Leftover Agreement in Kartvelian*

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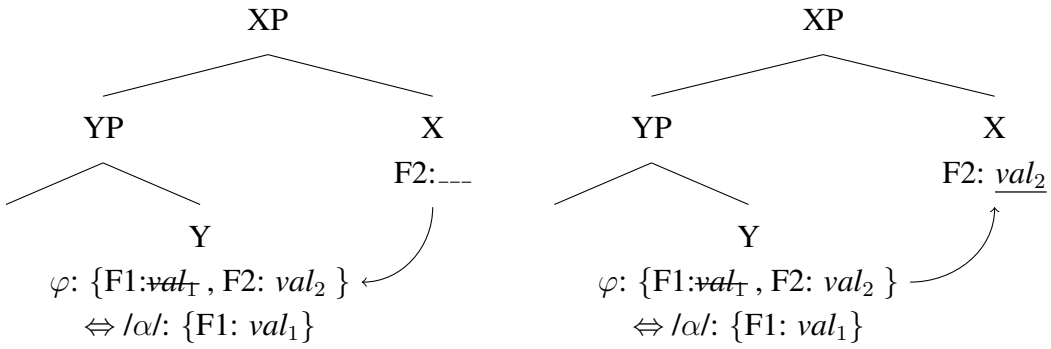
1 Introduction

- In this talk we argue, based on data from number agreement in Kartvelian languages, for a phenomenon we call **Leftover Agreement (LA)**:

(1) a.



(2) Let Y be a probe that has copied a feature bundle φ through agreement with noun phrases in its c-command domain, YP be a phase, and X be a probe outside of that phase.[1]

   a. YP, being a phase, undergoes Vocabulary Insertion, and the head Y gets matched with the best exponent available, /α/.

   b. It turns out that this exponent lexicalizes only a subset of the feature bundle φ. (E.g.., in (1), /α/ lexicalizes F1, but not F2.)

   c. The un-lexicalized — *leftover* — features (F2 in (1)) remain accessible for further computation. **Leftover Agreement (LA)** is agreement of a higher probe X with such leftover features on a lower probe Y.

- **When LA occurs:** LA occurs when the higher probe X is in the next Spell-Out cycle, and it has access only to Y and its specifier, but not to its complement.

- Here's an illustration from Georgian (Y = prefix, X = suffix, F1 = person, F2 = number):

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

(4) **g**-naxa-**t**
2-see.AOR.3SG-**PL**
'(S)he saw you (pl).'

*Authors are listed alphabetically. Many thanks to David Pesetsky, Norvin Richards, Sabine Iatridou, Yakov Testelets, Laura Kalin, Jonathan Bobaljik, and the audience of MorPhun at MIT. All errors are each other's.

[1] We do not assume, of course, that YP is a complement of X; many projections may intervene between them.

Roadmap:

1. Minimal background on Kartvelian verbs
2. The main empirical generalization
3. Our proposal: setting the system and illustrating it for 'direct' and 'inverse' alignments
4. Comparison to the morphological theories on the market
5. Some open questions & loose ends

2 Background on Kartvelian

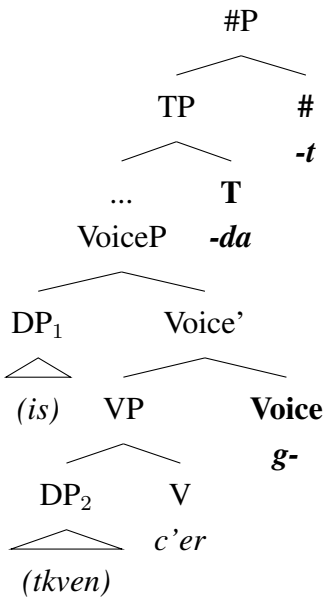
Agreement slots within the verb

- Kartvelian verbs have three slots that are relevant for agreement in their wordforms:

(5) (is) (tkven) gada-**g**-c'er-**da-t** *Georgian*
(3SG.NOM) (2PL.ACC) PVB-**2**-describe-**COND.3SG-PL**
'(S)he would describe you (pl).'

- Our assumptions about **slots-to-probes correspondence:**
  - the prefix (*g-*) ⇔ **Voice**;
  - the suffix that realizes both tense and agreement (*-da*) ⇔ **T**;
  - the suffix that realizes number features (*-t*) ⇔ **# head** above T;[2]

(6) **Three agreement probes: Voice, T, #**



[2]Later on, we will entertain the idea that the highest probe in Svan may actually agree not just in number but also in person. We may ignore this complication for now.

Direct and Inverse

- Kartvelian has a three-way split in case assignment: NOM-ACC, ERG-NOM, DAT-NOM.

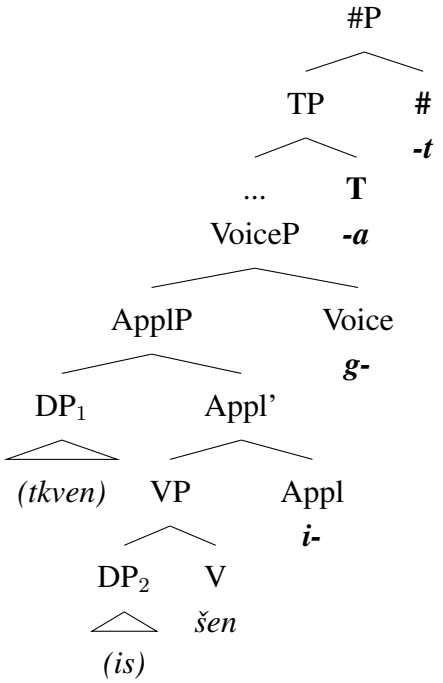
(7) **Type of agreement depending on the case alignment**

Agreement paradigm	Case alignment	Examples of forms
Direct	NOM-ACC, ERG-NOM	Present, Future, Aorist
Inverse	DAT-NOM	Present Perfect, Pluperfect

- Following Thivierge (2018), we assume that the DAT-NOM case alignment corresponds to an unaccusative syntactic structure with an applicative argument:[3]

(8) (tkven) (is) a-**g**-**i**-šen-ebi-**a-t** *Georgian*
(2PL.DAT) (3SG.NOM) PVB-**2-3APPL**-build-PERF-**be.PRS.3-PL**
'You all have built it.'

(9) **Four agreement probes: Appl, Voice, T, #**



- **Evidence for the unaccusative + applicative analysis:**
  - a preverbal vowel that is usually present in constructions with applicative arguments and agrees with the introduced argument (*u*- for 3rd person, *i*- for 1st/2nd person);
  - the perfect participle and the present form of 'be' in the present tense are still visible within the syncronically inseparable form.

- **The term "inverse"**: the prefix *g*- corresponds to the object in (5), but to the subject in (8).

[3] All our discussion of the inverse will be based on the data from Georgian. Whether our analysis can be extended to the inverse of other three languages remains to be investigated.

3 The Kartvelian Discontinuous-Bleeding Generalization

- The main generalization can be illustrated by comparing how the four languages say **"She got us / you [PL]"** (3SG subject, plural participant object) in direct forms.

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

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

b. **g**-naxa-**t**
2-see.AOR.3SG-**PL**
'(S)he saw you (PL).'

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

a. **gw/n**-adgäri
1PL.INCL/1PL.EXCL-kill.PRS
'(S)he is killing us (incl./excl.).'

