Noname manuscript No.
(will be inserted by the editor)

Leftover Agreement

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Abstract Based on data from number agreement in the four Kartvelian 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 Kartvelian 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 grammar allows for a certain kind of interleaving of syntax and spell-out, where accessibility of the uninterpretable features on edges of phases (on their heads and specifiers) is dependent on whether or not they have been lexicalized within the phase.

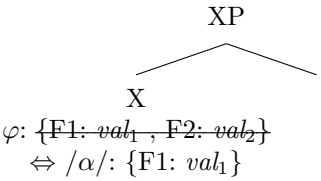
Keywords agreement · Kartvelian · spell-out · Vocabulary Insertion

Acknowledgements: Authors are listed alphabetically. We are grateful for useful feedback to Hagen Blix, Jonathan David Bobaljik, Colin Davis, Steven Foley, Sabine Iatridou, Laura Kalin, Léa Nash, David Pesetsky, Maria Polinsky, Norvin Richards, Yakov Testelets, and audiences at MIT, at the workshop *Linguistic Theory, Meet Languages of the Caucasus!*, at LSA 94, WCCFL 38 and GLOW 43. All errors are each other's.

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, F1 and F2, and the exponent α that has been matched with X lexicalizes only F1.[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 F2 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 the rewriting rule. 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.

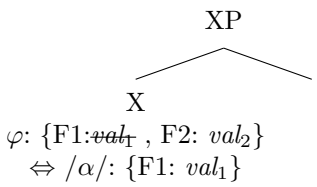
According to the partial rewriting, not all features of the head are regarded as being used up after it has been matched with an exponent, but only features that match the specification of the vocabulary item exactly. (4) illustrates partial rewriting at work. In the exact same configuration as in (2) above, with the head X being matched with an exponent α that lexicalizes only one of its features, partial rewriting declares that only the feature that has been lexicalized by the exponent—F1—is used up and becomes inaccessible

[1] This paper follows the Leipzig glossing conventions with the following additions: ADDR = addressee; AOR = aorist; DEP = dependent; EX = exclusive; IMPF = imperfect; IN = inclusive; IND = Independent; OBV = obviative; π = person; PART = participant; PERF = present perfect; PRV = pre-radical vowel; PVB = preverb; SPKR = speaker; U.CONJ = 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 is an exponent of the syntactic node that bears the feature bundle {F1, F2}, but it lexicalizes only F1 and does not lexicalize F2.

for further operations. The feature F2, 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 Kartvelian languages, in which, we argue, the spell-out of a lower agreement probe affects agreement on a higher agreement probe. When the exponent 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* (Harley and Noyer 1999; Noyer 1992), 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 (Harley and Noyer 1999). An analysis in terms of fission was proposed by Halle and Marantz (1993) for number agreement in Georgian. We will argue that there are certain 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 Kartvelian number agreement. In section 3 we provide brief background on Kartvelian 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 Kartvelian 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 discusses potential cases of agreement with leftover features from other languages (Berber and Passamaquoddy) and summarizes the implications of our proposal.

2 The Kartvelian Discontinuous-Bleeding Generalization

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

(5) **The Kartvelian 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 be present.

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

a. **gv**-nax-a
1PL-see.AOR-3
'(S)he saw us.'

b. **g**-nax-a-**t**
2-see.AOR-3-**PL**
'(S)he saw you (pl).'

(7) **Svan**
(Testelets 1989:9)

a. **gw/n**-adgäri
1PL.IN/1PL.EX-kill.PRS
'(S)he is killing us.'

b. **ž**-adgäri-**x**
2-kill.PRS-**PL**
'(S)he is killing you (pl).'

(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).'

[3] Note that this correlation holds with respect to *a particular number feature*. I.e., there is no general ban on the prefix and 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**-k'lav-di-**t** **Georgian** (Aronson 1990:171)
1PL-kill-IMPF-**PL**
'You (pl). were killing us.'

The interaction between the prefix and the suffix will be discussed in detail in the section 4.

In particular, in sentences with 1PL objects there is a split between Kartvelian 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-3
'(S)he saw me.'

(11) **Svan**
(Testelets 1989:9)
m-adgäri
1-kill.PRS
'(S)he is killing 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 2SG object, (14)-(17), we see the same prefixes as when the object is 2PL supports the analysis according to which these prefixes (*g-* in Georgian and Laz, *ž-* 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-3
'(S)he saw you (sg).'

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

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

(16) **Svan**
(Testelets 1989:9)
ž-adgäri
2-kill.PRS
'(S)he is killing 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 represent two different probes, and because Vocabulary Insertion is only partially replacive, the unlexicalized plural features on the prefixal probe are accessible 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 corresponds to it 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 probe.

3 Background on Kartvelian

Kartvelian languages have intricate agreement, which received much 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 1998 on Svan, a.m.o. 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).

Kartvelian verbs have three slots in their wordforms that will be relevant for the discussion of agreement. 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**-**3.PL**
'They would kill you (sg).'

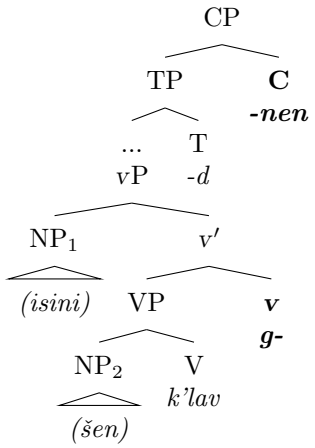
In (90) we see three morphemes that surround the verbal root.[5] The prefix *g-* realizes the 2nd-person feature from the object. The suffix *d-* encodes T(ense)A(spect)M(odality) information: it occurs in conditional and imperfect forms.[6] The suffix *-nen* encodes the fact that the subject is 3PL.

[5] The root 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 simplification.

[6] Conditional and imperfect forms are distinguished by the presence of the preverb; the form in (90) is conditional because it has one.

Many previous works on Georgian agreement have postulated at least two probes: a *v*-probe that corresponds to the prefix and a higher probe that corresponds to the plural suffix (Béjar 2003; Béjar and Rezac 2009; McGinnis 2013). We will follow this idea and assume that the prefixal agreement corresponds to the probe on *v*, and the suffixal agreement corresponds to the probe on C.[7] 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 appendix B for discussion).[8] Thus, (90) will have the structure in (19).

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



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

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

The choice of TAM of the form in Kartvelian 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). Second, there are two agreement subparadigms, so-called *direct* and *inverse*.[9] 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

[7] The concrete label of this probe is not crucial to us; we label it C for convenience.

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

[9] As we will see in the upcoming sections, this name arose due to the fact that exponents of the *v* agreement change in the inverse paradigm: the exponents that marked subjects start marking objects and vice versa.

inverse paradigm is used in forms which have dative subjects and nominative objects, the direct paradigm is used otherwise (Aronson 1990).

(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

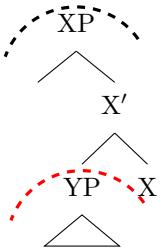
Our primary focus will be the direct paradigm, but in section 7 we will discuss in detail how our account extends to the Georgian inverse, and how it in fact provides additional support for parts of our analysis.

4 The proposal: Leftover Agreement

We propose that the Kartvelian 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), 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 the structure that undergoes Vocabulary Insertion together;
- : **the complement of the phase head (YP)** — the chunk of the 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:

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

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

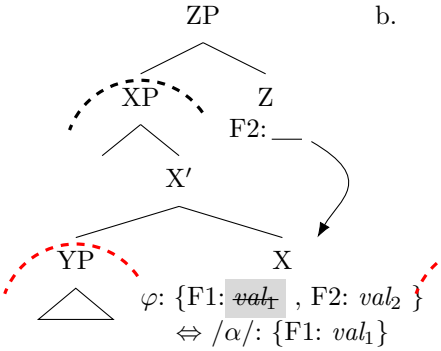
b. features that have not been lexicalized by exponents—***leftover features***—are still visible to higher heads and can be interacted with within further syntactic operations.

