Expanding the agreement domain in Georgian

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1 Introduction

1.1 Empirical facts: Setting up the question

- Georgian (Kartvelian) is a South Caucasian language; spoken primarily in Georgia with 4.5 million speakers[1]
  - Subject and object agreement; prefixes and suffixes
  - Complex patterns of multiple exponence and blocking effects
  - Omnivorous verbal plural marker
- Georgian has two major verbal agreement paradigms:
  i. **Basic**: prefixes track the object, suffixes track the subject
  ii. **Inverse**: prefixes track the subject, suffixes track the object
- Georgian verbs may allow up to four agreement slots:

(1) mas tʃven **v**-**u**-χvar-**v**-ar-**t**
3SG.DAT 1PL.NOM 1-3-love-1-be.PRES-PL
'She/he loves us.'

- There are some interesting asymmetries with respect to the distribution of the verbal plural marker *-t* between the two paradigms:
  → I focus only on its co-variance with 3PL subjects here
  - 3PL arguments never trigger *-t* in the basic (2a)
  - In the inverse, however, number agreement is possible with 3PL subjects—but only if the object is also 3rd person (2b)
  - Number agreement is blocked if the object is 1SG or 2SG (2c)

[1] Hand-out available at `https://sigwanthivierge.com/presentations`

(2) a. mat is da-p'at'iʒ-es(-***t**)
3PL.AOR 3SG.NOM PREV-invite-3PL.AOR-PL
'They invited him/her.'
b. mat is u-χvar-**t**
3PL.DAT 3SG.NOM VER-love-PL
'**They** love him/her.'
c. mat tkven u-χvar-x-ar-(***t**)
3PL.DAT 2PL.NOM VER-love-2-be.PRES-PL
'They love you (sg).' (Okay as 'They love you (pl)'.)

→ The suffix *-t* indexes plural of any argument that is 1st or 2nd person

→ But, *-t* indexes a 3rd person argument only if it is the subject of an inverse clause that also has a 3rd person object—why?

1.2 Why am I doing this?

- The Georgian agreement system is notoriously complex and has received much theoretical attention:
  - Most of the focus has been on the basic paradigm; several loose ends remain
  - I hope to convince you that, by approaching Georgian agreement through the lens of the inverse paradigm—and how *-t* behaves between the two—we can better understand what is going on
  - In Georgian, agreement in number is parasitic on agreement in person
  - Properties associated with moving between the two paradigms follow from what we already know about dative subjects, applicative phrases, and PCC effects
- The crux of this proposal is built around *intervention effects*:
  - In the inverse, the dative subject is *v*P-internal in Spec,ApplP, where it blocks agreement between v^0 and the internal argument

  - 1st/2nd person internal arguments must move to Spec,*v*P, where they control agreement on high person and number probes
  - In 3PL→3, there is no *v*P-peripheral argument, and so the person probe can Agree with the *v*P phase
  - The number probe may now search into the *v*P and target the 3PL dative subject
- This approach also allows us to understand more of the relationship between Agree and phases

→ A family of proposals argue that Agree between a head and a phase may render the interior of the phase accessible to further operations:

  - Agree between the matrix verb and embedded CPs mediates extraction and movement in Dinka, Tagalog, Zulu, and others

→ I propose that Georgian number agreement is another manifestation of this relation, and this proposal results in a more comprehensive account of Georgian agreement

2 The landscape

- Predicate-argument agreement in transitive sentences is marked by a set of prefixes and and a set of suffixes:
  - In the basic paradigm, the prefixes cross-reference the object and the suffixes cross-reference the subject
  - In the inverse paradigm, the pattern 'flips'—the prefixes cross-reference the subject whereas the suffixes cross-reference the object

  → For reasons of time and space, I will focus on the agreement patterns in the inverse, and note their differences as compared to the basic
- Harris (1981, 1984) proposes 'inversion' to be a general rule applying to verbs and arguments in, e.g. evidential constructions
  - 'Initial' subjects become 'final' indirect objects, and 'initial' direct objects become 'final' subjects
- Here I only focus on 'normal' transitive verbs, leaving aside evidentials