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

(12) **Laz** (Lacroix: 294 (ex. 734b, 735b))

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).'

(13) **Megrelian** (Kipshidze 1914: 076)

a. **m/v**-tʃ'argn-**a(n)**
1-write.PRS-**PL**
'(S)he writes us.'

b. **r**-tʃ'argn-**a(n)**
2-write.PRS-**PL**
'(S)he writes you (PL).'

(14) **The Kartvelian Discontinuous-Bleeding Generalization**[4]
Number agreement on the # probe appears only when the number has not been lexicalized by the exponent corresponding to the Voice probe.

	Is PL lexicalized on Voice?	Is there # agreement?	Examples
1PL in Georgian & Svan	YES	NO	(10a), (11a)
1PL in Laz & Megrelian	NO	YES	(12a), (13a)
2PL in all four languages	NO	YES	b of (10)-(13)

- **Our hypothesis**:
  Discontinuous number bleeding in Kartvelian arises due to Leftover Agreement:
  - The # probe can feed off the previous instance of agreement (on the Voice probe) when there is something unlexicalized left over for it.
  - When all the features have been lexicalized by the exponent of Voice, there is nothing that the higher # probe can find in the leftovers, and thus it fails to agree (in the sence of Preminger 2014).

[4]The term **discontinuous bleeding** has been used in the morphological literature (Noyer 1992 on Berber) for the phenomenon whereby insertion of one affix that expresses two features bleeds insertion of another non-adjacent affix that could have expressed one of those features.

4 Our proposal

Background assumptions

- **Directionality**: Agree can proceed downward or in a Spec-Head configuration.
- We differentiate three operations within Agree:
  - **Interaction**: the probe interacts with NPs during its search for features;
  - **Valuation**: the probe values its features by copying them from suitable NPs;
  - **Satisfaction**: probes differ in what features stop their search.
- **Cyclic Spell-Out:** Weak PIC (Chomsky 2001)
  - In [$_{ZP}$ ... Z ... [$_{HP}$ ... H [YP]]], where H and Z are phase heads, the complement of H is not accessible to operations at ZP; only H and its edge are.
  - Departure from Chomsky (2001): we assume that H and its edge, although still accessible, undergo Vocabulary Insertion together with H's complement.
  - Thus, if the exponents of H and Spec, HP lexicalize all their uninterpretable features, those features become inaccessible for further computation as well. Their interpretable features, however, remain accessible.

4.1 Voice-agreement

Properties of the Voice probe

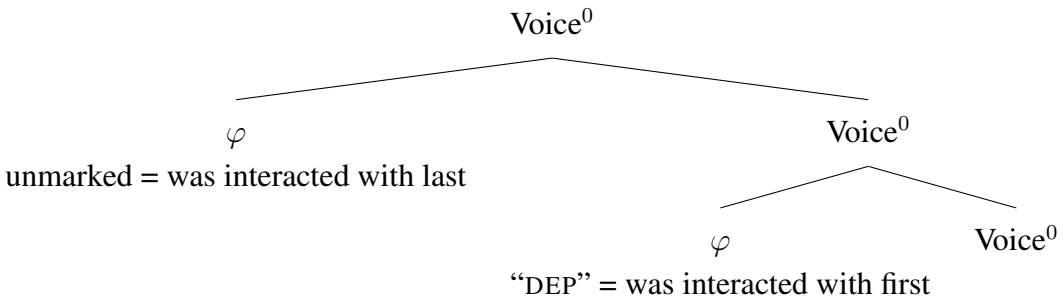
- it interacts with all NPs: first it searches in its c-command domain, then it looks into its specifier (if it has one);
- it can only get values from participant NPs, and it gets the whole φ-bundle from them[5];
- it is never satisfied (Hiraiwa's 2005 Multiple Agree; Deal's 2017 Insatiability).

Representation of Voice features

- The bundles of φ-features gathered on Voice have hierarchical structure;
- **Assumption:** 3rd person NPs — which Voice interacts with, but cannot copy features from — contribute to the structural representation of φ-feature bundles (we'll represent them as $\emptyset$).
- When there are two φ-bundles on Voice, the bundle that has been copied first is labeled DEP ('dependent'), the bundle that has been copied last is left unmarked.

[5]This is essentially Nash's (1992) and Halle & Marantz's (1993) take on the Georgian prefix. However, they analyzed the prefix as a clitic—a view we are in no way committed to.

(15)



Exponents of the Voice probe

(16) DEP-labeled φ feature bundle:

a. *gv-* $\Leftrightarrow \{1PL\}$

b. *m-* $\Leftrightarrow \{1\}$

c. *g-* $\Leftrightarrow \{2\}$

(17) unmarked φ feature bundle:

