower and higher agreement features might in principle be deleted in the morphology), whereas we predict the bleeding of Leftover Agreement to exhibit a stricter bottom-up directionality: the leftover features copied by higher probes must be a subset of the features on lower probes.

Blix (2021) assumes a syntax with a uniform alternating sequence of argument-specific person and number probes: [$\#_S$ [π_S [$\#_O$ [π_O ...]]]]. Working within a broadly nanosyntactic framework, he then analyzes the complex agreement patterns we focused on as a result of richer Vocabulary Items and of a more interactive mapping between the syntax and such Items. The main drawback of such an austere approach is that it leads us to expect more detectable agreement than we actually find, thus requiring independent restrictions to account for the general lack of number agreement with 3PL objects, or zero-prefixes to account for the lack of double person agreement when both arguments are participants.

[41] Our discussion of the inverse will be based on data from Georgian. Whether our analysis can be extended to the inverse of the other three South Caucasian languages remains at present to be investigated. The experiential constructions in the South Caucasian languages might not be uniform; see fn. 46 in section 7.1 for some discussion.

(102) **Georgian *direct*** (Aronson 1990:172)
g-nax-a-**t**
2-see-AOR-**PL**
'(S)he saw you (pl).'

(103) **Georgian *inverse*** (Aronson 1990:269)
(tkven) (is) a-**g**-i-šenebi-a-t
(2PL.DAT) (3SG.NOM) PVB-**2**-PART.APPL-build.PERF-be.PRS.3-PL
'You (pl) have built it.'

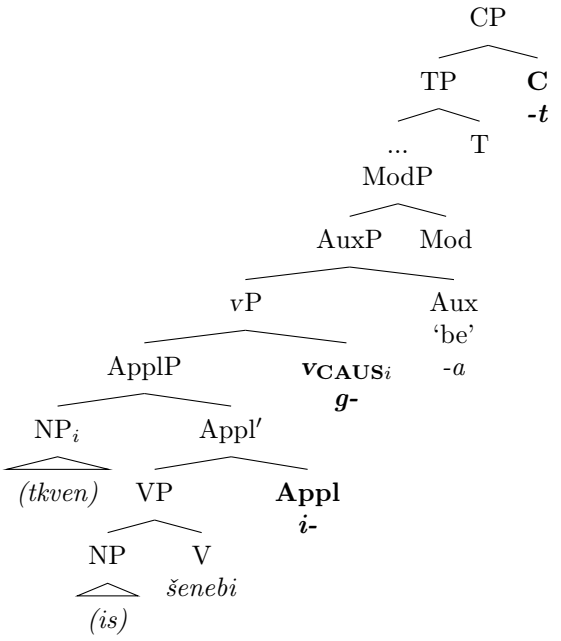
In this section, we will argue that this paradigm is not only straightforward to capture in its essentials within the system we've developed so far, but it also provides evidence for several of that system's key features.

7.1 Structure and interpretation of the present perfect

We'll be basing our discussion of the Georgian inverse agreement paradigm on the form of present perfect. Before we get to the details of the agreement system, let us discuss the syntax and semantics of the sentences containing these forms. For a transitive sentence like (104a) we assume the structure in (104b).

(104) a. **Georgian** (Aronson 1990:269)
(tkven) (is)
(2PL.DAT) (3SG.NOM)
a-**g**-**i**-šenebi-**a-t**
PVB-**2-PART.APPL**-build.PERF-**be.PRS.3-PL**
'You (pl.) have built it.'

b.



We assume that there is a hidden modal in the structure (Mod), which selects for the auxiliary 'be', which in turn takes a *v*P as its complement. The presence of an auxiliary is supported by the fact that a morpheme that is identical in its exponence to a present-tense form of the copula 'be' can still be recognized within (but not syntactically separated from) any verb's present-perfect form, (105). We assume that the fact that in the present perfect the auxiliary is inseparable is due to the *v*-to-Aux head movement.[42]

(105) (mas) (is) da-u-c'eri-**a**
(3SG.DAT) (3SG.NOM) PVB-3APPL-write.PERF-**be.PRS.3**
/*da-u-ceri **aris**
/PVB-3APPL-write.PERF **be.PRS.3**
'(S)he has written it.'

The presence of a modal is supported by the interpretations that present-perfect forms receive: e.g., (106) has an epistemic modal interpretation—given the evidence available to the speaker, Vano must have finished this drawing.[43]

(106) gušin vano-s es surati
yesterday Vano-DAT this picture.NOM
da-u-xat'i-a
PVB-3APPL-draw.PERF-be.PRS.3
'It turns out that Vano finished this drawing yesterday,'
'Vano must have finished this drawing yesterday.'

[42] This example, as well others not attributed to the literature, comes from Tanya Bondarenko's personal elicitation notes from her fieldwork in Tbilisi in the winter of 2018, and from some additional elicitations she carried out with speakers of Georgian in Boston in 2023.

[43] Georgian has a construction with an overt modal that selects an auxiliary verb, and curiously, only the epistemic reading of the modal is possible in such cases: cf. (i), where an auxiliary is present, and (ii), where *unda* 'must' directly combines with an optative verb.

(i) kac-s unda hkondes daleuli ɣvino
man-DAT must have.CONJ.3SG drink.PART wine.NOM
'The man must have drunk the wine.'
Epistemic: ✓, *Deontic:* ✗

(ii) kac-ma ɣvino unda dalios
man-ERG wine.NOM must drink.OPT.3SG
'The man must drink the wine.'
a. *Epistemic:* ✗, *Deontic:* ✓

While in the present perfect the auxiliary is always 'be', in (i) we see that the auxiliary is 'have'. We're grateful to an anonymous reviewer for pointing out that this difference might be morphological in nature: it's very plausible that when the applicative head is directly adjacent to 'be', it suppletes into what we think of as the root 'have'. The reviewer mentions a case where suppletion doesn't happen, and we are able to directly observe that 'have' is 'be' with an applicative marker: the future verb *ikneba* 'will be' differs from the future verb *ekneba* 'will have' only by having the applicative prefix *-e*. If that's the case, then (i) is an overt realization of the structure we propose in (104), modulo the absence of the suppletion in the present perfect: if the verb moves in between the applicative head and 'be', they are no longer local, and the condition for suppletion is not met.

Now let us consider the structure below the auxiliary. Georgian can form present-perfect forms from verbs of all classes: not only from transitives, (104), and unergatives, (107), but also from unaccusatives, (108). We take this as evidence that v's of different flavors can be present in the structure.

(107) (mas) u-t'iri-a
(3SG.DAT) 3APPL-cry.PERF-be.PRS.3
'(S)he has cried.' (Aronson 1990:269)

(108) (is) da-rčenil-a
(3SG.NOM) PFV-remain.PERF-be.PRS.3
'(S)he has remained.' (Aronson 1990:302)

Note that with unaccusatives, the argument of the verb remains in the nominative case. We assume that it occupies the position within the VP.

We propose that what is special about the present-perfect forms is that while different kinds of v can be present in the structure, none of them can themselves merge an external argument. In particular, v_{CAUS}, which normally introduces the Agent/Causer NP, is unable to do so. We attribute this inability to the presence of the auxiliary 'be': it cannot select for the v that introduces an external argument, and this gives rise to an unaccusative-looking syntax.