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 an exponent, it will remain visible to syntax.

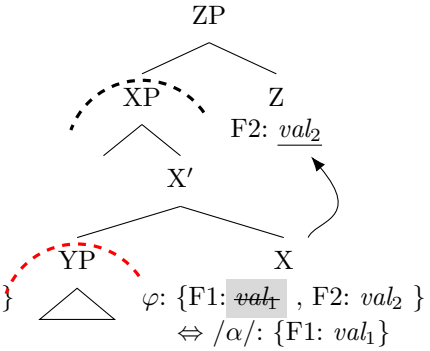
Many parts of this proposal have precedents in the literature. The idea that a phase head and its complement undergo spell-out together is not new. For example, the theory of Cyclic Linearization (Fox and Pesetsky 2005) claims that the whole phase undergoes spell-out and linearizes at the same time. Newell 2008 also proposes that some phase heads are interpreted at PF together with their complements.[10] 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, a.m.o.), 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 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 F1 and F2) via agreement with noun phrases within XP.[11]

(24) a.



b.



Once all syntactic operations within XP have been completed, it, being a phase, undergoes Vocabulary Insertion. During this process the head X gets matched with the most specified eligible exponent that is available, /α/. It turns out that /α/ lexicalizes only a subset of the features present in the bundle φ: φ in (24a) contains two features, F1 and F2, but /α/ lexicalizes only F1. F2 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 F2, as is the case in (24), then it will be able to find the leftover feature on X, agree with it, and lexicalize it

[10] However, according to her *v* is not a phase head.

[11] We do not assume, of course, that XP is a complement of Z; many projections may intervene between them.

(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 looking for. Second, these relevant features need to 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 outside of XP, then this higher probe will fail to agree (Preminger 2014).

5 Explaining the Discontinuous-Bleeding Generalization with LA

In this section we argue that the Kartvelian 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 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, a.m.o.). Following Deal (2015), we differentiate two operations within Agree: *interaction* is a process of the probe finding NPs that have some relevant features and agreeing 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 NPs than what they were searching for. The only thing we will need to assume about phasehood is that *v*P is a phase.

5.1 *v*-agreement

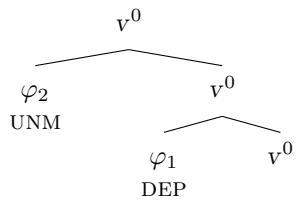
In this section we will outline our analysis of how *v*-agreement proceeds. Many details of this analysis are tangential to our proposal about Leftover Agreement: the LA account of Kartvelian number agreements needs *v* to get the correct exponents, but it does not depend on how exactly the exponents are determined or how the relevant features get onto *v*. Our story about *v*-agreement will be quite similar to Béjar and Rezac (2009)'s proposal, but with a twist: we will employ Yuan (2020)'s recent proposal about dependent-case assignment within agreement to explain the fact that *v*'s exponents depend on whether the exponed features 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 when it does, it copies their features ***coarsely***—copies the whole φ bundle corresponding to the NP.[12] We also assume that *v* is insatiable (Deal 2017; Hiraiwa 2005): it is a greedy probe that tries to gather all

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

the features that it can see, and stops when there are no more NPs to attempt to agree with.[13] 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 representation of the φ-feature bundles; we will represent such failed attempts as $\varnothing$ nodes.

(25)



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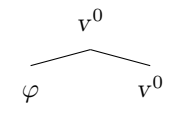


We propose that v's exponence is governed by a dissimilation process akin to ***dependent case***: a feature bundle adjoined to v is dependent (DEP) if it is c-commanded by another feature bundle adjoined to v; otherwise it is unmarked (UNM). When v gatheres only one φ-feature bundle, it is thus unmarked independent of whether it comes from the subject or the object (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,[14] and the dependent φ-feature bundles have the priority in being spelled-out.

(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 morphemes it can choose as its exponents. We provide the lists of DEP and UNM exponents for the four Kartvelian languages below.[15]

[13] As far as we can tell, analyzing v as an insatiable probe in this case is extensionally equivalent to 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.

[14] We take the inability to spell-out two φ-bundles at once to be an idiosyncratic property of Kartvelian. Cf. Yuan (2020) on verbal agreement in Yimas.

[15] We do not see an overt UNM-labeled 2nd-person prefix in Georgian, Laz and Megrelian, which is compatible both with there being no morpheme that could lexicalize UNM 2nd-person features and with there being a null morpheme that lexicalizes UNM 2nd-person features. We remain open to the possibility of a null morpheme, but will treat these languages as not having such a morpheme for simplification. Note that in Svan there is an overt UNM 2nd-person morpheme (*x-*).

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

(29) **Georgian**
UNM-labeled φ feature bundle:
a. *v-* ⇔ {1}
b. (∅ ⇔ {2})

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

(31) **Laz**
UNM-labeledφ feature bundle:
a. *v-* ⇔ {1}
b. (∅ ⇔ {2})

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

(33) **Megrelian**
UNM-labeled φ feature bundle:
a. *b-/v-* ⇔ {1}[16]
b. (∅ ⇔ {2})

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

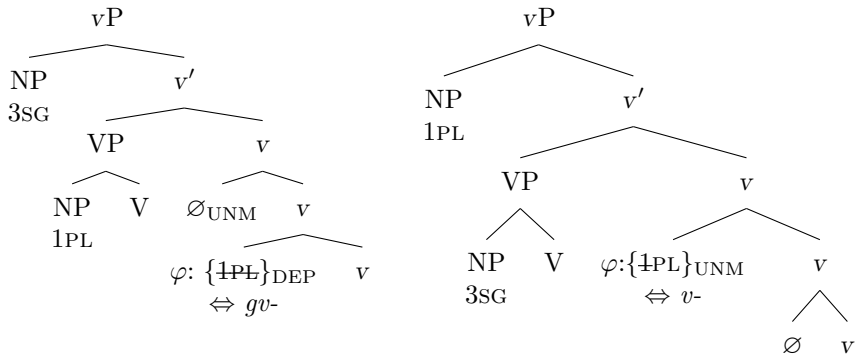
(35) **Svan**
UNM-labeled φ feature bundle:
a. *xw-* ⇔ {1}
b. *l-* ⇔ {1+2}
c. *x-* ⇔ {2}

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 due to *v* being able to copy features only of participant NPs. As we see in (37), a ∅-node will head-adjoin to *v*, marking this failed attempt.

(36) (is) (čven)
(3SG.NOM) (1PL.ACC)
mo-**gv**-k'lav-d-a
PVB-**1PL**-kill-IMPF-3
'(S)he would be killing us.'
(Aronson 1990:171)

(37) (čven) (mas)
(1PL.NOM) (3SG.ACC)
mo-**v**-k'lav-t
PVB-**1**-kill.PRS-PL
'We will kill it/him/her.'
(Aronson 1990:43)

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



Since *v* is an insatiable probe, it will try to find more features. 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 an empty sister node (∅), because *v* cannot copy features from non-participants. In the 1PL > 3SG configuration (37) however it will find the participant subject and copy its features onto itself.

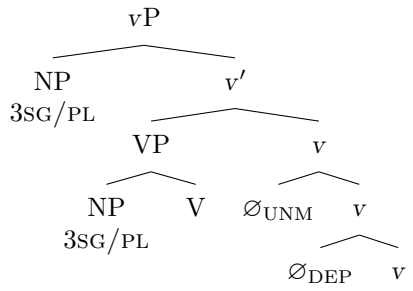
Thus, in both configurations, *v* will build a hierarchical structure during agreement, but the placement of the participant features in the two structures will be different. In 3SG > 1PL, the features of the 1PL NP are structurally lower (dependent) within the *v* head complex. In 1PL > 3SG, the features of the 1PL NP are structurally higher (unmarked) within the *v* head complex. Due to 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 he 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 exclusivity/inclusivity 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 the exclusivity/inclusivity of the plural).