a. *v-* $\Leftrightarrow \{1\}$

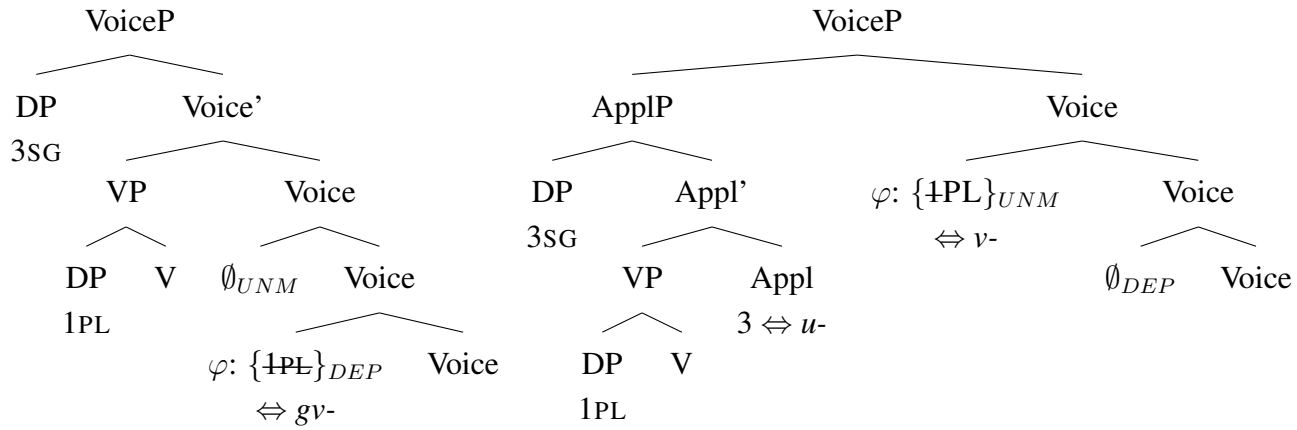
b. $(\emptyset \Leftrightarrow \{2\})$

DEP over UNM: expone DEP when possible

Example: {3SG, 1PL} and {1PL, 3SG} in direct and inverse

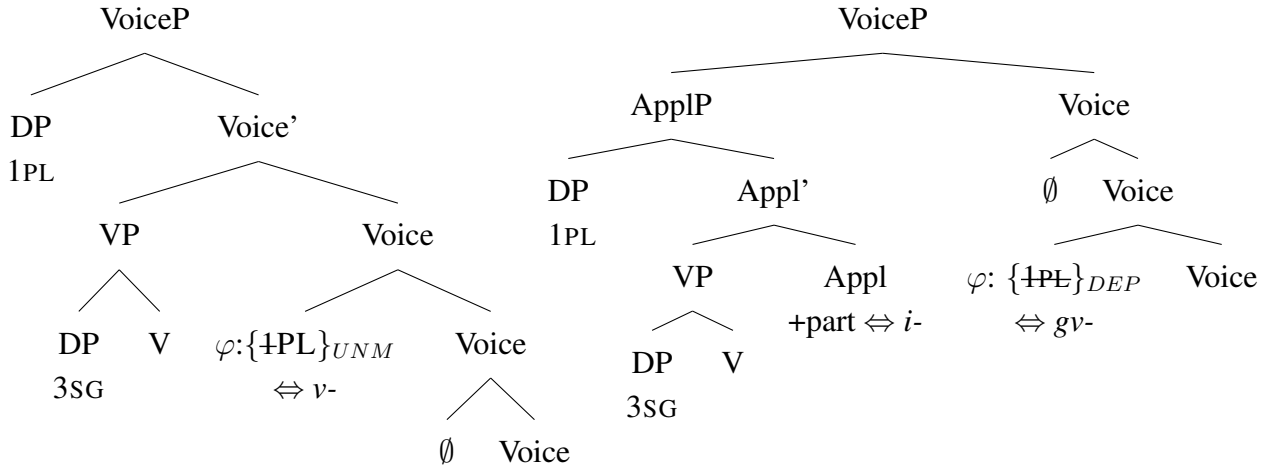
(18) (is) (čven)
(3SG.NOM) (1PL.ACC)
mo-**gv**-k'l-av-da
PVB-**1PL**-kill-TS-IMPF.3
'(S)he was killing us.' (Aron. 1990: 171)

(19) (mas) (čven)
(3SG.DAT) (1PL.NOM)
v-**u**-k-i-var-t
1-**3APPL**-praise-PERF-BE.PRS.1-PL
'(S)he has praised us.' (Aron. 1990: 272)



(20) (čven) (mas)
(1PL.NOM) (3SG.ACC)
mo-**v**-k'l-av-t
PVB-**1**-kill-TS.PRS.3-PL
'We kill it.' (Aronson 1990: 171)

(21) (čven) (is)
(1PL.DAT) (3SG.NOM)
a-**gv**-**i**-šen-ebi-a
PVB-**1PL**-**1/2.APPL**-build-PERF-BE.PRS.3
'We have built it.' (Aron. 1990: 269)



Direct - vs - Inverse

The only difference between direct and inverse is their syntactic configuration:

- In the inverse the Voice probe c-commands both NPs, in the direct it c-commands the object and has the subject in its specifier.
- In the inverse, the Voice probe first interacts with the subject; in the direct, with the object.
- Hence, in the inverse the dependent φ-bundle corresponds to the subject; in direct, to the object.
- Given that the interaction with 3rd person arguments did not lead to valuation and cannot be exponed, in (18)-(21) we always see the prefix agreeing with the 1PL NP, irrespective of whether that is the subject or the object, and irrespective of whether it has a DEP or UNM feature bundle corresponding to it.

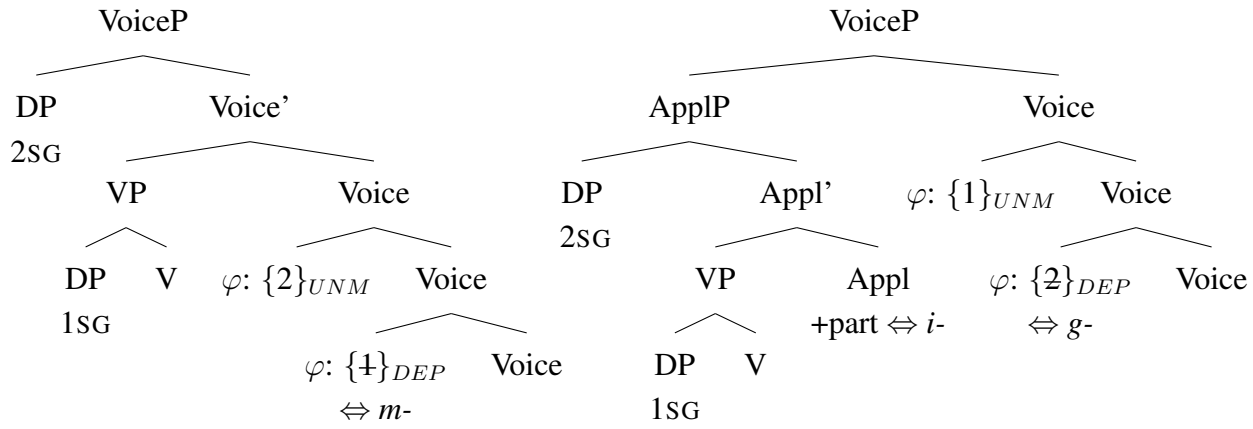
Evidence for DEP over UNM preference

- When both arguments are participants, features of the DEP bundle are exponed.
- In the direct the DEP argument is the direct object; in the inverse, it is the subject.

Example: {2SG, 1SG}

(22) (šen) (me)
(2SG.NOM) (1SG.ACC)
mo-**m**-k'l-av
PVB-**1**-kill-TS.PRS.2
'You (sg) are killing me.' (Ar. 1990: 171)

(23) (šen) (me)
(2SG.DAT) (1SG.NOM)
g-i-k-i-var
2-1/2.APPL-praise-PERF-BE.PRS.1
'You (sg) have praised me.' (Aron. 1990: 272)



Why label these feature bundles DEP/UNM?

- It seems convenient to think about the structure of the φ-bundles in terms of **dependent case:** the lower bundle in the structure gets dependent case (DEP), the higher bundle gets unmarked (UNM).
- That dependent-case assignment can occur within agreement has been previously argued for (Yuan 2017).
- Unlike other approaches (ex., Béjar & Rezac 2009), this makes a straightforward and correct prediction about **unaccusatives** and **unergatives**: in both cases the agreement on Voice has UNM exponents, since there is only one feature bundle in the structure.

(24) **unaccusative** (Class 2)
(me) ga-**v**-c'itldebi
(1SG.NOM) PVB-**1(UNM)**-blush.PRS.1
'I will blush.' (Aronson 1990: 62)

(25) **unergative** (Class 3)
(me) **v**-gor-av
(1SG.NOM) **1(UNM)**-roll-TS.PRS.1
'I roll.' (Aronson 1990: 204)

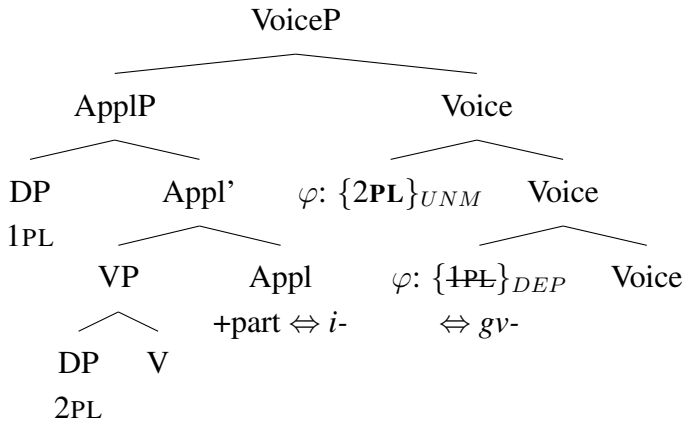
Evidence for multiple Agree of Voice

- Why do we need Voice to agree with multiple NPs, if we always see only one exponent?