When an external argument is present, we suggest that it is introduced by an Appl projection that is merged between VP and v_{CAUS}. Thus, in this respect we follow the insights from the previous literature (Marantz 1989; Thivierge 2021). There are three pieces of evidence in favor of such an account.

First, we see that present-perfect forms bear the same applicative morphology as we see in other constructions that introduce applicative arguments: so-called "preradical" vowels *-i-* for 1st/2nd person, (104), and *-u-* for 3rd, (105).[44]

Second, this applicative morphology occurs between the verbal stem and the prefixal agreement. According to the Mirror Principle (Baker 1985), this should indicate that the Appl head is lower in the structure compared to the head with the φ-probe, and thus v is above Appl.

Third, present-perfect forms in Georgian are restricted in not being able to express indirect objects as dative arguments—i.e., if a transitive verb has a dative argument in other tenses, (109), that argument has to be demoted

[44] An anonymous reviewer brings to our attention the fact that, in the paradigm of some Georgian ditransitive verbs, we find either *-h-* or *-s-* instead of *-u-* as a 3APPL prefix; furthermore, the reviewer points out that in modern standard Georgian this *-h-*/*-s-* can cooccur with null agreement prefixes (as in $2>3$ and $3>3$ configurations,) but not with the UNM 1st-person prefix *v-* — e.g. *mi-s-ts^{h}em* 'you will give it to him/her' and *mi-s-ts^{h}em-s* 's/he will give it to him/her', but *mi-v-*(**s-*)*ts^{h}em* 'I will give it to him/her'. Our account does not offer any immediate explanation for this asymmetry, which may very well arise from the interaction of several processes (agreement between Appl and the applicative argument, lexically conditioned allomorphy on Appl, cluster-avoidant readjustments, etc.). To further complicate the picture, we should also point out that Aronson (1990:174) reports a couple of forms that appear to run counter to the reviewer's generalization (*mi-v-s-c'er* PRV-1-3APPL-write 'I shall write him' and *v-h-k'itxav* 1-3APPL-ask 'I shall ask him'). The issue deserves to be investigated in more depth.

to a PP when this verb occurs in present-perfect forms, (110). No version of applicative and prefixal agreements can make two dative arguments possible, (111).

(109) me Lida-**s** mi-v-**s**-c'er
I.NOM Lida.**DAT** PVB-1-**3APPL**-write.PRS
'I will write to Lida.' (Léa Nash, p.c.)

(110) me Lidasa-**tvis** mi-m-i-c'eri-a
I.DAT Lida.GEN-**for** PVB-1-PART.APPL-write.PERF-be.PRS.3
'I have written to Lida.' (Léa Nash, p.c.)

(111) a. *me Lida-**s** mi-m-**i**-c'eri-a
I.DAT Lida-**DAT** PVB-1-**PART.APPL**-write.PERF-be.PRS.3
/mi-m-**u**-c'eri-a/mi-m-**s**-c'eri-a
/PVB-1-**3APPL**-write.PERF-be.PRS.3
Intended: 'I have written to Lida.' (Léa Nash, p.c.)

b. *me Lida-**s** mi-v-**i**-c'eri-a
I.DAT Lida-**DAT** PVB-1-**PART.APPL**-write.PERF-be.PRS.3
/mi-v-**u**-c'eri-a/mi-v-**s**-c'eri-a
/PVB-1-**3APPL**-write.PERF-be.PRS.3
Intended: 'I have written to Lida.' (Léa Nash, p.c.)

This suggests that the indirect object argument and the external argument are in complementary distribution in Georgian present-perfect forms. Such complementarity is expected if dative external arguments in present-perfect forms and Recipient/Benefactor arguments occupy the same structural position in Georgian. We suggest that this position is the specifier of an applicative head that takes VP as its complement and that is itself the complement of v (cf. "high" arguments in Öztürk 2013; Pylkkänen 2008).[45]

We assume that interpretation of functional heads can be subject to *allosemy* (Marantz 2013; Wood and Marantz 2017, among others): such heads can receive different meanings depending on their syntactic environment. In particular, when ApplP is the complement of a $v_{\text{CAUS}i}$ which can't introduce an argument of its own, it introduces an EXP(ERIENCER) θ-role. $v_{\text{CAUS}i}$ comes with an index that has to be the same as the index of the introduced applicative argument, as in (112) (cf. Demirok 2018; Öztürk 2013). Thus, when $v_{\text{CAUS}i}$,

[45] If indirect objects of transitive verbs cannot be expressed as dative arguments due to the presence of the external argument, then we might expect unaccusative verbs, which lack external arguments introduced by ApplPs, to allow dative arguments in the present-perfect forms. This is in fact the case, at least for some unaccusative verbs (Aronson 1990):

(i) me Lida-**s** da-v-malvi-var
I.NOM Lida-**DAT** PFV-1-hide.PERF-be.1
'I have hidden from Lida. (Léa Nash, p.c.)

(112), combines with ApplP in a sentence like (104), repeated here in (113), we get the property of events in (114).

(112) $[\![v_{\text{CAUS}i}]\!]^g = \lambda \text{P}_{vt}.\ \lambda \text{e}_v.\ \text{P(e)} = 1\ \&\ \textsc{Caus}(\text{e}) = g(i)$

(113) **Georgian** (Aronson 1990:269)

(tkven) (is) a-**g**-**i**-šenebi-**a-t**
(2PL.DAT) (3SG.NOM) PVB-**2-PART.APPL**-build.PERF-**be.PRS.3-PL**

'You (pl.) have built it.'

(114) $[\![v_{\text{CAUS}i}\text{P}]\!]^g = \lambda \text{e}_v.\ \text{build}([\![\text{it}]\!]^g)(\text{e}) \wedge \textsc{Exp}(\text{e}) = g(i) \wedge \textsc{Caus}(\text{e}) = g(i)$

This will thus be a property of building events whose EXPERIENCER and CAUSER is the same individual described by the dative NP bearing the index i. We suggest that individuals that are both EXPERIENCERS and CAUSERS do not have the same degree of control over the development of the eventuality as AGENTS do. This difference might explain why, under negation, present perfect is compatible with adverbs like *šemtxvevit* 'accidentally', but verbs in aorist forms, which have true AGENTS, are not, (115).

(115) a. Nino-m (*šemtxvevit) ar da-xat'-a surati.
Nino-ERG (accidentally) NEG PVB-draw-AOR.3 picture.NOM
'Nino didn't draw a picture (accidentally).'

b. Nino-s (šemtxvevit) ar da-u-xat'i-a
Nino-DAT (accidentally) NEG PVB-3APPL-draw.PERF-BE.3
surati.
picture.NOM
'Nino hasn't drawn a picture (accidentally).'

