The text and figures in this PDF are approved by the author(s) for publication. Any mistakes in this PDF will not be corrected by the publisher. This PDF was created on Friday 28th July, 2023.

The Guarani inverse as double Agree

Hunter Johnson

1. Introduction

Verbs in Guarani exhibit *inverse/direct agreement* in which the verb consistently agrees with the highest ranking argument along the *Person Hierarchy* (PH; 1>2>3).[1] Setting aside some complications to be addressed later, the basic pattern is shown in (1). The person marker prefix on the verb surfaces as *a* when the 1st person is the subject (1a) and *che* when the 1st person is the object (1b).[2]

(1) a. che **ai**-pytyvõ { Tamara-pe / ichupe / ha'e-kuera-pe }
1.SG.SUBJ **1.SG.SUBJ**-help { Tamara-DOM / her / s/he-PL-DOM }
'I helped Tamara / her / them.' (1>3/3PL: agreement with subject)

b. { Romi / ha'e / nde } **chei**-pytyvõ (chéve)
{ Romi / s/he / you } **1.SG.OBJ**-help (me.OBJ)
'Romi / s/he / you helped me.' (3/2>1: agreement with object)

I follow the work of Béjar (2003) and Béjar and Rezac (2009) on *Cyclic Agree* in that the crucial *syntactic* distinction between direct and inverse is how many arguments the probe Agrees with. Extending this to Guarani, I propose that direct agreement is the result of *single Agree* between a probe and one argument (2) which occurs when a more featurally specified DP c-commands a less (or equally) specified DP. Inverse agreement, on the other hand, is the result of *double Agree* between a probe and two arguments (3) which occurs when a *less* featurally-specified DP c-commands a more-specified DP. Double Agree as in (3) leads to a *multi-valued probe* structure with two *values* (one from each DP).

(2) [TP T [vP DP [VP V DP]]] → *single Agree, direct morphology*

(3) [TP T [vP DP [VP V DP]]] → *double Agree, inverse morphology*

In what follows, I introduce a strictly *Agree*-based analysis of the Guarani inverse agreement pattern drawing primarily from Béjar (2003) and Béjar and Rezac (2009). Extending the idea that single Agree leads to direct and double Agree leads to inverse, I propose that the inverse VIs in Guarani express more than one value on a probe. Inverse VIs are thus capable of satisfying the additional requirements of the multi-valued probe in the morphology, namely that the two values must be expressed. By contrast, direct VIs only express a single value which will help explain why direct agreement also surfaces in intransitives. After introducing the empirical pattern in Section 2, I introduce the model of Agree in Section 3 and demonstrate how it captures the agreement pattern in Guarani in Section 4. Section 5 concludes.

* Hunter Johnson, University of California, Los Angeles. Aguyjevete che angirũnguérape cheipytyvõva'ekue Guaraníme Coronel Oviedope ha hetavépe. Penemba'erãite Elvira Martinez, Laure Galeano, Irma Ovelar, ha Maria Gomez. I am greatly indebted to Stefan Keine, Ethan Poole, and Harold Torrence for their input at all stages of this project. I am further grateful to audiences at UCLA, WSCLA 26, and WCCFL 41. In particular to Jessica Coon, Susana Béjar, Amy Rose Deal, Michelle Yuan, Justin Royer, Adrian Stegovec, and many more for helpful discussion.

[1] Similar patterns have been previously described in other work for various languages (Klaiman 1992; Givón 1994; Aissen 1999; Zuñiga 2006; Bliss et al. 2020: amongst others). The pattern is also referred to as hierarchical agreement (Nichols 2001).

[2] All data, unless explicitly noted, is from in-situ fieldwork in Coronel Oviedo, Paraguay in the summer of 2022.

2. Guarani inverse/direct agreement[3]

2.1. The direct pattern

Before describing the agreement pattern in transitive clauses with multiple arguments, it is worthwhile walking through the agreement pattern of intransitives. Direct agreement markers are present in intransitive clauses.[4] The verb agrees with the sole argument in person and number (4). The 1st person subject marker is *a* (4a), the 1st person exclusive marker is *ro* (4b), and the 1st person inclusive *ja* (4c). 2nd person singular agreement surfaces as *re* (4d) and 2nd person plural as *pe* (4e). Number is never expressed on the verb for 3rd persons. Regardless of the number of the subject, *o* surfaces (4f).