- Evidence from the **inverse:** {1PL subject, 2PL object}, (26)-(27):
  - 1PL (DEP) gets exponed by *gv-*;
  - # cannot see actual NPs that are in the complement of Voice (due to the Weak PIC);
  - if Voice copied only features of the subject, # would not be able to get a PL feature from the object through Leftover Agreement;
  - but # does get the PL feature of the object — hence it must be present on Voice, hence Voice must gather φ-bundles from multiple NPs.

(26) (čven) (tkven) **gv**-i-k-i-xar-**t**
(1PL.DAT) (2PL.NOM) **1PL**-1/2APPL-praise-PERF-be.PRS2-**PL**
'We have praised you all.' (Aronson 1990: 272)

(27)



- **Why in (26) # cannot be getting PL from T**
  - in inverse T does not agree with NPs in number;
  - we can see this from a {3SG subject, 3PL object} configuration: although T agrees with a 3PL NP (nominative object), it does so only in person, (28).

(28) (mas) (isini) a-u-šen-eb-i-**a**
(3SG.DAT) (3PL.NOM) PVB-3(APPL)-build-TS-PERF-**be.PRS.3**
'(S)he built them.' (Aronson 1990: 269)

4.2 T-agreement

Properties of the T probe

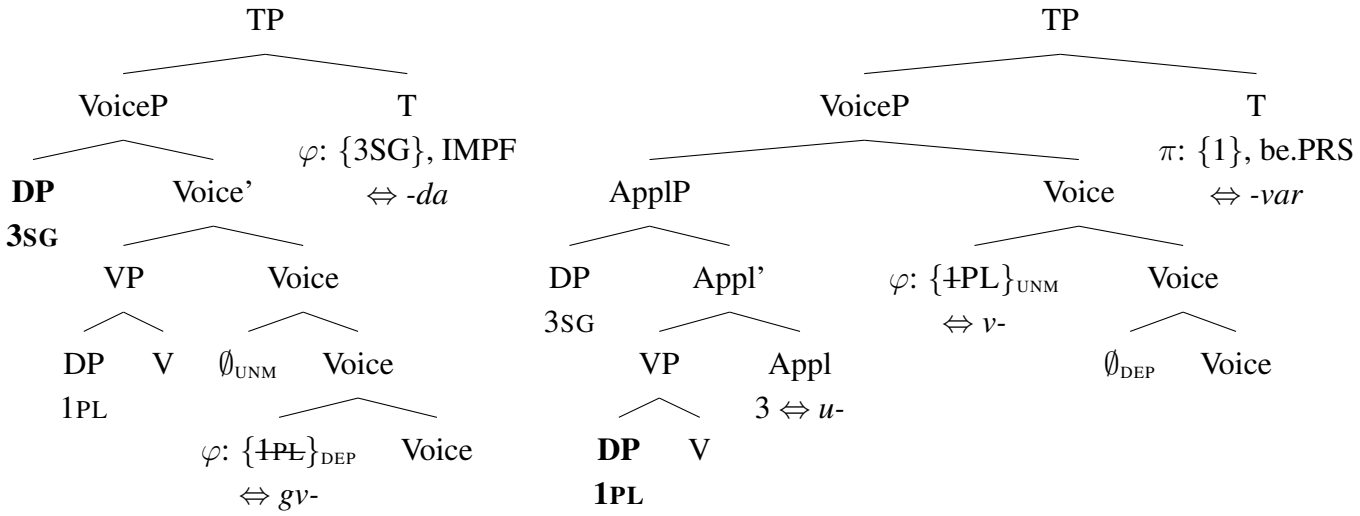
- due to the Weak PIC, T "sees" all NPs, and interacts with all non-oblique NPs that it c-commands;

- it gets its value from the closest non-oblique NP:
  — in the direct, it get the whole φ-bundle from the nominative subject;
  — in the inverse, it gets π from the nominative object (DAT subject is closer, but it is oblique)[6];
- it is satisfied by the first NP it interacts with, and probes no further.

Example: {3SG, 1PL} in direct and inverse

(29) (is) (čven)
(3SG.NOM) (1PL.ACC)
mo-gv-k'l-av-**da**
PVB-1PL-kill-TS-**IMPF.3**
'(S)he was killing us.' (Aron. 1990: 171)

(30) (mas) (čven)
(3SG.DAT) (1PL.NOM)
v-u-k-i-**var**-t
1-3APPL-praise-PERF-**BE.PRS.1**-PL
'(S)he has praised us.' (Aron. 1990: 272)



4.3 #-agreement

Properties of the # probe

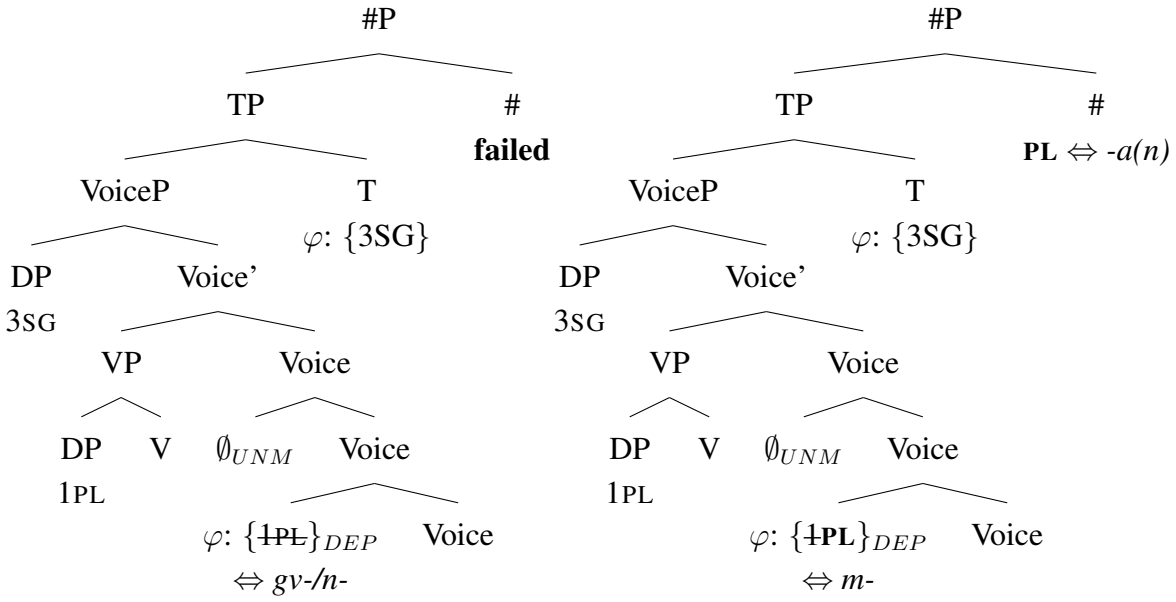
- it's a second phase head, and so, due to the Weak PIC, it is too high to "see" NPs in the complement of Voice (the object in direct, both arguments in the inverse)[7];
- when there is no NP with a PL feature accessible, # it can get PL features through Leftover Agreement with the Voice head;
- it is satisfied by the first PL feature it finds, and probes no further;
- if it does not find any PL features neither on accessible NPs, nor in the leftovers of Voice, it fails to agree (Preminger 2014).