So far we looked only 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 incapability of agreeing with 3rd-person NPs (38). This is borne out: we do not see any prefixal agreement

in 3SG/PL > 3SG/PL configurations, (39)-(41). 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.'

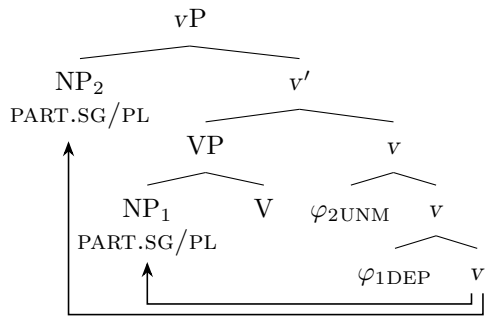
(40) **Svan**
(Testelets 1989:9)
adgäri
kill.PRS
'(S)he is killing her/him/it/them.'

(41) **Laz**
(Lacroix 2009:289)
dzirom-s
see.PRS-3
'(S)he sees 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 it 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. The φ_2 in this structure is the unmarked (UNM) bundle, the φ_1 is the dependent one (DEP). The rule of exponence in (27) declares the priority of

spelling out 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 so, as is illustrated for the four languages in (44)-(51) by comparing the 1SG > 2SG and 2SG > 1SG configurations.

(44) **Georgian** 1SG > 2SG
(Aronson 1990:171)
mo-**g**-k'lav
PVB-**2**-kill.PRS
'I will kill you (sg).'

(45) **Georgian** 2SG > 1SG
(Aronson 1990:171)
mo-**m**-k'lav
PVB-**1**-kill.PRS
'You (sg) will kill 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'arən-k
2-see-PRS
'I see you (sg).'

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

(50) **Svan** 1SG > 2SG
(Testelets 1989:9)
ž-adgäri
2-kill.PRS
'I kill you (sg).'

(51) **Svan** 2SG > 1SG
(Testelets 1989:9)
m-adgäri
1-kill.PRS
'You (sg) kill me.'

As we 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: prefixal agreement is always with the object, and the exponents are always picked from the DEP-labeled set.[17]

Let us now summarize how *v*-agreement proceeds. We have observed that in PART + NON-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 agreement.

[17] 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 think that the inverse paradigm of Georgian provides evidence that *v* in fact agrees with both arguments in these cases (see section 7.3).

Moreover, we 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 don't differ in their agreement. For example, compare an unaccusative 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 marker from the UNM-labeled set of exponents. This is an unexpected result for a system like in Béjar (2003) and Béjar and Rezac (2009) (as is noted in Béjar 2003:130), which views what we have been calling DEP-labeled markers as markers that are used for features that have been gathered in the first cycle of probing. If arguments of unaccusatives originate as objects, we would expect them to be targeted in the first cycle of probing, and thus expect unaccusative verbs to use first-cycle agreement markers (i.e. what we referred to as DEP-labeled markers), 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-bundle, leading to UNM-labeled exponents.

5.2 Leftover Agreement between v and C

The C probes in Kartvelian languages have different properties, but all of them make use of Leftover Agreement. In this section we first illustrate the core idea of Leftover Agreement in C by looking at the plural agreement in the 3SG > 1PL and 3SG > 2PL configurations, and then examine how C agreement differs in Georgian, Laz and Megrelian, and Svan.

While C probes of Kartvelian languages differ, all of them are interested in gathering plural features. Thus, all of them will interact with heads and phrases that have a PL feature. Given that vP is a phase, VP is completely inaccessible to C (- - - - - -). Accessibility of v and its specifier to C depends on exponence: only ***leftover*** (= unlexicalized) features are accessible to it (- - - - - -). Given this state of affairs, let's consider the predictions that we make for a PL-searching probe in the 3SG > 1PL configuration, (54)-(57).

(54) **Georgian**
(Aronson 1990:172)
gv-nax-a
1PL-see.AOR-3
'(S)he saw us.'

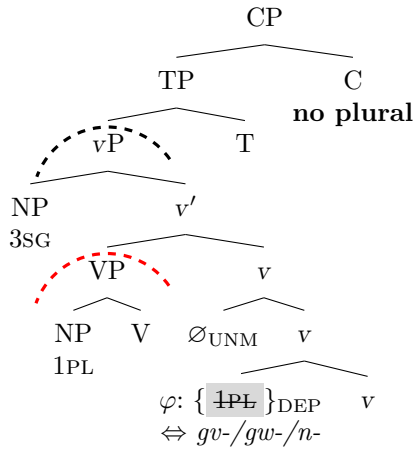
(55) **Laz**
(Lacroix 2009:294)
m-dziom-**an**
1-see.PRS-**PL**
'(S)he sees us.'

(56) **Svan**
(Testelets 1989:9)
gw/n-adgäri
1PL.IN/1PL.EX-kill.PRS
'(S)he is killing us.'

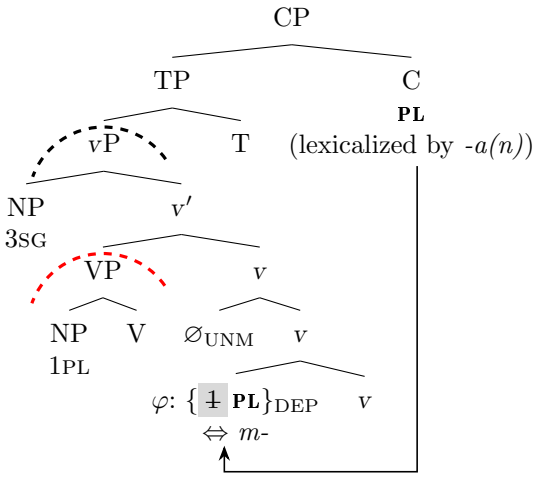
(57) **Megrelian**
(Kipshidze 1914:76)
m/v-č'arən-**a(n)**
1-write.PRS-**PL**
'(S)he writes us.'

A probe that is searching for PL won't be able to find this feature on a 3SG subject, which means that the only source of a plural feature for C can be *v*. However, according to our proposal not all features of *v* can be accessible to C: only ***leftover*** features, that have not been already lexicalized, are accessible. 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 being already lexicalized, and thus we don't see C lexicalizing PL features in this configuration (58). In Laz and Megrelian, C will find the unlexicalized PL feature on *v*, copy it and lexicalize it (59).

(58)



(59)



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 (60), 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 (60). If C could agree with the plural object directly, we would expect the plural suffix *-t* to occur in the form. The fact that it cannot occur here suggests that the direct object is out of C's reach, and it can only get features from the *v* and its specifier.[18]

[18] The form *da-v-c'er-di-t* is possible under a different meaning: "We would write it/them".

(60) 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 lexicalize only 2nd person, and the PL feature on *v* is left over. C is able to find this feature, copy it onto itself and lexicalize it (65).

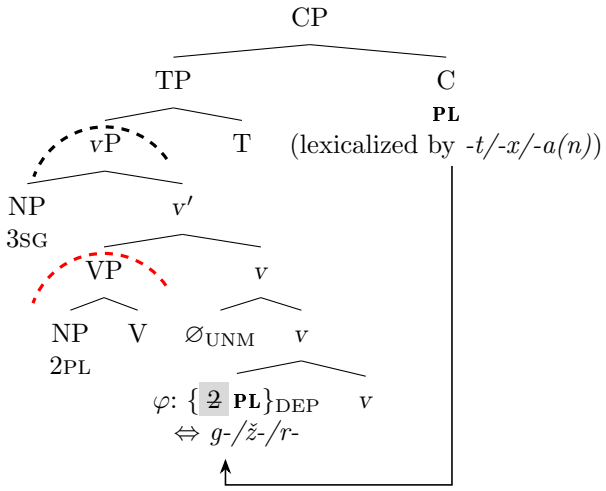
(61) **Georgian**
(Aronson 1990:172)
g-nax-a-**t**
2-see.AOR-3-**PL**
'(S)he saw you (pl).'