To sum up, we have argued that Georgian present-perfect forms contain a covert epistemic modal which selects for a 'be' auxiliary. This auxiliary cannot combine with an argument-introducing v, so if a causative v is present in the structure, the external argument has to be introduced by a lower Appl head. This prevents transitive present perfect verbs from having indirect objects that would be introduced by ApplP. The external argument introduced by Appl bears the same index as v, and is thus interpreted both as an EXPERIENCER and as a CAUSER of the eventuality described by the verb. What will be crucial to us in the discussion that follows is that due to this syntax, the external argument in the present perfect is introduced lower than v in Georgian.[46]

[46] Our analysis faces a question of whether it can be extended to "inverse" forms in other South Caucasian languages. An anonymous reviewer points out that for example the experiential perfect in Laz has been analyzed as involving a higher applicative that is merged above the vP (Demirok 2013, 2018 and Öztürk 2013). We cannot investigate the morphosyntax of "inverse" forms from other languages within the limits of this paper, but would like to briefly offer a couple thoughts about the variation between Georgian and Laz.

First, the experiential constructions in Laz clearly differ from Georgian in a number of respects: as Öztürk (2013) shows, they cannot occur with unaccusative verbs, the verb in

7.2 Why the inversion in the prefixal paradigm?

In present-perfect forms we see *inversion* of the prefixal agreement: the exponents that usually expone the features of the subject expone the features of the object in these forms. For example, in (116) we see that in future forms, *v-* lexicalizes 1st-person subjects, and *m-* lexicalizes 1st-person objects. In the present perfect, this is reversed, (117): *v-* shows up when the 1st-person NP is an object, and *m-* shows up when such an NP is a subject.

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them bears causative morphology, and the dative argument can co-occur with other dative arguments. As we saw, none of these properties hold of the Georgian present perfect. In addition to that, the two languages differ with respect to whether the copula within the verbal form can show agreement with the direct object: we see a default 3rd-person copula in Laz, (i), but a copula that agrees with the direct object in Georgian, (ii).

(i) *Laz* (example provided by the reviewer)
Ma si ce-g-i-ç̣am-ap-**un**
I you PVB-2-PART.APPL-beat-CAUS-TS-3.**PRS.COP**
'I have beaten you.'

(ii) *Georgian* (Aronson 1990:p. 272)
(me) (šen) m-i-ki-**xar**
(I) (you) 1-PART.APPL-praise-**be.2**
'I have praised you. '

For Georgian, we suggest that due to the v-to-Aux head movement, the phasehood is extended to AuxP (cf. den Dikken 2007), and Aux is able to agree with the object that would have been "spelled out" otherwise. Such phase extension does not seem to occur in Laz.

The aforementioned points of variation suggest that there are significant structural differences between the two constructions, despite the fact that prefixal agreement in both of them is "inverted". The question that arises then is whether these differences require an analysis of Laz in which the ApplP is higher than vP, and thus whether our account of inversion, which relies on vP being higher than ApplP, can be maintained for Laz. We leave this question for further research, noting only one interesting fact that we came across: Laz datives in the experiential perfect construction can undergo pseudo-incorporation, (iii). This is surprising if they are higher than the first phase, in which valency-changing operations are commonly thought to take place, but would be less strange if ApplP is lower than *v*P.

(iii) Ham resimi bere u-ğar-ap-un.
this picture.NOM child 3APPL-draw-CAUS-IMPF.3S
'There exists a past event where this picture has been child-drawn.'
(Sağ, Demirok, and Bal 2022)

Second, it is possible that the structures of Georgian and Laz are indeed different, with the Georgian present perfect having *v*P higher than ApplP, and Laz having ApplP higher than *v*P, but the inversion of agreement is the same because the φ-probe is placed on the head of the first phase and phasehood is contextually determined (cf. Bobaljik and Wurmbrand 2005; Bošković 2014, 2016; Dikken 2007; Gallego and Uriagereka 2006, a.o.)—it is the highest head of the verbal complex, which would be *v* in Georgian, but Appl in Laz. Then, assuming that there is an implicit agent in the Spec,*v*P in Laz, as proposed by Öztürk 2013, the φ-probe on Appl in Laz would look down and first find the features of the external argument, and only then the features of the object. This should lead to the same "reversal" of agreement that we propose for Georgian—reversal that occurs because the source of subject features is lower than the ϕ-probe and is thus found by it on its first attempt to agree.

(116) **Georgian *direct*** (Aronson 1990:44,172)

a. a-**v**-a-šeneb
PVB-**1**-PRV-build.PART.PRS
'**I** will build it/them.'

b. **m**-nax-a
1-see-AOR
'(S)he saw **me**.'

(117) **Georgian *inverse*** (Aronson 1990:269,272)

a. a-**m**-i-šenebi-a
PVB-**1**-PART.APPL-build.PERF-be.3
'**I** have built it/them.'

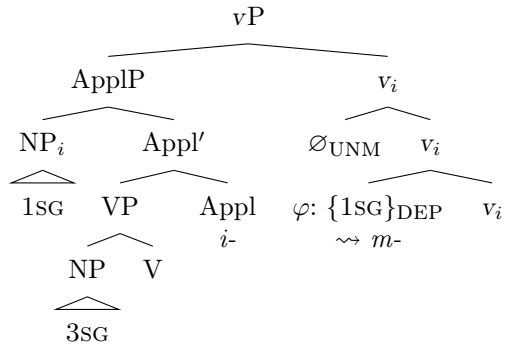
b. **v**-u-ki-var
1-3APPL-praise-be.1
'(S)he has praised **me**.'

The syntactic structure for the present-perfect forms that we proposed in the previous section automatically predicts this inversion of the prefixal agreement given the independently established rules of exponence in (28)-(29), repeated here as (118)-(119). This is illustrated in (120)-(121) for 1SG>3SG.

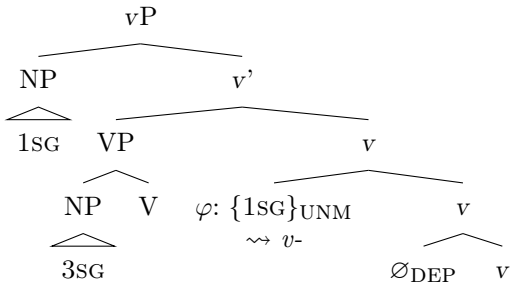
(118) **Georgian**
DEP-labeled φ-feature bundle:
a. $\{$1PL$\} \rightsquigarrow$ *gv-*
b. $\{1\} \rightsquigarrow$ *m-*
c. $\{2\} \rightsquigarrow$ *g-*

(119) **Georgian**
UNM-labeled φ-feature bundle:
a. $\{1\} \rightsquigarrow$ *v-*
b. $\{2\} \rightsquigarrow \varnothing$

(120) *Inverse* 1SG > 3SG



(121) *Direct 1sg*> 3SG



Recall from section 5.1 that, in a canonical transitive structure, *v* will first interact with the object's φ-feature bundle and next with the subject's, so that the former interaction will trigger dependent prefixal exponence, and the latter will trigger unmarked exponence. This means that in a 1SG > 3SG configuration, the 1st-person feature of the subject will be exponed by *v-*. In the present perfect, where the external argument is introduced in Spec,ApplP and is thus lower than the probe, the relative order of the interactions will be flipped around: the downward-probing *v* will interact first with the subject's φ-feature bundle and then with the object's. Thus, the features of the subject will trigger dependent prefixes, and the features of the object will trigger unmarked prefixes. In a 1SG > 3SG configuration, for example, the 1st-person feature of

the subject will be exponed by *m-*. As we see, the puzzling inversion property of this agreement paradigm is thus accounted for under our proposal with no need for any additional assumptions.