[6]See section 6 for some complications that concern the exponents of T in different Kartvelian languages.

[7]But see section 5.3 for an example of a plural object that undergoes movement and gets agreed with by #. This suggests that # in principle can agree with NPs, it just usually does not due to the syntactic configuration.

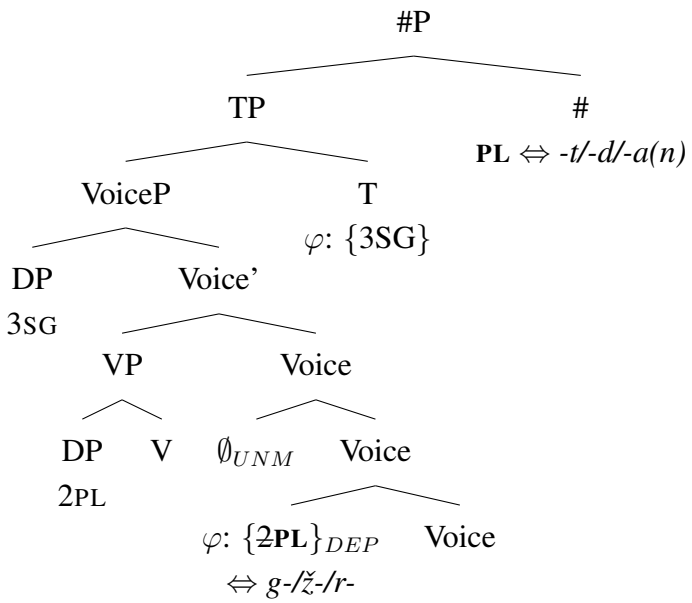
Illustration: 1PL and 2PL objects in the direct across Kartvelian

(31) **Georgian**	(32) **Svan**	(33) **Laz**	(34) **Megrelian**
gv-naxa	**n**-adgäri	**m**-dziom-**an**	**m/v**-tʃ'argn-**a(n)**
1PL-see.AOR.3SG	**11PL.EX**-kill.PRS	**1**-see.PRS-**PL**	**1**-write.PRS-**PL**
'(S)he saw us.'	'(S)he kills us."	'(S)he sees us.'	'(S)he writes us.'



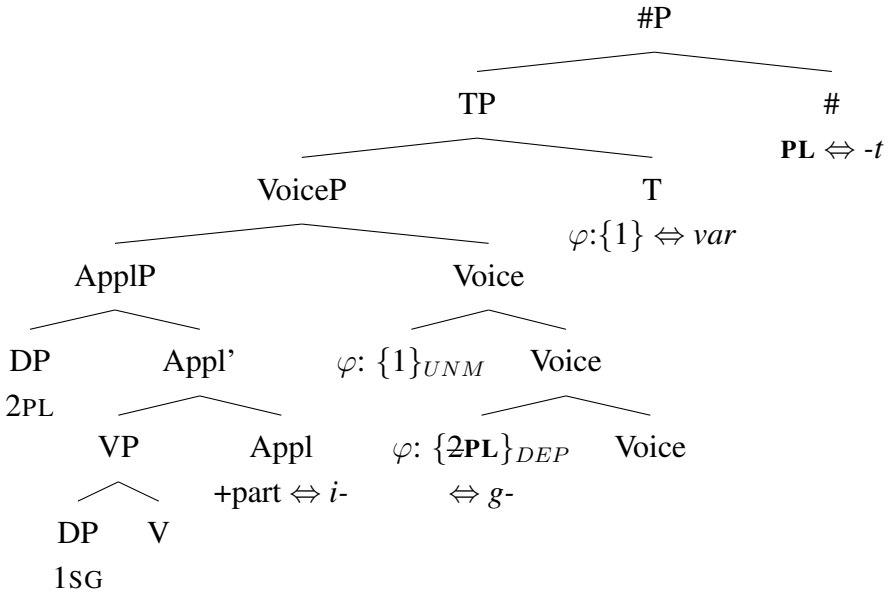
- Georgian and Svan, which do have a DEP exponent for 1PL (*gv-/n-*) do not show # agreement (31-32), because # fails to agree: the subject is SG, there are no other accessible NPs, and no leftover PL features in the Voice domain.
- In Laz and Megrelian, which don't have a DEP exponent for 1PL, there is # agreement (33-34), because even though the subject is SG and there are no other accessible NPs, # can find a leftover PL feature in Voice and expone it.
- All four languages lack a DEP exponent for 2PL, so all of them show LA with 2PL objects in the direct configuration: # is able to find the PL feature on Voice and expone it.

(35) **Georgian**	(36) **Svan**	(37) **Laz**	(38) **Megrelian**
g-naxa-**t**	**ž**-adgäri-**d**	**g**-dziom-**an**	**r**-tʃ'argn-**a(n)**
2-see.AOR.3SG-**PL**	**2**-kill.PRS-**PL**	**2**-see.PRS-**PL**	**2**-write.PRS-**PL**
'(S)he saw you pl.'	'(S)he kills you pl."	'(S)he sees you pl.'	'(S)he writes you pl.'



Insensitivity of LA to the grammatical role: {2PL subject, 1SG object} in the inverse

(39)



(40) **Georgian** (Aronson 1990: 272)
g-i-k-i-var-**t**
2-1/2.APPL-praise-PERF-be.PRS.1-**PL**
'You all have praised me.'

- Direct shows Leftover Agreement that feeds of PL features of the object.
- Inverse shows that the grammatical role does not matter:
  LA can also feed of PL features of the subject.

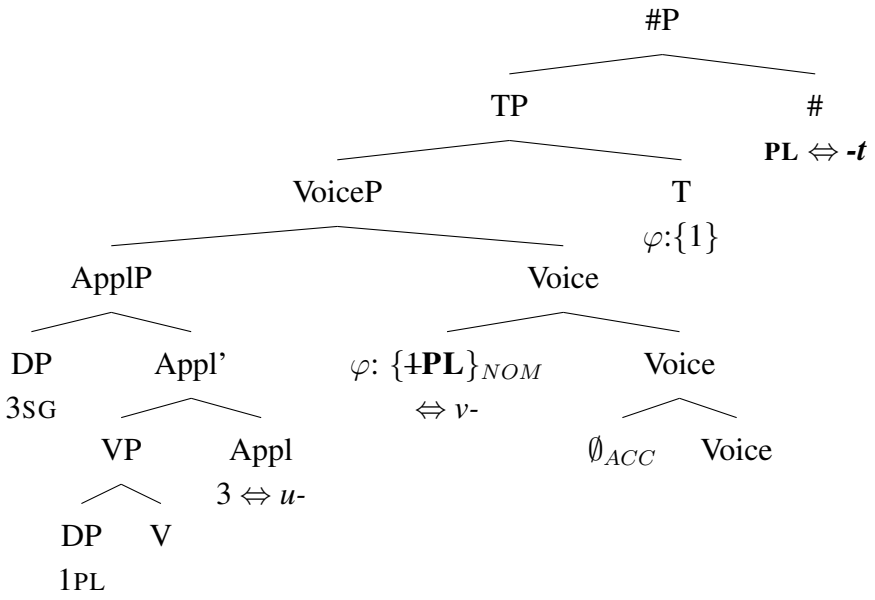
On the Weak PIC & the ban on multiple exponence: {3SG, 1PL} and {1PL, 3SG} in the inverse

- **Why do we need the Weak PIC?**
  Because T has to see object NPs, but # must not.
  - **Why T needs to see NPs in the complement of Voice:** because it agrees with the nominative object NPs ((41), with the structure in (43)).
  - **Why T could not have received its features through LA** with Voice: Leftover Agreement cannot be the explanation, because by definition it cannot create configurations with multiple exponence, like the one with multiple person exponence in (41).
  - **Why # must not see NPs in the complement of Voice**: because if it did, we would predict #-agreement with the subject in (42), but this does not occur (#-agreement fails).