(62) **Svan**
(Testelets 1989:9)
ž-adgäri-**x**
2-kill.PRS-**PL**
'(S)he is killing you (pl).'

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

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

(65)



Thus, our proposal captures the dependence between *v*'s exponence and C's exponence 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, and thus it can search in *v*'s specifier and *v* itself, but not further. When the subject in Spec, *v*P is plural, C will be able

to agree with the subject itself.[19] 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 features that were not lexicalized by *v* itself derives the dependence between *v* agreement and C agreement—the Discontinuous-Bleeding Generalization.

This is the core of our proposal. While the general mechanism of interaction between *v* agreement and C agreement is the same in all four Kartvelian languages, these languages vary in the details of C agreement. Specifically, we propose that there are two points of variation: (i) the featural specification of the C probe; (ii) the procedure of Vocabulary Insertion on C. Let us first consider the specification of the probe on C. In all the languages it shows a more complex behavior, suggesting that it's not merely a # probe, but that behavior is different in Georgian, Laz and Megrelian on the one hand, and Svan on the other hand. Let us consider the exponents we see on C. In Georgian, Laz and Megrelian we see that C lexicalizes two kinds of features: NON-PART features and PL features, (66)-(68).[20]

(66) **C exponents in Georgian**

a. {NON-PART, PL} ⇔ *-en* /___PRS on T
⇔ *-nen* /___IMPF on T

b. {NON-PART} ⇔ *-s* /___PRS on T
⇔ *-a* /___IMPF on T

c. {PL} ⇔ *-t*

(67) **C exponents in Laz**

a. {NON-PART, PL}
⇔ *-an* /___PRS on T
⇔ *-es* /___IMPF on T

b. {NON-PART}
⇔ *-s* /___PRS on T
⇔ *-u* /___IMPF on T

c. {PL} ⇔ *-t*

(68) **C exponents in Megrelian**

a. {NON-PART, PL}
⇔ *-a(n)* /___PRS on T
⇔ *-es* /___IMPF on T

b. {NON-PART}
⇔ *-s/c* /___PRS on T
⇔ *-u/ə* /___IMPF on T

c. {PL} ⇔ *-t*

[19] 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 current section 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.

[20] This tripartite system of endings (NON-PART SG vs NON-PART PL vs PART) seems to be very persistent throughout the conjugation system of these three languages.

Svan does not seem to ever lexicalize NON-PART; it lexicalizes PART and PL features, as is illustrated in (69).

(69) **C exponents in Svan**

a. {PART, PL} ⇔ *-d*

b. {PART}
⇔ ∅/___PRS on T
⇔ *-äs /-sgw /*∅ */-is/*___IMPF on T[21]

c. {PL} ⇔ *-x*

Furthermore, as we will soon see, the relationship between NON-PART and PL features in Georgian, Laz and Megrelian and the relationship between PART and PL features in Svan is different. In the first group of languages, C will agree with whatever NON-PART and PL are accessible to it; finding one of these two features does not halt the search. In Svan the situation is different: it seems that as soon as C finds PART or PL, it is satisfied. This leads to an intervention effect, which is discussed in more detail in section 6.

These differences motivate our proposal about the C probes in Kartvelian languages, (70)-(71): we propose that C in Georgian, Laz and Megrelian is searching for a conjunction of the NON-PART and PL features, whereas C in Svan is searching for a disjunction of PART and PL.

(70) **C probe in Georgian, Laz and Megrelian**
NON-PART ∧ PL

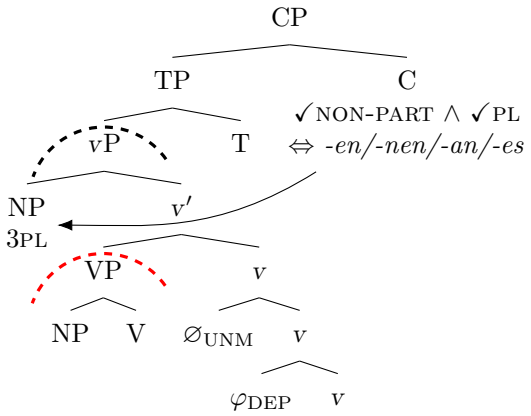
(71) **C probe in Svan**
PART ∨ PL

While these probes might look complex, their make-up consists of elements that have been proposed in the literature before. Coon and Bale (2014) claimed that probes can search for conjunction of features, and Roversi (2020) argued that probes can also search for disjunction of features. Furthermore, Harbour (2016), Nevins (2007) and Trommer (2008) argued that 3rd person is not reducible to the mere absence of person features. In fact, there appear to be languages where certain slots in the verb form exclusively show agreement with 3rd-person NPs (e.g. peripheral agreement in Algonquian; see Francis and Leavitt 2008; Oxford 2020), something that would be difficult to account for if probes could not search for non-participant NPs.

But most importantly, the specifications in (70)-(71) allow us to capture why we see the exponents that we see in Kartvelian C agreement. Let us consider C agreement in Georgian, Laz and Megrelian first. There are three important configurations to consider: the subject is 3PL, the subject is 3SG, and the subject is a participant. If the subject is 3PL, (72), then C will agree with it and completely satisfy both of its features, finishing its search. We will then get exponents *-en/-nen/-an/-es* in C, because they can expone 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.

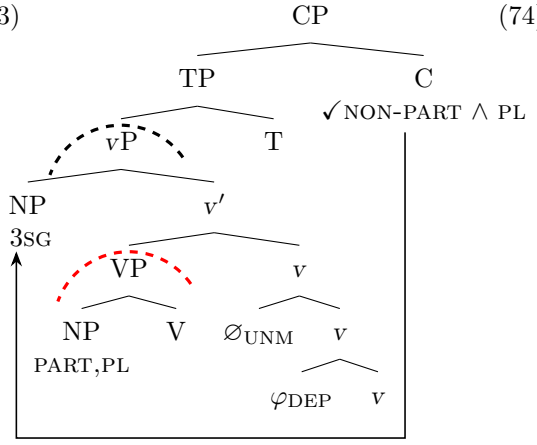
[21] These different allomorphs occur in different dialects (Tuite 1998).

(72)

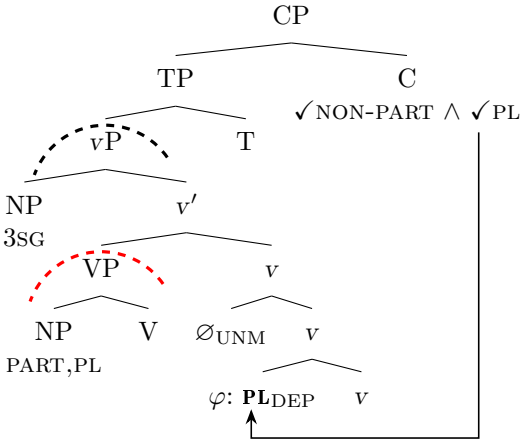


If the subject is 3SG, then C will first agree with it, (73) and then also check if *v* has any leftover PL features. If there are leftover PL features, C will agree with them and be satisfied (74); if there are no such features, its search will fail (Preminger 2014). We postpone the discussion of how NON-PART and PL are exponed when they get to C from different sources, as the three languages show variation in this respect.