(4) *Direct agreement in intransitives:*

a. che **a**-karu
I **1.SG.SUBJ**-eat
'I ate.'

b. ore **ro**-karu
we.EXCL **1.EXCL.SUBJ**-eat
'We (excl.) ate.'

c. ñande **ja**-karu
we.INCL **1.INCL.SUBJ**-eat
'We (incl.) ate.'

d. nde **re**-ñañi
you **2.SG.SUBJ**-run
'You ran.'

e. peẽ **pe**-ñañi
y'all **2.PL.SUBJ**-run
'Y'all ran.'

f. { ha'e / ha'e-kuera } **o**-ke
{ s/he / s/he-PL } **3.SUBJ**-sleeps
'S/he / they sleep(s).'

Moving on to transitives, first consider direct configurations in which the subject is at least as high as the object on the PH. In these cases, subject agreement surfaces—just as in intransitives. Consider a transitive clause with a 1st person subject and a 3rd person object (5).[5] In (5), the 1st person subject controls agreement on the verb for person and number regardless of whether the object is a 3rd person DP as in *Tamara*, a 3rd person object pronoun *ichupe*, or a 3rd person plural pronoun *he'ekuera*.

(5) che **ai**-pytyvõ { Tamara-pe / ichupe / ha'e-kuera-pe }
1.SG.SUBJ **1.SG.SUBJ**-help { Tamara-DOM / her / s/he-PL-DOM }
'I helped Tamara / her / them.' (1>3/3PL: agreement with subject)

The story is similar for direct configurations with 2nd person subjects (i.e. 2>3). Regardless of the number of the 3rd person object, so long as the subject is 2nd person (6), the verb will agree with it in both person and number, surfacing as *re*. Just as in clauses with 1st person subject, the 3rd person object never controls person or number agreement.

(6) nde **rei**-pytyvõ { Juam-pe / ichupe / ha'e-kuera-pe }
you **2.SG.SUBJ**-help { Juan-DOM / her / s/he-PL-DOM }
'You helped Juan / her / them.' (2>3/3PL: agreement with subject)

The only context in which 3rd person subject agreement is observed is in a clause where both arguments are 3rd persons (i.e. 3>3). However, 3rd persons never control number agreement in Guarani, as opposed to 1st and 2nd persons. Regardless of the number of the subject, the verb will always surface with the 3rd person subject marker *o* (7).

---

[3] This pattern in Guarani has been described elsewhere in descriptive (Gregores and Suarez 1967; Estigarribia 2020) and theoretical work (Velázquez-Castillo 1991; Payne 1994; Woolford 2016; Zubizarreta and Pancheva 2017).

[4] Guarani also has an *active/stative* split in intransitives (Gregores and Suarez 1967; Velázquez-Castillo 1991, 2002; Payne 1994) in which some intransitives bear inverse agreement. In this paper, I focus solely on the agreement in transitive clauses.

[5] The underlying form of the 1st person subject agreement is *a*. Diphthongization of *a* to *ai* occurs when the marker resides in the domain of regressive nasal harmony (with a few exceptions). The final stressed vowel of the verb *pytyvõ* 'help' causes all of the vowels in the word to becoming nasalized and also triggers some consonant alternations.

(7) { Romi / ha'e / ha'e-kuera } **oi**-pytyvõ { Juam-pe / ichupe / ha'e-kuera-pe }
{ Romi / s/he / s/he-PL } **3.SUBJ**-help { Juan-DOM / her / s/he-PL-DOM }
'Romi / s/he / they helped Juan/her/them.' (3/3PL>3PL: agreement with subject)

In local direct scenarios (1>2) a portmanteau prefix is used (Payne 1994; Rose 2015; Woolford 2016; Zubizarreta and Pancheva 2017) which represents the person features of the subject and object as exemplified in (8).[6] Here, the 1st person subject marker *a* does not occur, and neither does the 2nd person subject marker *re*. Instead, a portmanteau *ro* surfaces. Interestingly, this is the only person marker in the direct which is also sensitive to the features of the object. If the object is 2nd person singular the agreement marker *ro* is used (8). While if the object is 2nd person plural, the agreement marker *poro* (9) is used.[7]

(8) che **roi**-pytyvõ (ndéve)
I **1.SG>2.SG.PORT**-help (you.OBJ)
'I helped you.' (1>2SG: portmanteau)

(9) che **poroi**-pytyvõ peẽ-me
I **1.SG>2.PL.PORT**-help (y'all-DOM)
'I helped y'all'. (1>2PL: portmanteau)

2.2. Inverse agreement

Inverse configurations, unlike direct configurations, are ones in which the object outranks the subject. In these cases, the object controls agreement on the verb. In a clause with a 3rd or 2nd person subject and a 1st person object, 1st person object agreement is present (10). The pronunciation of the 1st person object pronoun *chéve* is always optional so long as there is overt 1st person object agreement (*che*) on the verb (10). 1st person objects control agreement regardless of the number of the subject (11).