7.3 For the purposes of LA, it is *v*'s exponent that matters

The inversion property also allows us to test one of the ideas at the core of our account of the South Caucasian Discontinuous-Bleeding Generalization in section 5. On our account, the possibility of C agreement with VP-internal arguments depends on whether those arguments' φ-features were or were not lexicalized by the exponents of *v*. The variation in this regard between Georgian and Svan on the one hand and Laz and Megrelian on the other is thus simply due to the differences in the featural specifications of the *v* exponents available to each language. We can further corroborate this point now by looking at the variation between different agreement paradigms (direct *vs.* inverse) within one and the same language (Georgian). Take, for example, the minimal pair in (122). Even though both examples feature a 3SG subject and a 1PL object, the direct example in (122a) does not display any LA on C, whereas the inverse example in (122b) does.

(122) **Georgian** (Aronson 1990:172,272)

a. 3SG>1PL in **direct**	b. 3SG>1PL in **inverse**
gv-nax-a	**v**-u-naxi-var-**t**
1PL-see.AOR-3	**1**-3APPL-see.PERF-be.PRS.1-**PL**
'S/he saw us' (direct)	'S/he has seen us' (inverse)

This is exactly as predicted by our account. In the direct example (122a), *v* finds the 1PL object's features in its first interaction, and hence can be exponed by the dependent exponent *gv-*, which fully lexicalizes its 1PL bundle. By contrast, in the inverse example (122b), *v* only finds the 1PL object after interacting with the subject in Spec,ApplP; it is thus exponed by the unmarked exponent *v-*, which happens to only lexicalize the 1st-person feature. As a result, although the φ-features of subject and object are the same across the two cases, in the direct *v* ends up with no leftover features for C to agree with, resulting in no plural suffix, while in the inverse *v* does have a leftover plural feature, which C agrees with and finally expones as *-t*. Once again, the variation simply comes down to the difference in featural specifications between *v*'s exponents—in this case, *gv-* and *v-*.

7.4 If both arguments are participants, *v* agrees with both

The inverse also provides key evidence for our account of *v* agreement in section 5.1, according to which, whenever the subject and the object are both

participant NPs, *v* always agrees with both, even though it only lexicalizes agreement with the first NP it interacted with. Crucial in this regard are inverse examples like (123b), exhibiting LA with the plural feature of a 2PL object (cf. the lack of LA in the 2SG-object counterpart (123a)).

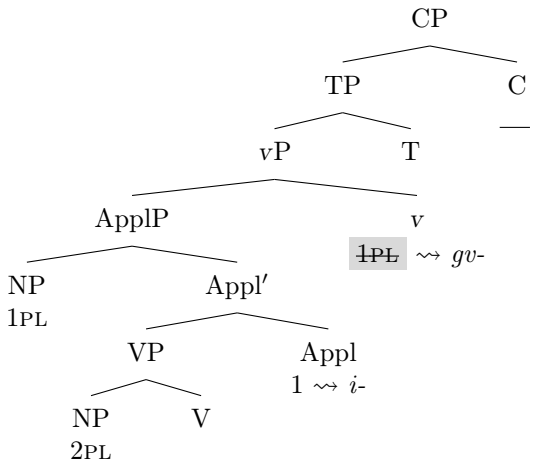
(123) Georgian (Aronson 1990:272)

a. (čven) (šen) **gv**-i-ki-xar
(1PL.DAT) (2SG.NOM) **1PL**-PART.APPL-praise.PERF-be.PRS.2
'We have praised you (sg).'

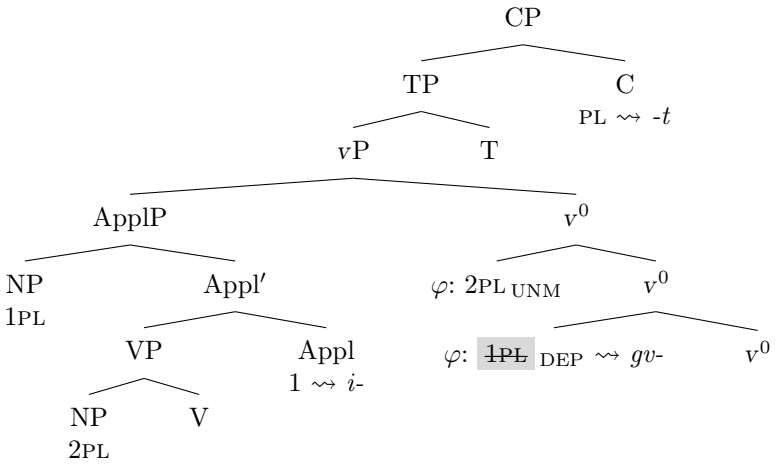
b. (čven) (tkven) **gv**-i-ki-xar-**t**
(1PL.DAT) (2PL.NOM) **1PL**-PART.APPL-praise.PERF-be.PRS.2-**PL**
'We have praised you (pl).'

If the representation for (123b) were like (124), with *v* only agreeing with the closest participant, C could never get the 2PL object's plural feature either from *v* or from the VP-internal object itself, and we would therefore expect no LA, contrary to fact. We thus need a representation like (125) instead, with *v* agreeing with both participant arguments and thereby acting as an intermediary for LA by the C probe.

(124) (to be revised in (125))



(125)



The "double-agreement" assumption required by our account of *v* agreement in the spirit of dependent case is therefore independently corroborated.[47]

8 Concluding remarks and outlook

In the previous sections, we have offered an account of verbal agreement in all four currently spoken South Caucasian languages—Georgian, Laz, Megrelian and Svan. Our main focus has been on the rich interactions between prefixal and suffixal agreement that all of these languages display, with particular regard to what we've called the South Caucasian Discontinuous-Bleeding Gener-

[47] One remaining problem with our account comes from the fact that 3PL subjects in the inverse may sometimes control suffixal plural agreement, too—an unexpected outcome on the assumption that the inverse subject is lower than *v* (hence not directly accessible to C) and that *v* itself cannot agree with 3rd-person arguments (and hence cannot "pass on" any of their features to C via Leftover Agreement).

(i) **(mat)** (is) a-u-šenebi-a-**t** (Aronson 1990:269)
(3PL.DAT) (3SG.NOM) PVB-3APPL-build.PERF-be.PRS.3-**PL**
'They have built it.'

To further add to the complexity of their puzzle, it turns out that this unexpected suffixal agreement with 3PL subjects may only arise if the object is not a participant.

(ii) **(mat)** (me) v-u-ki-var (Aronson 1990:272)
(3PL.DAT) (1SG.NOM) 1-3APPL-praise.PERF-be.PRS.1
'They praised me.'

(iii) **(mat)** (šen) u-ki-xar
(3PL.DAT) (2SG.NOM) 3APPL-praise.PERF-be.PRS.2
'They praised you.'