(73)



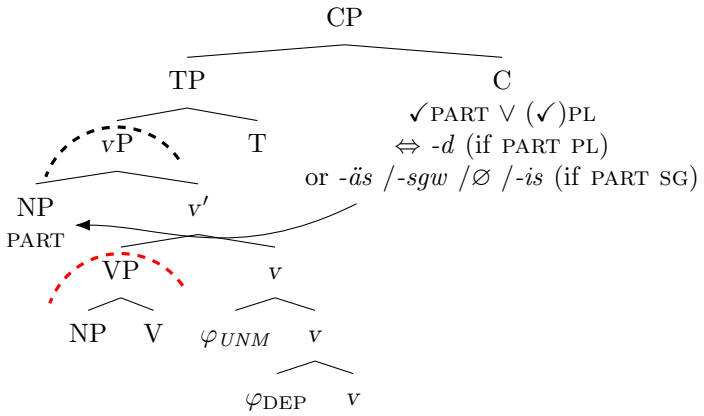
(74)



Finally, if the subject is a participant, then C will never find a NON-PART feature, as *v* never gathers such features to begin with and thus cannot have any NON-PART features left over. Thus, in this configuration C will only show plural agreement: it will have the *-t* exponent when either the subject is plural, or *v* has a plural feature that has not been lexicalized on it. Thus, a NON-PART ∧ PL probe in C allows us to capture the exponents we see in C correctly.

Now let us turn to Svan, and consider three configurations: participant subject, NON-PART PL subject and NON-PART SG subject. If the subject is a participant, the probe will be satisfied as soon as it agrees with the subject:

(75)



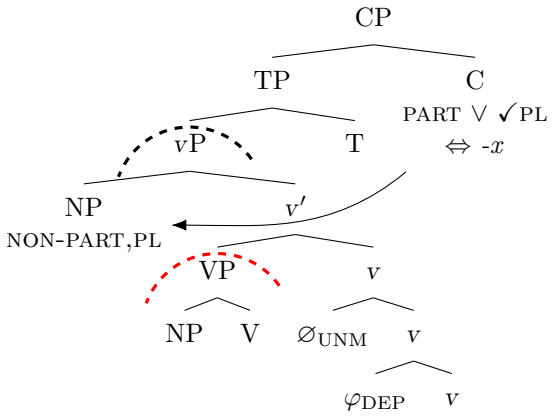
If the participant subject is plural, then C will get two features and have a *-d* exponent. If the participant subject is singular, C will only copy the PART feature. But this will be enough to satisfy the disjunctive probe, and C will search no further. In this case we will see a morpheme spelling out participant features only. The phonological form of this morpheme can be different depending on the TAM form of the verb; in particular it is ∅ in some forms, and it also varies across different Svan dialects: for example, Tuite (1998) reports for the imperfect allomorph *-äs* in Upper Bal dialect and in Lent'ex dialect, *-sgw* in Becho dialect, ∅ in Etser and Laxamul, *-is* in Lashx dialect. What is interesting is that in all the dialects we see that the C exponent in imperfect is different from all other forms 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 (76).

(76) **Svan** 1SG > 2PL (Testelets 1989:9)
ž-adgäri
2-kill.PRS
'I kill you (pl).'

In (76) the object is a plural participant, and *v* does not lexicalize the plural feature of this participant, 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, bleeding 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, check off its PL feature, and be immediately satisfied:

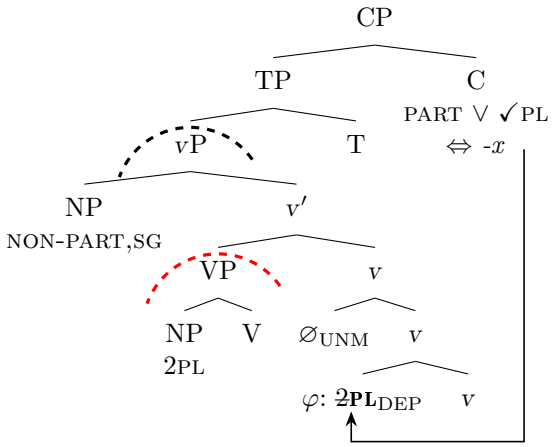
(77)



The data is in line with this prediction: in all the forms where the subject is 3PL we see the plural marker *-x*.[22]

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 something is via Leftover Agreement with *v*. In particular, since *v* always lexicalizes participant features, C only has a chance of finding leftover plural features. Such features are present on *v* in Svan only in one configuration: when the object is 2PL, and the prefix does not lexicalize the plural feature:

(78)



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

[22] But note that in this case we cannot distinguish C not searching further (which is what our proposal predicts) and C searching, but not finding anything further. 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.

participant feature due to the fact that *v* lexicalizes this feature in its exponent. Thus, C doesn't copy PART onto itself, and has to use *-x*, which matches in the specification exactly what C gathered. Unless the object is 2PL, we will not find any agreement on C when the subject is 3SG, as C's search will fail.

Thus, postulating a NON-PART ∧ PL probe for Georgian, Laz and Megrelian and a PART ∨ PL probe for Svan allows us to capture both the syntactic behavior of the probes and the exponents that we see.

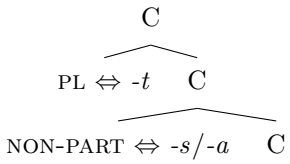
Now we can turn to the second point of variation between the Kartvelian languages, which has to do with Vocabulary Insertion on C. This point will only be relevant to the three languages in which there is a circumstance where C gathers two features from different sources: Georgian, Laz, and Megrelian.[23] Recall that C gets two features from different sources only in the configuration with a 3SG subject and a participant PL object whose plural feature is not lexicalized by *v*. In all the three languages 3SG > 2PL is such a configuration. The probe first checks the NON-PART feature by agreeing with the subject, and then the PL feature by agreeing with the leftover plural feature on *v*. Now the question arises: how do these features on C get lexicalized? It turns out that whether the source of the two features on C is the same or not can matter:

(79)	**Georgian**	(80)	**Laz**	(81)	**Megrelian**
	(Aronson 1990:171)		(Lacroix 2009:294)		(Kipshidze 1914:76)
	g-k'lav-d-**a-t**		**g**-dziom-**an**		**r**-č'arən-**a(n)**
	2-kill-IMPF-**3-PL**		**2**-see.PRS-**3.PL**		**2**-write.PRS-**3.PL**
	'(S)he killed you (PL).'		'(S)he sees you (PL).'		'(S)he writes you (PL).'

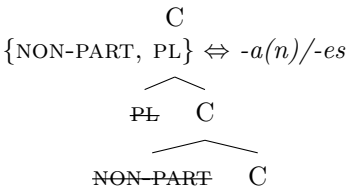
As is illustrated in (79)-(81), Georgian on the one hand and Laz and Megrelian on the other hand show different behavior. In Georgian, the two features on C are lexicalized separately: the NON-PART feature is exponed as ∅ in the present tense and as *-a* in the imperfect, the PL feature is lexicalized by *-t*. In Laz and Megrelian however the two features are lexicalized by a single exponent: *-a(n)* in the present tense and *-es* in the past. What is the source of this variation?

There might be several ways to model this distinction, but here is one possible implementation. Recall that we assumed that when *v* copied features onto itself, it organized the features into a hierarchical structure. We suggest that the same is true of C, as is illustrated in (82)-(83).

(82) Georgian



(83) Laz and Megrelian



[23] This circumstance does not arise in Svan due to the disjunctive nature of the probe: as soon as it finds a PART feature or a PL feature, it stops the search.