(10) { Romi / ha'e / nde } **chei**-pytyvõ (chéve)
{ Romi / s/he / you } **1.SG.OBJ**-help (me.OBJ)
'Romi / s/he / you helped me.' (3/2>1: agreement with object)

(11) { ha'e-kuera / peẽ } **chei**-pytyvõ (chéve)
{ s/he-PL / y'all } **1.SG.OBJ**-help (me)
'They / y'all helped me.' (2PL/3PL>1: agreement with object)

Inverse configurations with 2nd person objects (i.e. 3>2) also give rise to object agreement with the 2nd person object (12). The only inverse configuration in which 2nd person object agreement surfaces is 3>2, unlike 1st person inverse configurations.

(12) { Tamra / ha'e / ha'e-kuera } **ndei**-pytyvõ (ndéve)
{ Tamara / she / s/he-PL } **2.SG.OBJ**-help (you.OBJ)
'Tamara / s/he / they helped you.' (3/3PL>2: agreement with object)

Inverse agreement is required in inverse configurations. Failure to agree with the higher ranking object, and instead agreeing with the subject, results in ungrammaticality (13).

[6] This is a common trait among the other members of the Tupi-Guarani language family (Rose 2015): most languages in the family express 1>2 agreement with a portmanteau. I, following previous literature, treat the portmanteau as a direct configuration.

[7] There is an obvious way in which the *poro* may be decomposed into two separate morphemes *po* and *ro* where *po* represents the plural feature of the object and *ro* the person features of the subject. However, as discussed in Rose (2015), the diachronically reconstructed form of this marker is *opo* (Jensen 1990). Following previous literature I consider *poro* a single morpheme.

(13) a. *ha'e **oi**-pytyvõ (chéve)
s/he 3-help (me.OBJ)
Intended: 'S/he helped me.' (3>1: *agreement with subject)

b. *nde **rei**-pytyvõ (chéve)
you 2.SG.SUBJ-help (me.OBJ)
Intended: 'You helped me.' (2>1: *agreement with subject)

c. *ha'e **oi**-pytyvõ (ndéve)
s/he 3-help (you.OBJ)
Intended: 'S/he helped you.' (3>2: *agreement with subject)

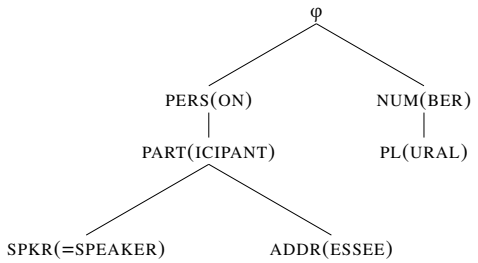
3. Segmental probing

The analysis adopted here is a strictly *Agree*-based analysis building on many previous models of Agree. I draw primarily on the model of *Cyclic Agree* as presented in Béjar (2003) and Béjar and Rezac (2009). Cyclic Agree introduced *segmental probing* in which the various segments on a probe may Agree individually with different DPs. This idea has been explored extensively and is a standard assumption in analyses of hierarchy effects (Preminger 2014; Deal 2015, 2022; Oxford 2019, 2022; Stegovec 2020; Coon and Keine 2021; Foley and Toosarvandani 2022: amongst many others). Segmental probing crucially allows for *double Agree* to be established between a single probe and more than one DP if the right conditions are met. Those conditions are structural (c-command) and hierarchical (how high each argument ranks on the PH). Direct configurations give rise to single Agree because a featurally more-specified DP c-commands a less (or equally) featurally-specified DP. Inverse configurations give rise to double Agree because a featurally less-specified DP c-commands a featurally more specified DP—leading to some segments on the probe being valued by the higher DP and others by the lower DP.

3.1. Feature geometries

Following (Harley and Ritter 2002; Béjar 2003: amongst others), I assume the privative features of DPs are organized into a complex geometry. Within these feature geometries, certain entailment relationships between features hold. Entailment follows in the sense that in order to be a 1st person with [SPKR(=SPEAKER)] a syntactic object must also be at least [PERS(ON)] because 1st persons are also persons, at least a [PART(ICIPANT)] because the speaker of an utterance must be a Speech Act Participant, etc..