We are not aware of any satisfactory account of this pattern within our current approach. See Thivierge (2021) for an analysis in terms of licensing-driven movement of participant objects, and Atlamaz and Baker (2018) for a similarly puzzling pattern in Kurmanji.

alization: suffixal number agreement with a given NP appears only when number agreement with that NP has not been lexicalized by the agreement prefix.

Our account of this generalization has crucially relied on an architecture of grammar where syntax and Vocabulary Insertion are interleaved in a particular way, with the uninterpretable features on a phase edge being accessible or inaccessible to the next phase depending on the outcome of Vocabulary Insertion.[48]

This allowed us to analyze the South Caucasian prefix–suffix interactions in terms of a notion of Leftover Agreement—agreement by a higher probe (here, realized by the suffix) with the unlexicalized features of a probe on the lower phase's edge (here, realized by the prefix, which we identified as *v*). We have thereby departed from previous accounts that posited a single probe in the syntax and had it fissioned into a prefixal and a suffixal exponent in the morphology (e.g. Halle and Marantz 1993). By taking the prefix and the suffix to realize two syntactically distinct probes, and by treating the relation between the two as genuine syntactic agreement, we could then capture the intervention effects found between prefix and suffix in Svan, as well as the interactions with movement and phasal locality displayed by 3PL objects in Georgian.

Finally, if this much is on the right track, we should also expect to find reflexes of Leftover Agreement well beyond South Caucasian. The research agenda that emerges from this thus aims to assess whether other known prefix–suffix interactions (sometimes previously handled by fission) might also be reanalyzed in terms of Leftover Agreement. Although a comprehensive overview of cross-linguistic parallels would of course take us too far afield, here we wish to briefly point to two promising case studies.

The first case study focuses on Afro-Asiatic—the language family that first motivated the coinage of the phrase *discontinuous bleeding* by Noyer (1992). The pattern exemplified in (126) is highly reminiscent of the one we found in South Caucasian: suffixes can lexicalize number (and person) agreement only if the prefix cannot. In particular, in (126c) the 1PL prefix *n-* bleeds the presence of both the 1st-person suffix *-ɣ* and the plural suffix *-n*. It is thus

[48] A question that arises is whether the partial replaciveness at the syntax-PF interface has a counterpart at the syntax-LF interface: i.e., when we match meanings with syntactic features, are we "removing" the interpretable features that have been expressed by the matched meanings from narrow syntax? It seems to us that in order to approach this question, one needs a precise theory of how movement is interpreted. Recall from section 6 that scrambling of 3PL objects in Georgian can feed number agreement with C, (101). If the lower copy of the direct object had to undergo the process of *Sense Insertion* (Schwarzschild 2022)—matching semantic values (meanings) with elements of syntax—together with the other elements of the first phase (vP), and if that process were to "remove" from the noun phrase those interpretable features that have been expressed by meanings, we would then expect it to be impossible for object movement to feed agreement in (101), contrary to fact. So the possibility of such movement feeding agreement might pose a problem for the view that Vocabulary Insertion and Sense Insertion are completely parallel processes. On the other hand, note that this problem is contingent on our assumptions about how movement is interpreted, and changing when and how moved constituents are interpreted might allow one to keep the parallelism between the two interfaces. We leave this issue for future research.

unsurprising that we might want to extend our account of South Caucasian to these data as well, with the prefix realizing a *v* probe and the suffixes realizing higher probes that may feed off *v*'s leftovers. Furthermore, the pattern is also interesting insofar as it suggests that person features can be leftovers too, just as number features can be—a natural expectation under our approach.

(126) Tamazight Berber (Noyer 1992:132)

a.	b.	c.
t-dawa-**n**-t	dawa-**ɣ**	**n**-dawa
2-cure-**PL**-FEM	cure-**1**	**1PL**-cure
'You (pl.fem) cure.'	'I cure.'	'We cure.'

Passamaquoddy (Eastern Algonquian) also has an agreement pattern that could be viewed as arising from Leftover Agreement.[49] In so-called Independent clauses, verbs have two agreement slots that seem to interact with each other—a prefix and a suffix.[50] The person features that the prefix lexicalizes are not agreed with by the suffixal probe. Consider (127)-(130), with the assumption that the exponents in bold have the featural specifications in (131)-(132).

(127) **n**-tokom-a-**n**
PART-hit.IND-3OBJ-**SPKR.PL**
'We (excl.) hit her/him.'

(128) **k**-tokom-a-**n**
ADDR-hit.IND-3OBJ-**SPKR.PL**
'We (incl.) hit her/him.'

(129) **k**-tokom-a-w-**a**
ADDR-hit.IND-3OBJ-W-**PL**
'You (pl.) hit her/him.'

(130) **'**-tokom-a-w-**a**-l
π-hit.IND-3OBJ-W-**PL**-OBV
'They (pl. prox.) hit her/him (obv.).'

[49] The data presented here is all taken from the verbal paradigms that come with the Passamaquoddy dictionary (Francis and Leavitt 2008).

[50] There are other agreement slots in Independent: a suffix that agrees with the object, and so-called peripheral agreement—suffixal agreement with non-participant phrases.

(131) **The prefix's exponents:**
a. {π, PART, ADDR} $\rightsquigarrow$ *k-*
b. {π, PART} $\rightsquigarrow$ *n-*
c. {π} $\rightsquigarrow$ *'-*

(132) **The suffix's (Independent) exponents:**
a. {SPKR, PL} $\rightsquigarrow$ *-(o)n(nu)*
b. {PL} $\rightsquigarrow$ *-a*

We can observe that the suffix never lexicalizes 2nd-person features. We hypothesize that this might be due to the fact that the prefix always agrees with 2nd-person noun phrases whenever they are present. The examples in (127)-(128) show that there is no suffix that would lexicalize 1st inclusive plural: we get the suffix *-(o)n(nu)* regardless of whether plural is exclusive or inclusive. Assuming that inclusive 1PL NPs have features {π, PART, SPKR, ADDR, PL}, this absence is expected if the suffixal probe finds its features on the prefixal probe. If the prefix has agreed with a 1st-person plural inclusive NP, but lexicalized only {π, PART, ADDR}, then the rest of the features ({SPKR, PL}) can be agreed with and lexicalized by the suffixal probe. When the 1PL NP is exclusive, we assume that the prefix lexicalizes only {π, PART}, and the leftover features {SPKR, PL} are exponed by the suffix as *-(o)n(nu)*.

The examples in (129)-(130) show that the plural suffix that we find in sentences with 2nd-person plural NPs does not show person features: it is exactly the same as plural agreement with 3rd-person NPs. Thus, we see again that lexicalizing addressee features by a prefix bleeds their appearance as a suffix: the only leftover feature is the plural. Interestingly, in so-called Conjunct forms, which do not contain a prefixal probe, we see that there are separate suffixes for agreement with 1PL inclusive and 1PL exclusive NPs, and there are also separate exponents for agreement with 2PL and 3PL NPs.

(133) tokom-**ek**
hit.UCONJ-**SPKR.PL**
'We (excl.) hit her/him.'

(134) tokom-**oq**
hit.UCONJ-**SPKR.ADDR.PL**
'We (incl.) hit her/him.'