(41) (mas) (čven)
(3SG.DAT) (1PL.NOM)
v-u-k-i-**var**-**t**
1-3APPL-praise-PERF-**BE.PRS.1-pl**
'(S)he has praised us.' (Aron. 1990: 272)

(42) (čven) (is)
(1PL.DAT) (3SG.NOM)
a-**gv**-i-šen-ebi-a
PVB-**1PL**-1/2.APPL-build-PERF-BE.PRS.3
'We have built it.' (Aron. 1990: 269)

(43)



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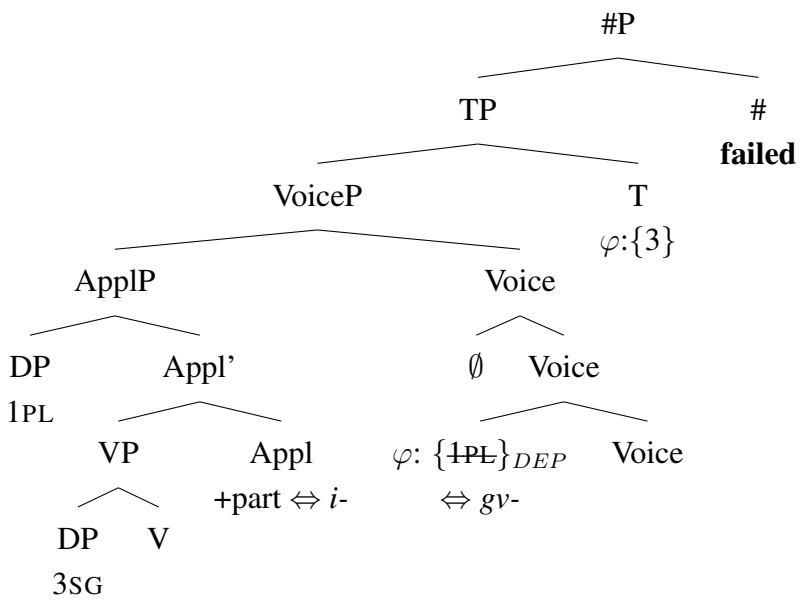


- **A ban on multiple exponence?**
  - Note that morphological approaches that explain the absence of #-agreement in verbs with 1PL prefixes through a ban on multiple exponence must be careful not to extend this ban to multiple exponence of person, which (41) shows must be allowed.
  - We will see in §5.1 how Foley (2017) achieves this by means of number- and person-relativized constraints in an OT framework.

4.4 Summary

- We have argued that the Kartvelian Discontinuous-Bleeding Generalization (14) can be explained by a process of Leftover Agreement, which involves probes interacting with unlexicalized features on lower agreement probes.
  - The system employs a pretty standard Agree system, with fallible probes relativized for particular φ-values and discriminating among different m-cases (Béjar 2003; Bobaljik 2008; Preminger 2014).
  - Our costliest assumptions are architectural: we need a specific kind of interleaving between syntax and exponence, and weak Phase Impenetrability (Chomsky 2001).

  That is what we take to be the core of our proposal. Other aspects of it — e.g. dependent agreement — can be assessed largely independently from that core.

- Leftover Agreement combines two ideas, neither of which was new, taken individually:
  - agreement between two heads (Legate 2005; Deal 2017);
  - morphological operations on some nodes feeding later syntactic operations (Arregi & Nevins 2012; Atlamaz & Baker 2018; Martinović 2019, among many others).
- Conceptually, it is in line with recent proposals by Deal (2017), according to which the purpose of Agree is to create redundancies.
  - In our setup, Voice creates redundancies, and a higher #-probe makes further use of those redundancies.
- Leftover Agreement can explain number agreement both across different Kartvelian languages and across different agreement alignments (direct/inverse).
- It shows that this is a process that is independent of a particular prefix and of the grammatical role of the NP from which the PL feature comes.

5 Comparison to alternative theories

5.1 Morphological alternatives in outline

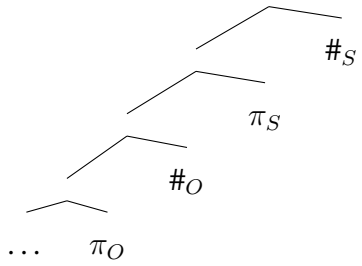
So far the key observations on discontinuous bleeding have only received morphological accounts.

- **Halle & Marantz (1993)** use **Fission**:
  - The prefix is born bearing both π and #, but Fission splits [+PL] off into a new node.
  - **Problem:** The exception of 1PL *gv-* is just stipulated: Fission applies "unless the [+PL] is part of a [+1], DAT argument."

  The same solution, along with the same problem, is incorporated in **Thivierge's (2018)** more comprehensive account of Georgian agreement, featuring Cyclic Agree, Interaction & Satisfaction, and Phase Unlocking.
- **Lomashvili & Harley (2011)** use a **template** with two positions of exponence:
  - PL may be spelled out in the suffixal position only if it cannot be in the prefixal position.
  - **Progress:** Suffixal #-agreement is now determined by the VIs available for the prefix.
  - **Problem:** The templatic approach divorces syntax from morphotactics.

- **Blix (2016)** uses **spans**.
  - Blix assumes a probe sequence like (45) and proposes that the suffix may spell out $\#_O$ separately only in the absence of a bigger span exponing both $\#_O$ and π_O.
  - **Progress:** This interaction now follows from the "biggest wins" mechanics of bottom-up Spell-Out in Nanosyntax.

(45)



  - **Problems**: Given the probe setup in (45), one would expect agreement to always happen in both number and person with both subject and object—but that's not what we see.
  - When both arguments are participants, only the first interaction's person gets exponed. Blix treats this as an epiphenomenon due to a **silent participant-subject prefix**—which we see independently in Georgian, Laz and Megrelian 2>3 forms.
    However, **this won't work for Svan**, where all participant-subject prefixes are overt.
  - Likewise, we'd expect to find #-agreement with 3PL objects. For Blix (2016), the fact that we generally don't (modulo exceptions below) "calls for an independent account."

- **Foley (2017)** uses **Optimal Vocabulary Insertion**.
  - **Probes very much like ours**: Voice (Foley's "π") agrees in φ with all its arguments; T agrees in φ with the closest (non-oblique) DP; # omnivorously probes for [PL].
    This input is then handed to an **OT evaluator**.
  - The key constraint is ***MULTEXP**:
    Assign a star per pair of identical features exponed in a complex head which originate from the same argument. → *Avoid multiple exponence*
  - In Georgian, this constraint blocks *gv-…-t* with just one PL argument.
  - However, we do find multiple exponence of person:
    in the Georgian inverse *v-i-…-var*, both *v-* and *-var* agree with 1st person.
  - Foley solves this by sandwiching ***MULTEXP** above MAX[F] (expone as much as you can) but **below MAX[PERSON]** (expone as many person features as you can).