(14)



Empirical facts suggest that, unlike 3rd persons in other languages (Aissen 1997; Harley and Ritter 2002; Heck and Richards 2010; Oxford 2019, 2022; Hammerly 2021; Foley and Toosarvandani 2022), 3rd persons in Guarani do not bear number and gender features. (15) shows that regardless of whether a 3rd person is singular, plural, the subject, or the object, the agreement always surfaces as *o*. Of course, number must be encoded semantically on 3rd persons to derive the plural meaning of *ha'ekuera* 'them'. However, this number feature is not syntactically active or available for agreement. Maintaining the idea that these feature geometries are universal and variation is extremely limited (Harley and Ritter 2002; Béjar 2003; Deal 2015, 2022; Coon and Keine 2021), I assume that the lack of overt 3rd person number agreement

suggests that 3rd persons lack number features entirely. More specifically, I propose that 3rd persons in Guarani simply lack the # branch of the feature geometry in (14).

(15) a. { ha'e / ha'e-kuera } o-ke
{ he / they-PL } 3.SUBJ-sleep
'He/they sleep.'

b. { ha'e / ha'e-kuera } oi-pytyvõ { chupe / chupe-kuera }
{ s/he / s/he-PL } 3.SUBJ-help { him / him-PL
'He/they helped him/them.'

3.2. Articulated probes

Beyond feature geometries on DPs, probes are also articulated into separate *segments*, following Béjar (2003); Béjar and Rezac (2009). Each segment looks to Agree with a particular feature, i.e. [PERS]. An articulated π (person) probe as in (16) will search a structure for a Goal DP which bears the entire feature geometry entailed by [SPKR] to value the corresponding [*u*SPKR] but the probe will also Agree with or interact with (adopting terminology from Deal (2015, 2022)) Goal DPs which bear [PERS] and [PART]. Following previous literature (Woolford 2016; Zubizarreta and Pancheva 2017), I place the probe high on T/Infl in Guarani and propose the probe structure in (16). I further argue that Guarani, as (Béjar 2003; Béjar and Rezac 2009; Coon and Keine 2021: amongst others) have argued for other languages, has both a π probe and a # (number) probe. The π probe searches the structure first, followed by the # probe. In particular, the π probe is articulated to Agree with features related to person and # features related to number. Following Coon and Keine (2021) I represent probe order by placing ▷ between two probes $x \triangleright y$ to signal that x searches before y.

(16) *Probe on T with π and # in Guarani:*

$$\mathrm{T}\left[\left[\begin{array}{c} u\mathrm{PERS} \\ | \\ u\mathrm{PART} \\ | \\ u\mathrm{SPKR} \end{array}\right]_{\pi} \triangleright \left[\ u\mathrm{NUM}\ \right]_{\#}\right]$$

The particular definition of Agree which allows for this type of probing, adopted from Béjar and Rezac (2009) and Coon and Keine (2021) is given in (17).

(17) *Agree:* A probe segment [*u*F] agrees with the closest accessible DP in its domain that bears [F]. If Agree is established, the hierarchy of segments containing [F] is copied over to the probe, valuing and thus removing [*u*F].

There are two points which are critical to the analysis of Guarani: i) each segment probes independently and ii) the entire feature geometry is copied over to the probe. The first allows for different segments on a probe to be valued by separate DPs in its domain (segmental probing or Cyclic Agree). The second is what explains number agreement as the byproduct of Person agreement.[8][9] A final standard assumption in much of the literature on Agree, following Georgi (2013); Kalin and van Urk (2015); Oxford (2017); Paparounas and Salzmann (2023), is that once a DP has been agreed with, it cannot undergo subsequent agreement, possibly a byproduct case assignment due to the Activity Condition (Chomsky 2000, 2001).

[8] This definition of Agree has been used across various models of Agree. Accounts differ in precisely *how* double Agree is established. Béjar and Rezac (2009); Deal (2015, 2022) propose that Agree happens in cycles and therefore there is one agreement relation established per cycle. Coon and Keine (2021) on the other hand propose that Agree happens simultaneously: i.e. multiple agree relations are established at the same time. This distinction does not play a central role in this analysis and either appears to be compatible with Guarani.

[9] Woolford (2016); Zubizarreta and Pancheva (2017) argue that inverse agreement markers in Guarani are clitics and not ϕ-agreement as I treat them. However, there is no strong evidence for their clitic-hood and in fact there is evidence against treating them as clitics. Namely that they cannot co-occur with subject agreement—a common trait of clitics.