(135) tokom-**eq**
hit.UCONJ-**ADDR.PL**
'You (pl.) hit her/him.'

(136) tokom-a-**htit**
hit.UCONJ-3OBJ-**3.PL**
'They (pl., prox.) hit her/him (obv.).'

(137) **Conjunct exponents:**

a. $\{\pi, \text{SPKR}, \text{ADDR}, \text{PL}\} \rightsquigarrow$ *-oq*

b. $\{\pi, \text{SPKR}, \text{PL}\} \rightsquigarrow$ *-ek*

c. $\{\pi, \text{ADDR}, \text{PL}\} \rightsquigarrow$ *-eq*

d. $\{\pi, \text{PROX}, \text{PL}\} \rightsquigarrow$ *-htit*

Thus, whether or not we see 2nd-person features in suffixal agreement seems to depend on whether there is a prefix lexicalizing those features—a pattern that might be attributed to Leftover Agreement.[51,52]

The extension of our account to other languages remains to be worked out in full detail, but we hope to have shown that the concept of Leftover Agreement holds promise regarding complex agreement systems beyond South Caucasian.

Conflict of interest

The authors declare that they have no conflict of interest.

References

Aronson, Howard I. 1990. *Georgian: A reading grammar*. Columbus, OH: Slavica.

Atlamaz, Ümit, and Mark Baker. 2018. On partial agreement and oblique case. *Syntax* 21 (3): 195–237.

Baker, Mark. 1985. The mirror principle and morphosyntactic explanation. *Linguistic Inquiry* 16 (3): 373–415.

Béjar, Susana. 2003. Phi-syntax: A theory of agreement. PhD thesis, University of Toronto.

[51] This interaction between the prefix and the suffix in Algonquian languages has been analyzed as fission by Oxford (2018).

[52] Yet another language family where Leftover Agreement might be found is Quechua. The generalization about plural agreement from Myler (2017:793) is very reminiscent of the LA pattern: if the probe that usually does "subject agreement" is able to get leftover plural features from a former instance of agreement, then it is not surprising that it sometimes will lexicalize plural features of objects. This is what we see in (ii), where the object agreement occurs closer to the verbal root and doesn't lexicalize number, and its number gets lexicalized by an exponent corresponding to a higher probe. An interesting feature of this example is that it suggests that it is might sometimes be possible to lexicalize two plural features on the same probe that are coming from different sources.

(i) [Plural]-driven Subject Marking Anomaly (P-SMA)
When a verb takes a [+Participant] object with the feature [Plural], the subject agreement morpheme spells out features of the object, regardless of the person or number features of the subject. (Myler 2017:793)

(ii) *Cuzco Quechua* (Myler 2017:796, adapted from Lakämper and Wunderlich 1998:135)
maylla-**wa**-∅-nki-chis-**ku**
wash-**1O**-PRS-2S-PL-**PL**
'You (pl.) wash us (excl.).'

Béjar, Susana, and Milan Rezac. 2009. Cyclic Agree. *Linguistic Inquiry* 40 (1): 35–73.
Blix, Hagen. 2021. Spans in South Caucasian agreement: Revisiting the pieces of inflection. *Natural Language and Linguistic Theory* 39 (1): 1–55.
Bobaljik, Jonathan. 2000. The ins and outs of contextual allomorphy. *University of Maryland Working Papers in Linguistics* 10: 35–71.
Bobaljik, Jonathan, and Susi Wurmbrand. 2005. The domain of agreement. *Natural Language and Linguistic Theory* 23 (4): 809–865.
Bondarenko, Tatiana. 2017. Two aspectual subsystems of Georgian. *Voprosy Jazykoznanija* (4): 74–100.
Bonet, Eulàlia, and Daniel Harbour. 2012. Contextual allomorphy. In *The morphology and phonology of exponence*, ed. by Jochen Trommer, 195–235. Oxford: Oxford University Press.
Bošković, Željko. 2014. Now I'm a phase, now I'm not a phase: On the variability of phases with extraction and ellipsis. *Linguistic Inquiry* 45 (1): 27–89.
Bošković, Željko. 2016. Getting really edgy: On the edge of the edge. *Linguistic Inquiry* 47 (1): 1–33.
Božič, Jurij. 2019. Constraining long-distance allomorphy. *The Linguistic Review* 36 (3): 485–505.
Chomsky, Noam. 2000. Minimalist inquiries: The framework. In *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, ed. by Roger Martin, David Michaels, and Juan Uriagereka, 89–155. Cambridge, MA: MIT press.
Coon, Jessica, and Stefan Keine. 2021. Feature gluttony. *Linguistic Inquiry* 52 (4): 655–710.
Deal, Amy Rose. 2015. Interaction and satisfaction in phi-agreement. In *Proceedings of NELS*. Vol. 45, 179–192.
Deal, Amy Rose. 2017. Interaction and satisfaction: a theory of agreement. Handouts at EGG 2017. Olomouc.
Demirok, Ömer. 2013. Agree as a unidirectional operation: Evidence from Pazar Laz. PhD diss., MA Thesis, Boğaziçi University.
Demirok, Ömer. 2018. A modal approach to dative subjects in Laz. In *Proceedings of NELS*, ed. by Sherry Hucklebridge and Max Nelson. Vol. 48, 193–206.
Dikken, Marcel den. 2007. Phase extension: Contours of a theory of the role of head movement in phrasal extraction. *Theoretical Linguistics* 33 (1): 1–41.
Foley, Steven. 2017. Morphological conspiracies in Georgian and Optimal Vocabulary Insertion. In *Proceedings of the 52nd Chicago Linguistics Society*, ed. by Jessica Kantarovich, Tran Truong, and Orest Xherija, 217–232.
Foley, Steven. 2020. Agreement in the languages of the Caucasus. In *The Oxford handbook of languages of the Caucasus*, ed. by Maria Polinsky, 845–872. Oxford University Press.
Fox, Danny, and David Pesetsky. 2005. Cyclic linearization of syntactic structure. *Theoretical Linguistics* 31 (1-2): 1–45.
Francis, David A., and R.M. Leavitt. 2008. *Peskotomuhkati wolastoqewi latuwewakon: a passamaquoddy-maliseet dictionary*. Orono, ME: University of Maine Press. Available at https://pmportal.org/browse-dictionary.
Gallego, Ángel J., and Juan Uriagereka. 2006. Sub-extraction from subjects: A phase theory account. In *Romance linguistics*, ed. by José Camacho, Nydia Flores-Ferrán, Liliana Sánchez, Viviane Déprez, and María José Cabrera, 149–162. Amsterdam: John Benjamins.
Grishin, Peter. 2023. Omnivorous third person agreement in Algonquian. *Glossa* 8.1.
Gudjedjiani, Chato, and Mykolas L. Palmaitis. 1986. *Upper Svan: Grammar and texts*. Vilnius: Mokslas.
Halle, Morris, and Alec Marantz. 1993. Distributed Morphology and the pieces of inflection. In *The view from Building 20*, ed. by Kenneth Hale and Samuel J. Keyser, 111–176. Cambridge, MA: MIT Press.
Harbour, Daniel. 2007. Against PersonP. *Syntax* 10 (3): 223–242.
Harbour, Daniel. 2008. Discontinuous agreement and the syntax-morphology interface. In *Phi theory: Phi-features across modules and interfaces*, ed. by Daniel Harbour, David Adger, and Susana Béjar, 185–220. Oxford: Oxford University Press.
Harbour, Daniel. 2016. *Impossible persons*. Cambridge, MA: MIT Press.