The first tableau on the next page shows Georgian ***gv-nax-a*** '(s)he saw us' (AORIST, 3SG>1PL).

- *MULTEXP stops *-t* from doubling the object number already exponed by *gv-*.
- (But it can't be that simple. Why not *m-naxa-t*, with object number only on the suffix?)

The second tableau shows the Georgian inverse form ***v-dga-var*** 'I have stood'.

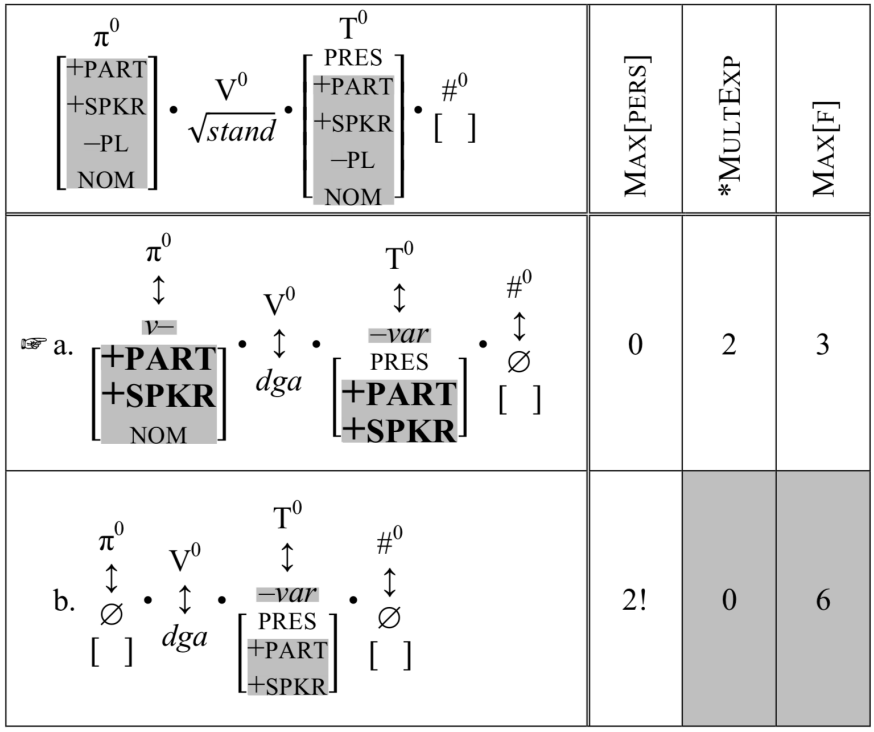
- Here the effects of MAX[PERSON] trump the ban on multiple exponence.

Foley's approach has good empirical coverage, but we'll see a few challenges from Svan.

Figure 1: Georgian *gv-nax-a* '(s)he saw us' (AORIST, 3SG>1PL)

	*MULTEXP	MAX[F]
$\left[\begin{bmatrix}-\text{PART}\\-\text{SPKR}\\-\text{PL}\\\text{ERG}\end{bmatrix}\begin{bmatrix}+\text{PART}\\+\text{SPKR}\\+\text{PL}\\\text{ABS}\end{bmatrix}\right]^{\pi^0} \cdot \sqrt{see}^{\,V^0} \cdot \begin{bmatrix}\text{AOR}\\-\text{PART}\\-\text{SPKR}\\-\text{PL}\\\text{ERG}\end{bmatrix}^{T^0} \cdot \begin{bmatrix}+\text{PART}\\+\text{SPKR}\\+\text{PL}\\\text{ABS}\end{bmatrix}^{\#^0}$		
a. $\begin{bmatrix}+\text{PART}\\+\text{SPKR}\\\mathbf{+PL}\\\text{ABS}\end{bmatrix}^{\pi^0}$ *gv–* • $\updownarrow^{V^0}$ *nax* • $\updownarrow^{T^0}$ *–a* $\begin{bmatrix}\text{AOR}\\-\text{PART}\end{bmatrix}$ • $\updownarrow^{\#^0}$ *–t* [+PL]	1!	10
☞ b. $\begin{bmatrix}+\text{PART}\\+\text{SPKR}\\+\text{PL}\\\text{ABS}\end{bmatrix}^{\pi^0}$ *gv–* • $\updownarrow^{V^0}$ *nax* • $\updownarrow^{T^0}$ *–a* $\begin{bmatrix}\text{AOR}\\-\text{PART}\end{bmatrix}$ • $\updownarrow^{\#^0}$ ∅ [ ]	0	11

Figure 2: Georgian inverse *v-dga-var* ‘I have stood’



5.2 A first argument in our favor: LA bled by a participant subject

Most of the morphological accounts in §5.1 can’t deal with the Svan contrast grayed out in Table 2

	Subject						
Object	1SG	1PL.EXCL	1PL.INCL	2SG	2PL	3SG	3PL
1SG	—	—	—	m-...	m-...-d	m-...	m-...-x
1PL.EXCL	—	—	—	n-...	n-...-d	n-...	n-...-x
1PL.INCL	—	—	—	—	—	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 1: Svan

- 3SG>2PL shows LA as usual: Voice can’t spell out PL, which is left over for a higher probe.
- However, **LA is bled in 1SG>2PL** (unlike in all other Kartvelian languages). Why?

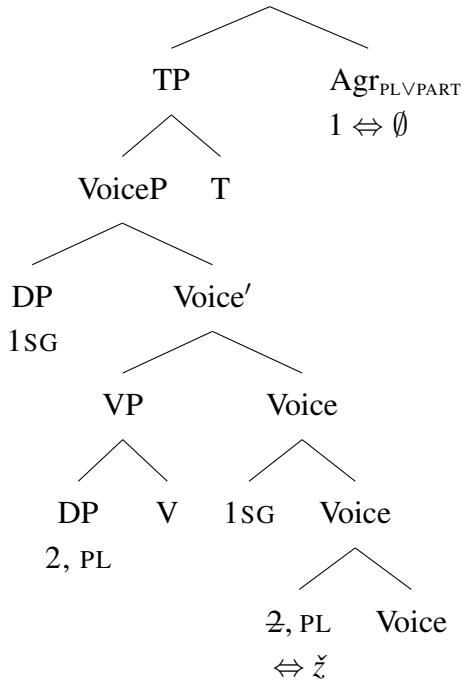
Accounts that treat overt Leftover Agreement as a morphological outgrowth have no good answer:

- Why should **Fission** of features copied from the object be sensitive to features of the subject?
- **Templates** can't be the answer either, since the suffixal slot in *ž*-... is in principle available.
- And in a **bottom-up spanning** account, higher features are precluded from bleeding the exponence of lower features, precisely because Spell-Out blindly proceeds bottom-up.

Instead, if the LA suffix realizes an independent probe, we can view the participant subject as an **intervener** for that probe.

- Assume that **the highest probe** in Svan **searches** not just for number but **for all φ-features**. Independent evidence: suffixal PL shows up as *-d* if the subject is participant, as *-x* elsewhere.
- We may then say that this probe is **relativized to any marked φ-feature—PART or PL**. In other words, the only φ-bundles that the probe is allowed to skip are 3SG bundles.
- In this way, we explain why a participant (1SG) subject halts Agr's search and bleeds LA.