Now we propose that Georgian on the one hand and Laz and Megrelian on the other hand differ in how they lexicalize this hierarchical structure.[24] In Georgian, nothing happens to the features on the nodes of the complex head. Each node containing features undergoes Vocabulary Insertion, and the node with PL is lexicalized as *-t*, the node with NON-PART is lexicalized as *-s*/*-a* (with the subsequent cluster resolution *-st* ⇒ *-t* in the present tense). Given that the features remain on different nodes, they cannot be lexicalized by the exponents *-en/-dnen*. In Laz and Megrelian, on the other hand, the features project to the topmost node of the complex head, and it is that topmost node that undergoes the Vocabulary Insertion.[25] Given that both NON-PART and PL features in these languages occupy the same node at the moment of Vocabulary Insertion, exponents that lexicalize both NON-PART and PL at the same time can be inserted: *-a(n), -es*. This difference in how the features from different sources behave on the complex head captures the variation in the spell-out of C that we see in these languages.

To summarize, in this section we saw that there is something uniform about all the four Kartvelian 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 of the four 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, but 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 lexicalize the complex C head that is created in the process of copying the features. In Georgian the nodes bearing the features are lexicalized separately, but in Laz and Megrelian the features to the topmost C node, feeding the insertion of exponents that lexicalize both features at once.

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 an alternative which

[24] One alternative is to say that only Georgian creates the hierarchical structure on C, whereas Laz and Megrelian do not (their C probe is flat). This view puts the burden of the explanation on the mechanism of copying features as opposed to the mechanism of Vocabulary Insertion. A middle ground solution would be to have the Laz and Megrelian C probe first be structurally complex, but then flatten it via fusion before Vocabulary Insertion.

[25] There are two ways to model the fact that the features are not lexicalized twice, both on the initial nodes and on the topmost node: either feature projection includes removal of the features from the previous nodes, or impoverishment ensures that the copies of features on the initial nodes are not spelled out.

is prominent in the literature, according to which the prefix–suffix interactions are dealt with squarely within the post-syntactic component—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 (84), 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 lonely plural feature can ultimately be realized as a *-t* suffix.

(84) 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.[26] This forces them to stipulate the 1PL exception by brute force rather than deriving it from the fact that 1PL object agreement (unlike 2PL) is lexicalized by a portmanteau.[27]

However, even if we were to somehow overcome this problem (for example, by granting fission some degree of look-ahead into the outcomes of Vocabulary Insertion), there would still remain another fundamental difference between the fission-based account and our own. That is because fission is a morphological operation that targets a single syntactic node, and is therefore not generally expected to be affected by that node's syntactic surroundings. By contrast, remember that our account posits a genuine syntactic agreement dependency between the probe realized by the suffix and the one realized by the prefix—crucially, two distinct nodes in the syntactic tree. We thus expect the syntactic structure intervening between those two nodes to be in principle able to affect their 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. In that section, we saw that, in Svan, *v*-agreement with 2PL objects leaves a leftover plural feature, which C can then agree with, much as expected ((7b), repeated here as (85)). However, this normal Leftover

[26] This particular order of operations is required under the assumption that fission might feed Vocabulary Insertion—i.e. that the features in the new *loci* of exponence created by fission might condition contextual allomorphy on their adjacent nodes, as recently argued by Hewett (2020). Such a feeding interaction is expected on our approach, whereby the relevant features are copied by a syntactic operation, not by a post-syntactic rule.

[27] This problem has already been noted by Trommer (1999), Lomashvili and Harley (2011), 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.

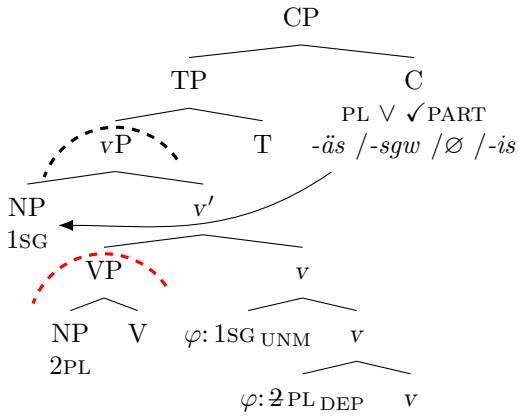
Agreement gets disrupted whenever the subject is a participant—even if it is singular ((76), repeated here as (86)).[28]

(85) **Svan** 3SG > 2PL
(Testelets 1989:9)
ž-adgäri-**x**
2-kill.PRS-**PL**
'(S)he is killing you (pl).'

(86) **Svan** 1SG > 2PL
(Testelets 1989:9)
ž-adgäri
2-kill.PRS
'I kill 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?[29] 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 participant argument will suffice to halt its search and hence to prevent it from copying the leftover plural feature on the lower probe, (87).

(87)



Another argument for taking the agreement suffix to realize its own probe in the syntax, as we have been assuming throughout, comes not from inter-

[28] 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 does or does not intervene.

(i) n-adgäri **Svan** (Testelets 1989:9)
1PL.EX-kill.PRS
'You (sg) are killing us (ex.).'

[29] 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.

vention or relativized locality but rather from the absolute locality restrictions imposed by phases. To appreciate the argument, recall that on our account, 3PL objects generally fail to control C agreement due to a conspiracy of reasons: 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.

(88) 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 (89)[30]—a movement which we assume can land into a position in between C and *v*.

(89) **Georgian**
(p.c. Léa Nash, building on observations reported in Blix 2021: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**}/{ʔs}
PRV-unite-{**PL**}/{ʔ3}
b. [SUBJ saerto punkcia] [OBJ mesame seri-is nakt'v-eb-s]
common function.NOM third series-GEN form-PL-ACC
a-ertianeb-{**s**}/{ʔ*t}
PRV-unite-{**3**}/{ʔ*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 with 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) notes variability of suffixal plural agreement in Svan perfect tenses. Although the details of the factors governing such variability are beyond the scope of our current research, the pattern in outline is just as we would expect to find.[31]

[30] According to Blix (2021), this is only possible if the subject is inanimate. Neither Blix nor us have an explanation for this restriction.

[31] 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. 29), 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

7 The inverse paradigm

It is now time to extend our analysis to the other agreement paradigm of Kartvelian—the so-called inverse.[32] Recall from (21) in section 3 that 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 in fn. 9, this agreement paradigm is called inverse because the prefixal exponents that would normally lexicalize (*v*-)agreement with the subject are here used to lexicalize (*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. (90) vs. (92)).

(90) **Georgian *direct*** (Aronson 1990:171)
g-k'lav-d-a-**t**
2-kill-IMPF-3-**PL**
'(S)he killed you (pl).'

(91) **Georgian *inverse*** (Aronson 1990:269)
(tkven) (is) a-**g**-i-šenebi-a-t
(2PL.DAT) (3SG.NOM) PVB-**2**-1/2.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 Why the inversion in the prefixal paradigm?

The starting point of our analysis of the Georgian inverse is the adoption of Marantz' (1989) idea that the DAT-NOM case alignment corresponds to an unaccusative structure with an applicative argument, as represented in (92b).[33]

be deleted in the morphology), whereas we predict the bleeding of Leftover Agreement to exhibit a stricter bottom-up directionality: the leftover features exponed by higher probes must be a subset of the features on lower probes.

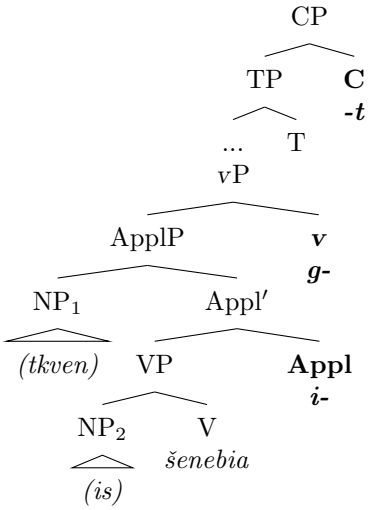
Blix assumes a syntax with a uniform alternating sequence of argument-specific person and number probes: $[\#_S\ [\pi_S\ [\#_O\ [\pi_O\ \dots]]]]$. Working within a broadly nanosyntactic framework, he then analyzes the complex agreement patterns we focused on as a result of richer Vocabulary Items and 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.