Harbour, Daniel. 2023. Discontinuous agreement: Nine birds, two stones. *Brill's Journal of Afroasiatic Languages and Linguistics* 15 (1): 23–66.
Harley, Heidi, and Robert Rolf Noyer. 1999. Distributed Morphology. *GLOT International* 4 (4): 3–9.
Hewett, Matthew. 2020. On the autonomy of Fission: Evidence from discontinuous agreement in Semitic. https://ling.auf.net/lingbuzz/005378.
Hewett, Matthew. 2023. Allomorphy in Semitic discontinuous agreement: Evidence for a modular approach to postsyntax. *Natural Language and Linguistic Theory* 41 (3): 1091–1145.
Hewitt, Brian George. 1995. *Georgian: A structural reference grammar*. 2 vols. Amsterdam: John Benjamins.
Hiraiwa, Ken. 2005. Dimensions of symmetry in syntax: Agreement and clausal architecture. PhD diss., MIT, Cambridge, MA.
Kibrik, Andrej Aleksandrovič. 1996. Jazyk ne tak nelep, kak kazhetsja (lichno-chislovoe glagol'noe soglasovanie v svanskom jazyke). In *Rusistika. Slavistika. Indoevropeistika. Sbornik k 60-letiju A.A. Zaliznjaka*, ed. by Vladimir N. Toporov, 478–493. Moscow: Indrik.
Kipshidze, Iosif. 1914. *Grammatika mingrel'skago (iverskago) jazyka s xrestomatieju i slovarem*. St. Petersburg: Academy Press.
Lacroix, René. 2009. Description du dialecte laze d'Arhavi (caucasique du sud, Turquie): Grammaire et textes. PhD diss., Université Lumière Lyon 2.
Lakämper, Renate, and Dieter Wunderlich. 1998. Person marking in Quechua—A constraint-based minimalist analysis. *Lingua* 105 (3–4): 113–148.
Lomashvili, Leila, and Heidi Harley. 2011. Phases and templates in Georgian agreement. *Studia Linguistica* 65 (3): 233–267.
Marantz, Alec. 1989. Relations and configurations in Georgian. Ms. University of North Carolina, Chapel Hill.
Marantz, Alec. 2013. Locality domains for contextual allomorphy across the interfaces. In *Distributed morphology today: Morphemes for Morris Halle*, ed. by Ora Matushansky and Alec Marantz, 95–113. Cambridge, MA: MIT Press.
Mascaró, Joan. 1996. External allomorphy and contractions in Romance. *Probus* 8: 181–205.
Mascaró, Joan. 2007. External allomorphy and lexical representation. *Linguistic Inquiry* 38 (4): 715–735.
McGinnis, Martha. 2008. Phi-feature competition in morphology and syntax. In *Phi theory: Phi-features across modules and interfaces*, ed. by Daniel Harbour, David Adger, and Susana Béjar, 155–184. Oxford: Oxford University Press.
McGinnis, Martha. 2013. Agree and Fission in Georgian plurals. In *Distributed Morphology today: Morphemes for Morris Halle*, ed. by Ora Matushansky and Alec Marantz, 39–58. Cambridge, MA: MIT Press.
Moskal, Beata, and Peter W. Smith. 2016. Towards a theory without adjacency: Hyper-contextual VI-rules. *Morphology* 26: 295–312.
Myler, Neil. 2017. Cliticization feeds agreement: a view from Quechua. *Natural Language and Linguistic Theory* 35 (3): 751–800.
Nash, Léa. 1992. La catégorie AGR et l'accord en géorgien. *Recherches Linguistiques* 21: 65–79.
Nevins, Andrew. 2007. The representation of third person and its consequences for person-case effects. *Natural Language and Linguistic Theory* 25 (2): 273–313.
Nevins, Andrew. 2011. Multiple agree with clitics: person complementarity vs. omnivorous number. *Natural Language and Linguistic Theory* 29 (4): 939–971.
Newell, Heather. 2008. Aspects of the morphology and phonology of phases. PhD diss., McGill University, Montreal.
Noyer, Robert Rolf. 1992. Features, positions and affixes in autonomous morphological structure. PhD diss., MIT.
Oxford, Will. 2018. Fission in Algonquian and the status of morphological templates. *Proceedings of WSCLA* 23.
Oxford, Will. 2020. Algonquian morphosyntax: Things you need to know. Talk at NELS 51 (Université du Québec à Montréal).

Öztürk, Balkız. 2013. Low, high and higher applicatives. In *Information structure and agreement*, ed. by Werner Abraham and Elly van Gelderen, 275–295. Amsterdam: John Benjamins.

Öztürk, Balkız, and Markus A. Pöchtrager. 2011. *Pazar Laz*. Munich: Lincom Europa.

Öztürk, Balkız, and Eser Erguvanlı Taylan. 2017. Omnipresent little vP in Pazar Laz. In *The verbal domain*, ed. by Roberta D'Alessandro, Irene Franco, and Ángel Gallego, 207–231. Oxford: Oxford University Press.

Preminger, Omer. 2011. Asymmetries between person and number in syntax: a commentary on Baker's SCOPA. *Natural Language and Linguistic Theory* 29: 917–937.

Preminger, Omer. 2014. *Agreement and its failures*. Cambridge, MA: MIT Press.

Pylkkänen, Liina. 2008. *Introducing arguments*. Cambridge, MA: MIT Press.

Roversi, Giovanni. 2020. How to satisfy probes: person/number hierarchy effects in Äiwoo. In *Proceedings of NELS*. Vol. 50, 99–112.

Sağ, Yağmur, Ömer Demirok, and Muhammet Bal. 2022. *Fieldwork notes on Laz high applicatives and subject pseudo-incorporation*. Handout, Fall 2022.

Schwarzschild, Roger. 2022. Pure event semantics. https://ling.auf.net/lingbuzz/006888.

Scott, Tessa. 2021. Formalizing two types of mixed A/Ā movement. URL: `https://ling.auf.net/lingbuzz/005874`.

Socolof, Michaela. 2020. Cyclic spell-out and impoverishment in Georgian. LSA poster. New Orleans.

Testelets, Yakov G. 1989. Svan (the Upper Bal dialect). Unpublished materials of the Lomonosov Moscow State University expedition into Svaneti in 1989.

Thivierge, Sigwan. 2021. Phasehood and phi-intervention. PhD diss., University of Maryland.

Topuria, Varlam. 1967. *Svanuri ena, I: Zmna [The Svan language, I: The verb]*. Tbilisi: Mecniereba.

Trommer, Jochen. 1999. Morphology consuming syntax'resources: Generation and parsing in a minimalist version of Distributed Morphology. In *Proceedings of the ESSLI workshop on resource logics and Minimalist Grammars*, ed. by Christian Retoré and Edward Stabler, 469–80. Utrecht: Association for Logic, Language and Information.