2.1 Prefixes, suffixes

- Inverse agreement obligatorily features 'versionizer vowels':
  - Overall associated with applicative-related morphology and interpretation
  - In the basic, they are productive and their appearance is tied to the introduction of an applicative argument (which is itself optional)
  - In the inverse, they are strictly associated with person features:
    - *i-* appears with 1st and 2nd person subjects (3a-d)
    - *u-* appears with 3rd person subjects only (3e)
- (3) also shows the set of prefixes that, in the inverse, track the subject (as opposed to the basic, where that same set tracks the object)
  - *m-* indicates a 1SG subject
  - *gv-* indicates a 1PL subject
  - *g-* indicates a 2SG/PL subject

(3) a. me is **m-i**-χvar-s
1SG.DAT 3SG.NOM 1-VER-love-3SG.PRES
'**I** love him/her.'

b. tʃven is **gv-i**-χvar-s
1PL.DAT 3SG.NOM 1PL-VER-love-3SG.PRES
'**We** love him/her.'

c. ʃen is **g-i**-χvar-s
2SG.DAT 3SG.NOM 2-VER-love-3SG.PRES
'**You (sg)** love him/her.'

d. tkven is **g-i**-χvar-t
2PL.DAT 3SG.NOM 2-VER-love-PL
'**You (pl)** love him/her.'

- In the inverse, a set of suffixes track the object (the 3SG-specific markers also appear in the basic, where they track the subject):
  - *-s* indicates a 3rd person object (4a)
- However, 1st/2nd person objects trigger another form of agreement in the inverse:

– They are marked as prefixes on a dummy verb *ar be* (akin to English *do*-support; see Nash 1994)

– *v-* indicates a 1st person object (4b)

– *x-* indicates a 2nd person object (4c)

(4) a. me is m-i-χvar-**s**
1SG.DAT 3SG.NOM 1-VER-love-3SG.PRES
'I love **him/her**.'
b. ʃen me g-i-χvar-**v**-ar
2SG.DAT 1SG.NOM 2-VER-love-1-be.PRES
'You (sg) love **me**.'
c. me ʃen m-i-χvar-**x**-ar
1SG.DAT 2SG.NOM 1SG-VER-love-2-be.PRES
'I love **you (sg)**.'

2.2 Number agreement

- The distribution of the marker *-t* is more complicated:
  – Baseline example in (5): *-t* appears after the suffixes and can mark a plural participant argument in either the subject or object position

(5) a. mas tkven u-χvar-**x**-ar-**t**
3SG.DAT 2PL.NOM VER-love-2-be.PRES-PL
'They love **you (pl)**.'
b. tkven is **g-i**-χvar-**t**
2PL.DAT 3SG.NOM 2-VER-love-PL
'**You (pl)** love him/her.'

- In the basic, 3PL arguments cannot be marked by *-t*, as in (6)

(6) a. mat is da-p'at'iʒ-es(-*__t__)
3PL.ERG 3SG.NOM PRV-invite-3PL.AOR-PL
'They invited him/her.'
b. man isini da-p'at'iʒa(-*__t__)
3SG.ERG 3PL.NOM PRV-invite-3SG.AOR-PL
'She/he invited them.'

- But we find instances of this agreement in the inverse:
  – If the object is 3rd person, 3PL subjects can be marked by *-t* (7a)
  – 1st/2nd person objects block number agreement (7b-c)

(7) a. mat is u-χvar-**t**
3PL.DAT 3SG.NOM VER-love-PL
'**They** love him/her.'
b. mat tkven u-χvar-x-ar(-*__t__)
3PL.DAT 2PL.NOM VER-love-2-be.PRES-PL
'They love you (sg).' (Okay as 'They love you (pl)'.)
c. mat tʃven u-χvar-v-ar(-*__t__)
3PL.DAT 1PL.NOM VER-love-1-be.PRES-PL
'They love me.' (Okay as 'They love us'.)