[32] Our discussion of the inverse will be exclusively based on data from Georgian—the Kartvelian language in which the paradigm and the corresponding syntax have been documented in by far the greatest detail. Whether our analysis can be extended to the inverse of the other three Kartvelian languages remains at present to be investigated.

[33] Cf. Thivierge (2021) for another recent proposal building on the same insight.

(92) a. **Georgian** (Aronson 1990:269)
(tkven) (is) a-**g**-**i**-šenebi-**a-t**
(2PL.DAT) (3SG.NOM) PVB-**2-1/2.APPL**-build.PERF-**be.PRS.3-PL**
'You (pl.) have built it.'

b.



There are several pieces of evidence for a structure along these lines.

First, a morpheme that is identical 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,[34] and the use of the copula as an auxiliary in Georgian is otherwise generally restricted to passive and unaccusative structures.

Second, the relevant tensed verb forms exhibit a preverbal vowel that is usually present in constructions featuring applicative arguments. This vowel agrees with the dative argument it introduces (*u-* for 3rd person, and *i-* for 1st/2nd person, as in (92)), and thus can simply be incorporated into our analysis as an Appl head that is specified to probe for person features into its own specifier.

Third, the most decisive argument for (92b) comes from the fact that, when coupled with the independently established rules of exponence in (28)-(29), repeated here as (93)-(94), that structure straightforwardly predicts the inversion in the choice of prefixes with respect to the direct paradigm.

[34] Notice that this copula-like morpheme appears to agree in person with the nominative object (*-var-* for 1st person, *-xar-* for 2nd, *-a-* for 3rd) even when that object's person features have already been lexicalized by *v*. If this morpheme were to be analyzed as a probe on T, such person agreement would thus be expected to be impossible, given that T should not have access to VP-internal features other than via Leftover Agreement mediated by *v*. One possible reaction to this problem would be to simply reject the idea that the agreeing copula-like morpheme really is a T-probe. Alternatively, one might pursue the idea that head movement of *v* into T might extend the phase for the purposes of agreement accessibility (cf. den Dikken 2007). We leave the decision between these theoretical options as a task for future research, noting that the problem is luckily restricted to the present perfect and does not extend to the other inverse subparadigm—the pluperfect.

(93) **Georgian**
DEP-labeled φ feature bundle:
a. *gv-* ⇔ {1PL}
b. *m-* ⇔ {1}
c. *g-* ⇔ {2}

(94) **Georgian**
UNM-labeled φ feature bundle:
a. *v-* ⇔ {1}
b. (∅ ⇔ {2})

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 (93). But crucially, in an applicative-unaccusative structure like (92b), 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, so it will be the interaction with the subject that will trigger dependent prefixes. The puzzling inversion property of this agreement paradigm is thus accounted for with no need for any additional assumptions.

7.2 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 Kartvelian 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 (95). Even though both examples feature a 3SG subject and a 1PL object, the direct example in (95a) does not display any LA on C, whereas the inverse example in (95b) does.

(95) a. 3SG>1PL in **direct**
gv-nax-a
1PL-see.AOR-3
'S/he saw us' (direct)

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

Georgian (Aronson 1990:172,272)

This is exactly as predicted by our account. In the direct example (95a), *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 (95b), *v* only finds the 1PL object after interacting with the subject in SpecApplP; it is thus exponed by the unmarked exponent

v-, which happens to only lexicalize a proper subset ({1}) of its {1PL} bundle. 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 lexicalizes 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-*.

7.3 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 (96b), exhibiting LA with the plural feature of a 2PL object (cf. the lack of LA in the 2SG-object counterpart (96a)).

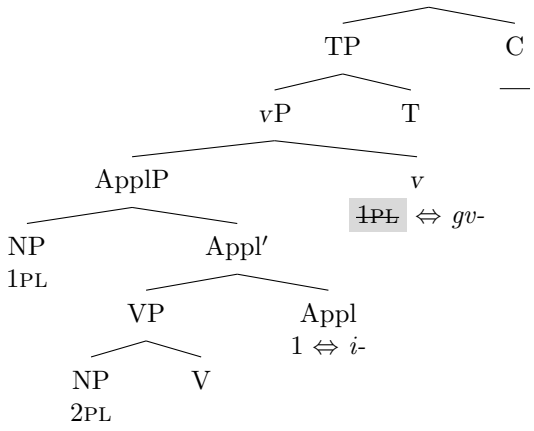
(96) Georgian (Aronson 1990:272)

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

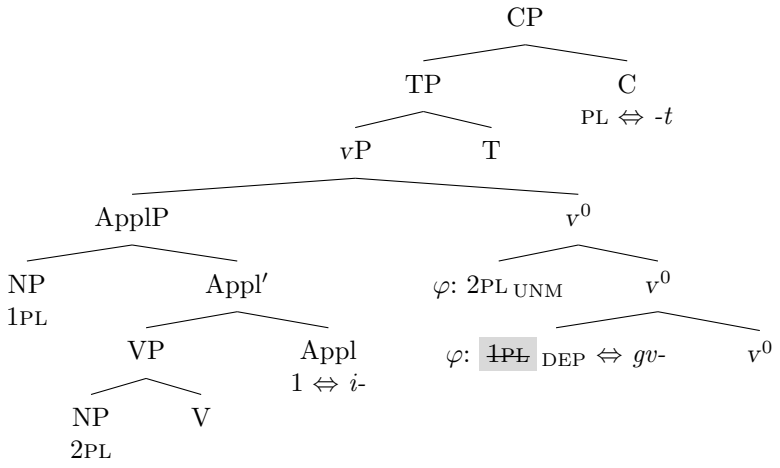
b. (čven) (tkven) **gv**-i-ki-xar-**t**
(1PL.DAT) (2PL.NOM) **1PL**-1/2.APPL-praise.PERF-be.PRS.2-**PL**
'We have praised you (pl).'

If the representation for (96b) were like (97), 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 (98) instead, with *v* agreeing with both participant arguments and thereby acting as an intermediary for LA by the C-probe.

(97) (to be revised in (98))



(98)



The "double-agreement" assumption required by our account of *v* agreement in the spirit of dependent case is therefore independently corroborated.[35]

8 Concluding remarks and outlook

In the previous sections, we have offered an account of verbal agreement in all four currently spoken Karvelian 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

[35] 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-3.APPL-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) 1-3.APPL-praise.PERF-be.PRS.1
'They praised me.'

(iii) **(mat)** (šen) u-ki-xar
(3PL.DAT) (2SG.NOM) 3.APPL-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.

to the what we've called the Kartvelian Discontinuous-Bleeding Generalization: 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. This allowed us to analyze the Kartvelian prefix–suffix interactions in terms of a notion of Leftover Agreement—agreement by a higher probe (here, the suffix) with the unlexicalized features of a probe on the lower phase's edge (here, 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 subjects in Georgian.

Finally, if this much is on the right track, we should also expect to find reflexes of Leftover Agreement well beyond Kartvelian. 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 show 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 (99) is highly reminiscent of the one we found in Kartvelian: suffixes can lexicalize number (and person) agreement only if the prefix cannot. In particular, in (99c) the 1PL prefix *n-* bleeds the presence of both the 1st-person suffix *-ɣ* and the plural suffix *-n*. It is thus unsurprising that we might want to extend our account of Karvelian 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.

(99) 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.[36] In so-called Indepen-

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

dent clauses verbs have two agreement slots that seem to interact with each other, a prefix and a suffix:[37] the person features that the prefix lexicalizes are not agreed with by the suffix. Consider (100)-(103), with the assumption that the exponents in bold have the featural specification as in (104)-(105).