Trommer, Jochen. 2001. Distributed Optimality. PhD diss., Universität Potsdam.

Trommer, Jochen. 2008. Third person marking in Menominee. In *Phi theory: Phi-features across interfaces and modules*, ed. by Daniel Harbour, David Adger, and Susana Béjar, 221–250. Oxford: Oxford University Press.

Tuite, Kevin. 1998a. A short descriptive grammar of the Svan language. Ms. Université de Montréal.

Tuite, Kevin. 1998b. Kartvelian morphosyntax. number agreement and morphosyntactic orientation in the south caucasian languages. PhD diss., Université de Montréal.

Wood, Jim, and Alec Marantz. 2017. The interpretation of external arguments. In *The verbal domain*, ed. by Roberta D'Alessandro, Irene Franco, and Ángel J. Gallego, 255–278. Oxford: Oxford University Press.

Yuan, Michelle. 2020. Dependent case and clitic dissimilation in Yimas. *Natural Language and Linguistic Theory* 38 (3): 937–985.

Appendix A: Tables

	Subject					
Object	1SG	1PL	2SG	2PL	3SG	3PL
1SG	—	—	m-...-Ø	m-...–Ø-t	m-...–Ø-s	m-...–Ø-en
1PL	—	—	gv-...–Ø	gv-...–Ø-t	gv-...–Ø-s	gv-...–Ø-en
2SG	g-...–Ø	g-...–Ø-t	—	—	g-...–Ø-s	g-...–Ø-en
2PL	g-...–Ø-t	g-...–Ø-t	—	—	g-...–Ø-t	g-...–Ø-en
3SG/PL	v-...–Ø	v-...–Ø-t	Ø-...–Ø	Ø-...–Ø-t	...–Ø-s	...–Ø-en

Table 1: Georgian direct: present/future (based on Aronson 1990:169-171)

	Subject					
Object	1SG	1PL	2SG	2PL	3SG	3PL
1SG	—	—	m-...-di	m-...-di-t	m-...-d-a	m-...-d-nen
1PL	—	—	gv-...-di	gv-...-di-t	gv-...-d-a	gv-...-d-nen
2SG	g-...-di	g-...-di-t	—	—	g-...-d-a	g-...-d-nen
2PL	g-...-di-t	g-...-di-t	—	—	g-...-d-a-t	g-...-d-nen
3SG/PL	v-...-di	v-...-di-t	Ø-...-di	Ø-...-di-t	...-d-a	...-d-nen

Table 2: Georgian direct: imperfect/conditional (based on Aronson 1990:171)

	Subject					
Object	1SG	1PL	2SG	2PL	3SG	3PL
1SG	—	—	g-i-...-var	g-i-...-var-t	v-u-...-var	v-u-...-var
1PL	—	—	g-i-...-var-t	g-i-...-var-t	v-u-...-var-t	v-u-...-var-t
2SG	m-i-...-xar	gv-i-...-xar	—	—	Ø-u-...-xar	Ø-u-...-xar
2PL	m-i-...-xar-t	gv-i-...-xar-t	—	—	Ø-u-...-xar-t	Ø-u-...-xar-t
3S/P	m-i-...-a	gv-i-...-a	g-i-...-a	g-i-...-a-t	u-...-a	u-...-a-t

Table 3: Georgian inverse: present perfect

	Subject					
Object	1SG	1PL	2SG	2PL	3SG	3PL
1SG	—	—	m-...-i	m-...-i-t	m-...-u	m-...-es
1PL	—	—	m-...-i-t	m-...-i-t	m-...-es	m-...-es
2SG	g-...-i	g-...-i-t	—	—	g-...-u	g-...-es
2PL	g-...-i-t	g-...-i-t	—	—	g-...-es	g-...-es
3S/P	v-...-i	v-...-i-t	∅-...-i	∅-...-i-t	...-u	...-es

Table 4: Laz past tense (based on Blix 2021:14 and Lacroix 2009)

	Subject					
Object	1SG	1PL	2SG	2PL	3SG	3PL
1SG	—	—	m-...-∅	m-...-∅-t	m-...-s	m-...-an
1PL	—	—	m-...-∅-t	m-...-∅-t	m-...-an	m-...-an
2SG	g-...-∅	g-...-∅-t	—	—	g-...-s	g-...-an
2PL	g-...-∅-t	g-...-∅-t	—	—	g-...-an	g-...-an
3S/P	v-...-∅	v-...-∅-t	∅-...-∅	∅-...-∅-t	...-s	...-an

Table 5: Laz present tense (based on Blix 2021:14 and Lacroix 2009)

	Subject					
Object	1SG	1PL	2SG	2PL	3SG	3PL
1SG	—	—	m/b/v-...-k	m/b/v-...-t	m/v-...-s/c	m/v-...-an
1PL	—	—	m/b/v-...-t	m/b/v-...-t	m/v-...-an	m/v-...-an
2SG	r-...-k	r-...-t	—	—	r-...-s/c	r-...-an
2PL	r-...-t	r-...-t	—	—	r-...-an	r-...-an
3SG/PL	b/v-...-k	b/v-...-t	∅-...-k	∅-...-t	...-s/c	...-an

Table 6: Megrelian present tense (based on Kipshidze 1914:76)[53]

	SG	PL
1	v/b-...-di	v/b-...-di-t
2	∅-...-di	∅-...-di-t
3	∅-...-d-u/ə	∅-...-d-es

Table 7: Megrelian imperfect (3rd OBJ) (based on Kipshidze 1914:73)[54]

[53] The labial consonants observed in the exponence of 1st-person features (*m-*, *b-* and *v-*) raise the question of how many prefixal exponents for 1st-person there really are. In the paper, we hypothesize that there are two 1st-person exponents: a DEP-labeled *m-/b-/v-* (which in some cases might be realized only as *m-/v-*), and an UNM-labeled exponent *b-/v-*. Our analysis, however, is equally compatible with there being a single exponent *m-/b-/v-*, underspecified as to whether it is DEP or UNM. Further study of these labial agreement exponents is necessary to determine for sure how many exponents we are dealing with.

	Subject						
Object	1SG	1PL.EX	1PL.IN	2SG	2PL	3SG	3PL
1SG	—	—	—	m-...	m-...-d	m-...	m-...-x
1PL.EX	—	—	—	n-...	n-...-d	n-...	n-...-x
1PL.IN	—	—	—	—	—	gw-...	gw-...-x
2SG	ʤ-...	ʤ-...-d	—	—	—	ʤ-...	ʤ-...-x
2PL	ʤ-...	ʤ-...-d	—	—	—	ʤ-...-x	ʤ-...-x
3S/P	xw-...	xw-...-d	l-...-d	x-...	x-...-d	...	...-x

Table 8: Svan (based on Gudjedjiani and Palmaitis 1986:63)

[54] We do not have the data for all person-number combinations of the Megrelian imperfect, so we only provide the paradigm of agreement markers for the case when the object is 3rd person. This illustrates the imperfect markers' allomorphy conditioned by C.