(8) *Inversion verb agreement paradigm, present tense*

S \ O	1SG	1PL	2SG	2PL	3SG	3PL
1SG	—	—	*m-i- -xar*	*m-i- -xar-t*	*m-i- -s*	*m-i- -s*
1PL	—	—	*gv-i- -xar*	*gv-i- -xar-t*	*gv-i- -s*	*gv-i- -s*
2SG	*g-i- -var*	*g-i- -var-t*	—	—	*g-i- -s*	*g-i- -s*
2PL	*g-i- -var-t*	*g-i- -var-t*	—	—	*g-i- -t*	*g-i- -t*
3SG	*v-u- -var*	*v-u- -var-t*	*u- -xar*	*u- -xar-t*	*u- -s*	*u- -s*
3PL	*v-u- -var*	*v-u- -var-t*	*u- -xar*	*u- -xar-t*	*u- -t*	*u- -t*

3 Unlocking phases

3.1 Theory

- Tagalog verb agreement show that the subject or the clause may be targeted
  – If the verb agrees with the subject, NOM agreement morphology surfaces (9a)
  – If the verb agrees with the clause, ACC agreement morphology appears instead (9b)

(9) a. **M**-agsa-sabi ang kalaba [na masarap ang
NOM-ASP-say ANG water.buffalo that delicious ANG
bulaklak]
flower
'The water buffalo will say that the flower is delicious.'
b. Sa-sabih-**in** ng kalaba [na masarap ang bulaklak]
ASP-say-ACC CS water.buffalo that delicious ANG flower
'The water buffalo will say that the flower is delicious.'
(Rackowski & Richards 2005:586)

- However, movement out of embedded CPs is only possible when the verb has agreed with the clause (10a)
  - If the verb agrees with the subject, movement is barred (10b)

(10) a. Kailan sa-sabih-**in** ng sundalo [na u-uwi
when ASP-say-ACC CS soldier that NOM.ASP-go.home
ang pangulo]?
ANG president
'When will the soldier say [that the president will go home ___]?'
b. *Kailan **m**-agsa-sabi ang sundalo [na u-uwi
when NOM-ASP-say ANG soldier that NOM.ASP-go.home
ang pangulo]?
ANG president
Intended: 'When will the soldier say [that the president will go home ___]?'
(Rackowski & Richards 2005:586)

→ This suggests that extraction from embedded CPs is preconditioned by Agree—namely, between the embedding *v* and its CP complement

- Van Urk and Richards (2015) note that this restriction is found in a diverse set of languages
  - Chamorro (Chung, 1998; den Dikken, 2009a)
  - Dinka (Van Urk and Richards, 2015)
  - Hungarian (den Dikken, 2009b, 2012)
  - Zulu (Halpert, 2012)
- In these languages, both A′- and A-movement is mediated by Agree between the embedding *v* and the embedded CP

→ I propose that Georgian number agreement is another manifestation of this restriction

  - A probe may Agree with a *v*P phase
  - Once this relation is established, a higher probe can search inside the *v*P phase and target previously-inaccessible arguments

3.2 Unlocking phases in Georgian

3.2.1 Structure

- Inverse subjects can bind anaphors: DAT>NOM (Harris, 1981; McGinnis, 1995, 1997; Amiridze, 2003)

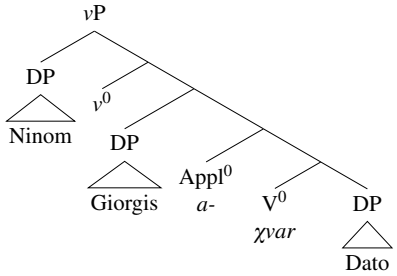
(11) a. **Nino-s** tav-is tav-i u-χvar-s
Nino-DAT own-GEN self-NOM AGR-love-3SG.PRES
'**Nino** loves herself.'
b. **Nino-s** da **Dato-s** u-χvar-t ertmanet-i
Nino-DAT and Dato-DAT VER-love-PL RECI-NOM
'**Nino and Dato** love each other.'

(12) *ertmanet-s u-χvar-t **Nino** da **Dato**
RECI-DAT VER-love-PL Nino.NOM and Dato.NOM
Intended: 'Nino and Dato love **each other**.'

- In causative constructions, the appearance of the inverse subject (instead of a regular applicative argument) results in a competition for the 'versionizer vowel' exponent slot
  - In causative constructions, the inverse-related versionizer *u-* disappears
  - The versionizer *a-* appears instead (13), showing *u-* and *a-* compete for the same slot

(13) Nino-m Dato Giorgi-s
Nino-ERG Dato.NOM Giorgi-DAT
ʃe-**a/*u**-χvar-a
PRV-VER.CAUS-love-3SG.AOR
'Nino made Giorgi love Dato.'