4. Application to Guarani

The particular model of Agree assumed in this paper was outlined in the previous section and adopts ingredients from previous models of Agree primarily drawing from Béjar (2003) and Béjar and Rezac (2009). In this section, I demonstrate how such a model of Agree gives rise to single Agree in direct configurations and double Agree in inverse configurations. Crucially, the instances of single Agree will give rise to the insertion of the direct agreement VIs and the instances of double Agree will give rise to the insertion of the inverse VIs. Copying features from more than one DP produces a multi-valued probe which requires a VI that expresses both values. The only VIs in Guarani that are capable of expressing more than one value are the inverse agreement markers. I further demonstrate that a secondary # probe is what gives rise to the portmanteau in which the verb appears to agree with both subject and object.

4.1. Vocabulary Items for Spell Out

Before proceeding with the syntactic derivations of inverse/direct agreement, it is worth walking through the Vocabulary Items (VIs) for the Guarani person agreement prefixes. I adopt a late-insertion model of morphology (Halle and Marantz 1993, 1994; Marantz 1997) in which phonological features are assigned to a bundle of syntactic features in the morphology. This insertion process follows the Subset Principle which states that the features a VI expresses must be a subset of the features on a syntactic head. The direct VIs are shown in (18): (18a) for 1st persons, (18a) for 2nd persons, and (18c) for 3rd persons.

(18) *Direct VIs:*

a. *a*− ⇔ $[[\text{PERS}[\text{PART}[\text{SPKR}]]], [\text{NUM}]]_{\pi}$ ⟶(VI for 1SG direct)

b. *re*− ⇔ $[[\text{PERS}[\text{PART}[\text{ADDR}]]], [\text{NUM}]]_{\pi}$ ⟶(VI for 2SG direct)

c. *o*− ⇔ $[\text{PERS}]_{\pi}$ ⟶(VI for 3rd persons)

These Vocabulary Items are essentially the feature geometries proposed for DPs: 1st persons are made up of [PERS], [PART], [SPKR], and [NUM]. In other words, these features are the minimum requirement to semantically express a 1st person. Or, if the DP and corresponding VI bears [ADDR] instead of [SPKR], 2nd person. As for 3rd persons, the VI *o* is selected when the probe bears only [PERS] which, in Guarani, fully expresses 3rd persons. The direct VIs also appear in intransitives when there is only a single argument.

In what follows, I show that inverse agreement is the result of double Agree and that double Agree leads to a multi-valued probe structure with a value from each DP. The inverse agreement markers must therefore express an additional value *on top of* expressing the person features of the object itself. This additional value will differ between the 1st person inverse and the 2nd person inverse. For the 1st person inverse, the additional value it expresses is underspecified as [. . .] (19a) to mean any additional geometry. For 2nd persons, the additional feature that the VI spells out will be specified as [PERS] (19b). The underspecification of the VI in (19a) allows it to be inserted in both 2>1 and 3>1 contexts. However, the specification for [PERS] of the VI in (19b) is what prevents it from tying with a 1st person inverse marker in 2>1 contexts where the probe will have copied over the same features. These VIs reflect the proposal that inverse marking is the morphological realization of a multi-valued probe.

(19) *Inverse VIs:*

a. *che*− ⇔ $[[\ldots], [[\text{PERS}[\text{PART}[\text{SPKR}]]], [\text{NUM}]]]_{\pi}$ ⟶(VI for 1SG inverse)

b. *nde*− ⇔ $[[\text{PERS}], [[\text{PERS}[\text{PART}[\text{ADDR}]]], [\text{NUM}]]]_{\pi}$ ⟶(VI for 2SG inverse)

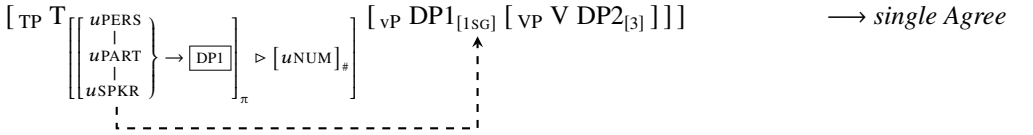
The final VI to discuss is the portmanteau which I classify as direct following Payne (1994); Woolford (2016); Zubizarreta and Pancheva (2017). It differs from both the direct and the inverse VIs in crucial ways but shares some similarities. It is similar to the inverse markers in that it expresses two values. However, those values are split up across two different probes—π and #. The π probe and the # each establish single Agree with a respective DP and therefore there is no double Agree. The details of the derivation are explored below, but for now what is important is the difference between expressing two values at the probe level (as the inverse markers do) and expressing two values at the head level (as the portmanteau does).