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

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

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

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

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

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

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 (100)-(101) show that there is no suffix that would lexicalize inclusive 1st plural: we get the suffix *-(o)n(nu)* regardless 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 probes 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 (102)-(103) 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 exponing addressee features as a prefix bleeds their presence 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.

[37] 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.

(106) tokom-**ek**
hit.U.CONJ-**SPKR.PL**
'We (excl.) hit her/him.'

(107) tokom-**oq**
hit.U.CONJ-**SPKR.ADDR.PL**
'We (incl.) hit her/him.'

(108) tokom-**eq**
hit.U.CONJ-**ADDR.PL**
'You (pl.) hit her/him.'

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

(110) **Conjunct exponents:**
a. *-ek* ⇔ {SPKR, PL}
b. *-oq* ⇔ {SPKR, ADDR, PL}
c. *-eq* ⇔ {ADDR, PL}
d. *-htit* ⇔ {3, PROX, PL}

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.[38]

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 Kartvelian.

Conflict of interest

The authors declare that they have no conflict of interest.

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

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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	—	—	∅-u-…-xar	∅-u-…-xar
2PL	m-i-…-xar-t	gv-i-…-xar-t	—	—	∅-u-…-xar-t	∅-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)[39]

[39] The labial consonants corresponding to first person features (*-m*, *-b* and *-v*) raise the question of how many exponents of 1st person there are. In the paper we hypothesize that there are two 1st person morphemes: a DEP-marked *-m/-b/-v* (that in some cases might

	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)[40]

	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	ž-...	ž-...-d	—	—	—	ž-...	ž-...-x
2PL	ž-...	ž-...-d	—	—	—	ž-...-x	ž-...-x
3S/P	xw-...	xw-...-d	l-...-d	x-...	x-...-d	...	...-x

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

Appendix B: C-conditioned allomorphy on T

In this paper we assumed that in all Kartvelian languages there is a T head which contains information about Tense/Aspect/Mood of the clause, and that there is no agreement probe that corresponds to it. However, the appearance of T exponents is conditioned by C agreement. In this appendix we discuss the T exponents that we assume and what allomorphs they get due to their interactions with C. For some allomorphs it is plausible that they are phonologically conditioned (e.g., the choice of an allomorph might be plausibly governed by avoidance of cluster formation)[41][42], for others it is less clear that a sensible phonological distribution can be sought. Here we discuss both formulations, leaving the final decision on the nature of T's allomorphy to future research, as it is tangential to our proposal.

In Georgian, the exponent of the present tense is null, and there are two allomorphs of the imperfective, *-di* and *-d*, (111). In Laz, (112) present tense is again null, and imperfective is either null too, or is *-i*.

be realized only as *-m/-v*), and an UNM-marked morpheme *-b/-v*. Our analysis however is compatible with there being a single morpheme *-m/-b/-v* that is underspecified for whether it is DEP or UNM. Further study of these labial agreement morphemes is necessary to determine for sure with how many morphemes we are dealing with.

[40] 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 and the allomorphs of C they condition.

[41] Svan is an exception, because for it the choice of an allomorph seems to depend on the class of the verb.

[42] # stands for the end of the phonological word.

(111) **T exponents in Georgian**

a. {PRS} ⇔ ∅

b. {IMPF} ⇔ *-di* /__#, *-t*
-d /__ *-a*, *-nen*

c. {IMPF} ⇔
-d /__C$_{\text{NON-PART}}$
-di /__ elsewhere

(112) **T exponents in Laz**

a. {PRS} ⇔ ∅

b. {IMPF} ⇔ ∅ /__*-es*
-i / elsewhere

c. {IMPF} ⇔
∅ /__C$_{\text{NON-PART}}$
-i /__ elsewhere

While the phonological form of the allomorphs (especially the similarity of *-di* and *-d*) might tempt us to provide phonological rules for their distribution, it is not obvious that the phonological rules that we would have to postulate would receive independent support from the phonologies of these languages. For example, we might hypothesize that the underlying allomorph in Georgian is *-di*, and forms in which we get *-d-a* emerge due to hiatus resolution: *-di* + *a* ⇒ *-da*. However, it does not seem that such hiatus resolution is a general process of Georgian phonology: there are plenty of words in which we find *i* followed by *a* in Georgian, e.g., ***dia****x* 'yes', ***Lia*** (female name), *c'**ia**γisuli* 'fossil, minerals', ***sia*** 'list'. Thus, it is not obvious why such a vowel deletion would occur in the case under consideration. It is also not clear why a vowel would get deleted before the *-nen* suffix; e.g., there is a word ***dine****ba* 'flow, run' where we see similar segments (except for the final *-n*) occuring without the vowel being deleted. Alternatively, if we assumed *-d* to be the main allomorph, it is not clear what would make *-i* appear after it at the end of words, because Georgian allows *-d* in codas and at the ends of words. For example, many adverbs are formed with the suffix *-ad*, giving rise to words that end in *-d*: *k'arga****d*** 'well', *sulelura****d*** 'stupidly', *sc'rapa****d*** 'quickly'.

Alternatively, we can consider the hypothesis that allomorphy on T is feature-driven: the features on the higher head (C) determine which allomorph of T will be spelled-out. Unlike in the phonologically-conditioned formulation, the directionality of such allomorphy would be compliant with the generalizations made in Bobaljik (2000), and the rules for choosing the allomorphs are easy to state. Imperfect in both Georgian and Laz has one allomorph that occurs when C has a NON-PART(icipant) feature, i.e., shows agreement with 3rd person, and the other allomorph otherwise.

In Megrelian, present tense is *-k* at the end of words and null otherwise, and the imperfect has allomorphs *-d* and *-di*:

(113) **T exponents in Megrelian**

a. {PRS} ⇔ *-k* /__#
∅ /__elsewhere

b. {PRS} ⇔ ∅ /__C$_{\text{NON-PART}}$
∅ /__C$_{\text{PL}}$
-k /__elsewhere

c. {IMPF} ⇔ *-d* /__ *-es*
-di /__elsewhere

d. {IMPF} ⇔ *-d* /__C$_{\text{NON-PART}}$
-di /__elsewhere

While the allomorphy that we see in the imperfect in Megrelian is completely parallel to the allomorphy of the imperfect in Georgian and Laz, the

present tense is different, as it has a non-null allomorph *-k*. The absence of *-k* in forms in which there is a plural suffix *-t* following it could receive a plausible phonological explanation: creating a word-final cluster *-kt* might be disallowed by the phonology. Cluster avoidance could also account for the absence of *-k* when it is followed by the 3rd-person singular marker *-s/c*, but it's not clear how it could account for the absence of *-k* when a 3rd-person plural marker *-a(n)* is following it (cf. ***kan****aoba* 'swinging'). So it could be that both morphological and phonological factors are at play in Megrelian: it might be that in the absence of the NON-PART feature on C T gets a *-k* allomorph, which is removed in the phonology when its presence creates an illegal cluster.

Finally, in Svan allomorphs depend on the verb rather than on C. In the present tense we see allomorphs *-e, -i, ∅*, (114), and the imperfect has allomorphs *-a* and *-da*.

(114) **T exponents in Svan**

a.	{PRS} ⇔	*-e, -i, ∅*	depending on the verb (Testelets 1989:13)
b.	{IMPF} ⇔	*-a*	if the verb ends on *-e* in present
		-da	if the verb ends on *-i, ∅* in present

While we do not commit ourselves to a particular view of T's allomorphy, we would like to note that the nature of the allomorphy on T has a consequence for the analysis of C agreement: if at least some cases of T allomorphy are determined by the features on C rather than by C's exponent, then it follows that C could not have gotten its exponent by fissioning an already-inserted exponent from a lower head (cf. Hewett 2020 and fn. 26).