(14) *Applicative arguments in Spec,ApplP (=13)*

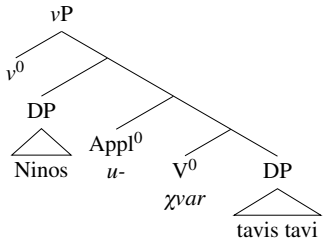


- Prefixes are conditioned by the φ-features of the causer and causee
  - The appearance of *v-* in (14) shows that the prefix is sensitive to the higher pair 1SG→3SG, not the lower pair 3SG→3SG

(15) me Nino-s ʃe-v-**a**-χvar-e Dato
1SG.ERG Nino-DAT PRV-1-VER.CAUS-love-PART.AOR Dato
'I made Nino love Dato.'

→ The combination of these facts suggest that inverse subjects are introduced by Appl^0
  - Which is why they show some applicative-related properties

(16) *Inverse subjects in Spec,ApplP (=11a)*

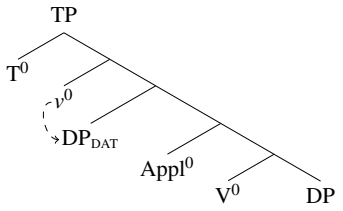


- Georgian shows Strong PCC effects in ditransitives:
  - 1st/2nd persons can't co-occur in the licensing domain of v^0, unless one appears as a NOM-marked reflexive ('object camouflage'; Harris 1981)

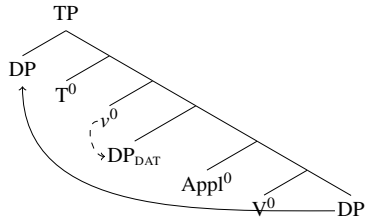
(17) a. *man mo-**g**-χid-a me ʃen
3SG.ERG PRV-2-sell-3SG.AOR 1SG.DAT 2SG.NOM
Intended: 'S/he sold me **to you**'
b. man mo-**g**-χid-a tʃem-i tav-i
3SG.ERG PRV-2-sell-3SG.AOR 1SG.POSS-NOM self-NOM
ʃen
2SG.DAT
'S/he sold me **to you**.'

- I assume that these patterns arise from licensing requirements for 1st and 2nd person arguments (Béjar and Rezac, 2003; Kalin, 2017)
  - 1st and 2nd person arguments must be licensed via Agree
- In their base-position, 1st/2nd person internal arguments can't be licensed by v^0 since the higher DATIVE intervenes (19)
  - But they can move into a higher agreement domain (20), allowing them to be licensed there (Rezac, 2008)

(18) *Unlicensed 1st/2nd person internal argument*



(19) *Movement into a higher agreement domain*



→ The appearance of the dummy auxiliary *ar* 'be' with 1st/2nd internal arguments suggests that they are licensed high

- Both inverse subjects and the objects are *v*P-internal; the inverse subject in Spec,ApplP controls agreement from v^0
- In order to be licensed, 1st/2nd person internal arguments move to the edge of the *v*P phase

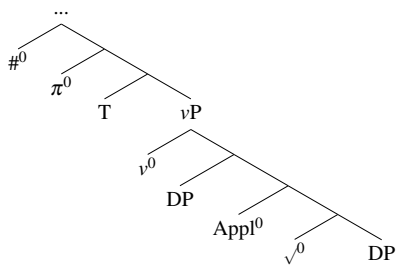
• We have reason to think that inverse subjects are higher than objects (based on binding and causatives)

- They are also lower than basic subjects, since they trigger 'object' agreement morphology (and block agreement with the object)

→ Inverse subjects are in a "deficient" Spec,ApplP

- The versionizers contribute no applicative interpretation, unlike their behaviour in the basic
- There, they receive structural DAT

(20) *Structure for the inverse*



3.3 Agreement

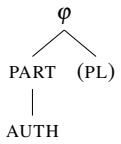
→ I will not present a complete analysis of Georgian agreement here, but rather focus on the inverse paradigm

- Particularly, with respect to number agreement

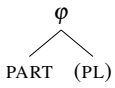
• I adopt the representations of Georgian pronominals below

- Plural arguments have a [PLURAL] node under φ (Harley and Ritter, 2002; McGinnis, 2005)

(21) *1st*



(22) *2nd*



(23) *3rd*

3.3.1 Deriving the prefixes

• **Prefixes**: on v^0 (Bejar, 2003; Béjar and Rezac, 2009)

- Basic: Targets the object first, then subject (potentially)
- Inverse: Targets the subject first, then object (potentially)

→ Why "potentially"?