(46)



- **Bonus**: We also explain why, in 3SG>2PL, LA is realized by *-x* rather than by the [PART,PL] suffix *-d* — because the PART feature on Voice is already spelled out by the time Agr probes.

(47) Exponence rules for Svan's Agr

a. PL, PART $\Leftrightarrow$ -d b. PL $\Leftrightarrow$ -x c. elsewhere $\Leftrightarrow \emptyset$

- **Foley's (2017)** is the only other account that analyzes LA as an independent probe.
  $\Longrightarrow$ He could then explain the Svan contrast in the same way we just have.

However, Svan poses other challenges to Foley's account.

- The person-based *-d/-x* split on the suffix often leads to **multiple exponence of person**: e.g., in 2PL>3 *x-...-d*, both *x-* and *-d* tell us the subject is participant.
  - In Foley's model, we might encode this again via MAX[PERSON] ≫ *MULTEXP.

  But then why does **LA with 2PL objects show up as NONPART *-x*** instead of PART *-d*?
  - On our account, instead, the fact that we have **more multiple exponence of subject features than of object features** follows from the **structural asymmetry** between the two arguments. Being on the edge of VoiceP, subjects are still directly visible by probes in the next cycle, whereas object features can only be gotten via LA.

- Also, Svan encodes a **clusivity** contrast in both subject and object agreement prefixes:
  - *gw-* (1INCL) vs *n-* (1PL.EXCL) for object agreement;
  - *l-* (1INCL) vs *xw-* (1EXCL, number-syncretic) for subject agreement.

  We repeat the Svan paradigm in Table 2, with a new key contrast grayed out.
  - In the 3SG>1INCL form *gw-...*, we find no LA — neither *-d* nor *-x*.
  - However, in the reverse configuration 1INCL>3, we do find suffixal agreement: *l-...-d*.
  - To get the asymmetry, Foley should treat *gw-* as specified for both person and number (so as to block multiple PL exponence), but *l-* as specified just for 1INCL person.
  - By contrast, we can keep the specifications of 1INCL prefixes constant (presumably [PART, SPKR, ADDR, PL]) and derive the asymmetry from the structure:
    ⟹ For us, **subjects can be agreed with by both Voice and Agr** in both number and person, because they are still directly visible to Agr, while object features are only visible through Voice leftovers.

	Subject						
Object	1SG	1PL.EXCL	1PL.INCL	2SG	2PL	3SG	3PL
1SG	—	—	—	m-...	m-...-d	m-...	m-...-x
1PL.EXCL	—	—	—	n-...	n-...-d	n-...	n-...-x
1PL.INCL	—	—	—	—	—	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 2: Svan, again

5.3 One more argument: 3PL objects can be agreed with, if high enough

- In our system, 3PL objects fail to control #-agreement because they are too far from #, and their features are not copied by VoiceP:

(48) da-c'er-a-**(*t/*es)** *Georgian*
PVB-write-AOR.3SG-(**PL**)
'(S)he wrote them.'

- This removes the need to invoke independent factors (Blix 2016) to explain the phenomenon.

3PL noun phrases can get agreed with by # in a different syntactic configuration

- An important feature of our account is that it lets syntactic structure influence # agreement.
  - We expect to find # agreement with 3PL noun phrases if they escape VoiceP.
  - Overall, we expect more flexibility in #-agreement than with other probes.
- Both expectations seem to be borne out.
  - Kibrik (1996) notes variability of number agreement in Svan perfect tenses.
  - In Blix (2018: 32, footnote 18) it is noted that sometimes third person plural objects can exceptionally trigger plural agreement if they are focused and the subject is inanimate. If in this case the 3PL direct object moves out of the VoiceP, under our approach it is expected that # probe agrees with the focused noun phrase.

(49) [$_{OBJ}$ mesame seri-is nakt'v-eb-s] [$_{SUBJ}$ saerto punkcia]
third series-GEN form-PL-DAT common function.NOM
a-ertianeb-(*s)-**t**
PFV-unite-(PRS.3SG)-**PL**
'A common function unites the forms of the third series.'
Thomas Wier, Léa Nash (p.c.) via Blix (2018)

6 Open questions & loose ends

6.1 The puzzle of agreement with dative 3PL subjects

The system so far predicts that 3PL NPs in Voice's complement should never be agreed with at all.

- **Exception**: In the Georgian inverse, **dative 3PL subjects** do give rise to #-agreement:

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

(51) **(mat)** (is) u-qvar-**t**
(3PL.DAT) (3SG.NOM) APPL-love-**PL**
'They love her/him.'

- However, this is possible **only if the NOM object is also 3rd-person**.
  A participant object restores the "no agreement with 3" generalization:

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

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

- An idea we explored is that agreement between Voice and 3PL subjects is mediated by Appl.
  ⇒ But why should a participant object interfere?
- In any event, it looks like we need to allow Voice-agreement to happen **in two waves**:
  - **First wave**: Are there any **participant** arguments?
  - **Second wave**: If not, is there at least a PL feature on the **subject**?

  Question: Why not a third wave to try and agree with a 3PL object, then?
- Any thoughts?

6.2 Interactions between T and

An issue we're struggling with is how to model interactions between T and # in different languages.

- In **Laz**, T only searches for person. In the past, it only realizes a binary distinction:

(54) Past T in Laz (ignoring portmanteaux)
a. π, PART goes to *-i*.
b. π goes to *-u*.

- Similarly, # shows up as *-t* if it has agreed successfully, and does not show up if it has failed.
- However, whenever we would expect the sequence *-u-t*, we find the portmanteau *-es* instead, **regardless of where the plural came from**.
- Various possible ways to implement this: outward- or inward-sensitive allomorphy, fusion, head movement, etc.

Georgian is more complicated.

- One way to think about it: T agrees in both number and person. In the imperfect:

  (55) a. PART ⇔ *-di*
  b. NONPART-PL ⇔ *-dnen*
  c. elsewhere ⇔ *-da*

- The puzzle, however, is that 3PL T affixes like *-dnen* systematically bleed the # exponent *-t*. Morphophonology? Or something deeper?

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Appendix A: Tables

Georgian

	Subject					
Object	1SG	1PL	2SG	2PL	3SG	3PL
1SG	—	—	m-...-di	m-...-di-t	m-...-da	m-...-dnen
1PL	—	—	gv-...-di	gv-...-di-t	gv-...-da	gv-...-dnen
2SG	g-...-di	g-...-di-t	—	—	g-...-da	g-...-dnen
2PL	g-...-di-t	g-...-di-t	—	—	g-...-da-t	g-...-dnen
3S/P	v-...-di	v-...-di-t	∅-...-di	∅-...-di-t	...-da	...-dnen

Table 3: Georgian basic: imperfect/conditional

	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 4: Georgian inverse: “present perfect”

Laz

	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	gv-...-es	gv-...-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 5: Laz past tense

Megrelian

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

Table 6: Megrelian

Svan

	Subject						
Object	1SG	1PL.EXCL	1PL.INCL	2SG	2PL	3SG	3PL
1SG	—	—	—	m-...	m-...-d	m-...	m-...-x
1PL.EXCL	—	—	—	n-...	n-...-d	n-...	n-...-x
1PL.INCL	—	—	—	—	—	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 7: Svan