- Deal (2015) shows that, in Nez Perce complementizer agreement, the probe searches until satisfied by a 2nd person argument
- If 2nd person is the subject, the complementizer shows agreement with the 2nd person only (26a)
- If 2nd person is the object, the complementizer shows agreement with the 2nd person and the non-2nd person subject (26b)

(24) a. ke-**m** kaa *pro$_{subj}$* cewcew-téetum *pro$_{obj}$*
C-2 then PRO.2SG telephone-TAM PRO.1SG
'When **you** call me.'

b. ke-**m**-ex kaa pro_{subj} cewcew-téetum pro_{obj}
C-2-1 then PRO.1SG telephone-TAM PRO.2SG
'When I call **you**.' (Deal 2015:6)

→ This is the *feature interaction and satisfaction* model:

– Probing stops once they are satisfied by the feature that values them, but they interact with non-satisfactory features that they encounter during search

- We know that *v-* and ∅- are respectively sensitive to 1↔3 and 2↔3

– The probe searches until satisfied by a [PARTICIPANT] feature, but interacts with each argument along the way (i.e. 3rd persons)

→ But this isn't *quite* enough – we also need *Cyclic Agree* (Béjar and Rezac, 2009; Keine and Dash, 2018; Clem, 2018)

– The first cycle of Agree targets the closest argument it c-commands; if it's 3rd person, the probe isn't valued

– Unvalued features may project and search again; this second cycle of Agree will target the argument in its specifier[2]

i. If 1st person → *v-* (interacting with 3rd person object)

ii. If 2nd person → ∅- (interacting with 3rd person object)

(25) *Vocabulary Items, prefixes on v^0*

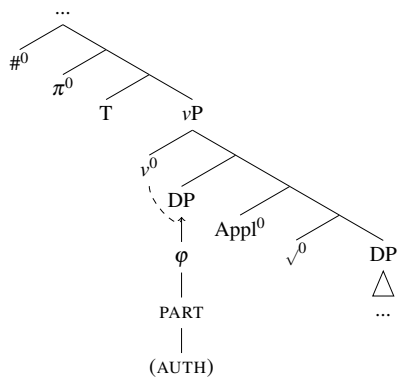
v-	↔	[AUTHOR] / ___ [–PARTICIPANT]
∅-	↔	[PARTICIPANT] / ___ [–PARTICIPANT]
gv-	↔	[AUTHOR, PLURAL]
m-	↔	[AUTHOR]
g-	↔	[PARTICIPANT]

- **First-cycle Agree**: *gv- m-, g-*

– Inverse paradigm: [PARTICIPANT] probe on v^0 satisfied by 1st and 2nd person subjects (26)

[2]Although I adopt privative feature specifications, I assume that the *syntactic absence* of a [PARTICIPANT] feature may be *morphologically* filled in as [-PARTICIPANT].

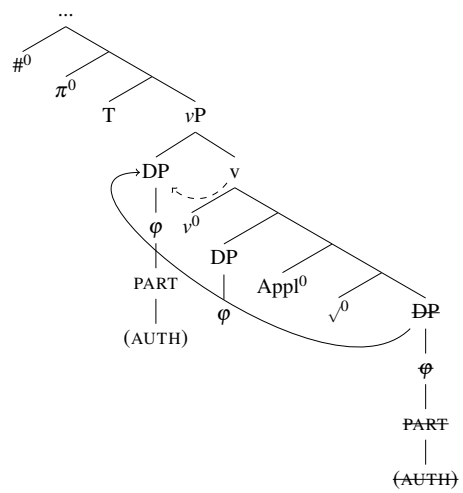
(26) *First-cycle Agree, inverse*



- **Second-cycle Agree**: *v-, ∅-*

– Inverse paradigm: [PARTICIPANT] probe on v^0 interacts with 3rd person subjects, satisfied by moved 1st and 2nd person objects in Spec,*v*P (27)

(27) *Second-cycle Agree, inverse*

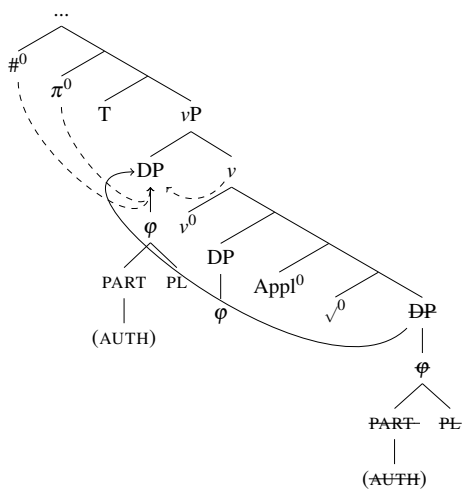


- In summary:
  i. A [PARTICIPANT]-bearing probe on v^0 searches its domain for a satisfactory goal, interacting with other arguments potentially encountered in the process
  ii. Agree is cyclic: unvalued features may project and probe again
    → First-cycle Agree yields *gv-, m-* and *g-*
    → Second-cycle Agree yields *v-* and *∅-*

3.3.2 Deriving the suffixes

- Separating $\#^0$ and π^0 along the syntactic spine derives the variation in the accessibility of arguments
  i. If the object is 1st/2nd person (28)
    – Due to PLC, they obligatorily move to Spec,*v*P for licensing
    – There, they are in a position accessible to the probe on π^0, respectively triggering *v-* or *x-*
    – If the 1st/2nd person object is plural, $\#^0$ spells-out as *-t*

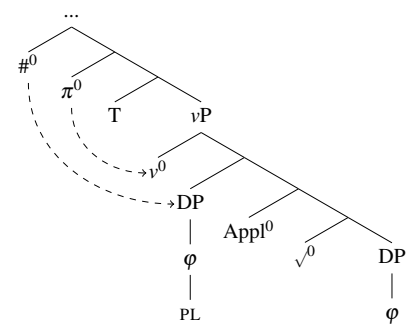
(28)



→ Captures the higher landing site for 1st/2nd person inverse objects, allowing for further plural number agreement indicated by *-t*

  ii. If the object is 3rd person (29)
    – Not subject to the PLC, so they remain low and inaccessible to the probe on π^0
    – Probing by π^0 neutralizes the *v*P phase boundary[3] (Rackowski and Richards, 2005; Preminger, 2011; Halpert, 2012; Van Urk and Richards, 2015)
    – With no phasal boundary, 3rd person inverse subjects in Spec,ApplP are accessible to the [PLURAL]-bearing probe on $\#^0$
    – If the 3rd person subject is plural, $\#^0$ spells-out as *-t*

(29)



→ Captures the ability of 3PL inverse subjects to trigger *-t*; independent π^0 probe expands the agreement domain for the probe on $\#^0$

4 Conclusion

→ The existing literature on mediating phasal spell-out with Agree has largely focused on extraction constraints from embedded CPs

→ I argued here that Georgian number agreement instantiates another manifestation of this relation

[3] I assume that an unvalued feature on a probe can enter in an Agree relation with another unvalued feature, as proposed in Frampton & Gutmann (2000).

  - Agreeing with a phase head can allow movement out of that phase
  - Agreeing with a phase head can let subsequent probes to search inside the phase
- Characterizing Georgian inverse verbs as Basque-esque applicative unaccusatives captures the agreement "inverse"-ness
  - A low probe on v^0 targets the subject in the inverse, blocking agreement with the object
  - A higher probe on π^0 targets moved 1st/2nd objects in the inverse
- Characterizing φ-agreement as two separate-but-consecutive heads in the clausal spine captures the (non-) ability of 3PL subjects to trigger *-t*
  - In the inverse, the dative subject is *v*P-internal in Spec,ApplP, where it blocks agreement between v^0 and the internal argument
  - In 3PL→3, there is no *v*P-peripheral argument, and so the person probe can Agree with the *v*P
  - The number probe may now search into the *v*P and target the 3PL dative subject

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