(20) *Portmanteau VI:*
ro− ⇔ [[PERS[PART[SPKR]]], [NUM]]$_{\pi}$ ▷ [[. . .], [NUM]]$_{\#}$ ⟶(VI for portmanteau)

4.2. Deriving the agreement pattern

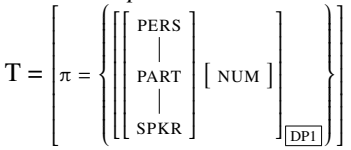
Beginning with the derivations, consider first a direct configuration like 1>3 in which the 1st person subject marker *a* surfaces. Here the π probe on T will search the structure for the closest c-commanded DP and agree with it. In this case, all of the features the probe is looking for are valued by a single DP ([*u*PERS[*u*PART[*u*SPKR]]]). Thus, only a single instance of Agree is established between one probe and one DP. The π probe on T copies over the entire feature geometry and results in the probe structure in (22). In (22), the features that the probe has copied over match exactly those of the 1st person direct VI in (18). The # probe will then the structure, but find nothing to Agree with because the 1st person EA has been deactivated through Agree with the π probe and 3rd persons have no number feature to offer the # probe.[10]

(21) *1>3 π Agrees first:*



⟶ *single Agree*

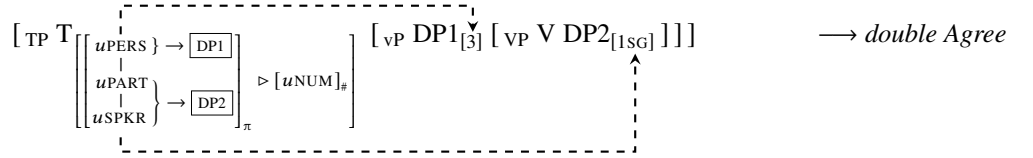
(22) *Features copied over to T in 1>3 direct:*



⟶ VI: *a* (1.SG.SUBJ)

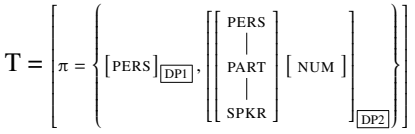
Compare this to an inverse configuration like 3>1 as in (23). The segments on π in (23) are valued by two different DPs: the [*u*PERS] feature by the 3rd person EA and the [*u*PART[*u*SPKR]] features by the 1st person IA. Recall that the number features of DPs ([NUM]) are also copied over by the π probe. This produces the probe structure in (24) in which the probe hosts two values, both of which must be expressed. In the morphology, following the Subset Principle, the 1st person inverse VI *che* must be inserted. Once again, the # probe searches the structure after the π probe and finds nothing because both DPs were Agreed with and thus deactivated for further agreement.

(23) *3>1 inverse construction:*



⟶ *double Agree*

(24) *Features in 3>1 inverse:*

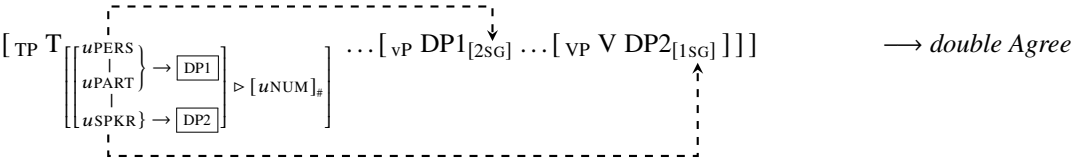


⟶ VI: *che* (1.SG.OBJ)

A 2>1 configuration is schematized in (25). The 2nd person EA values the probe's [*u*PERS] and [*u*PART] features and the 1st person IA the probe's [*u*SPKR] feature. The probe copies the entire geometry from both DPs and thus results in a probe with two values (26). The 1st person inverse VI is chosen for insertion because it expresses both values: the underspecified [. . .] feature and the full feature set of a first person. The 2nd person inverse marker *also* expresses two values but is not chosen because it requires that the additional value on the probe be only [PERS] and nothing more (the only feature 3rd persons bear).

[10]The notation of DP1, DP2, etc., in particular in the probe structures like (22) or (24) is simply for clarity. I do not propose that the probe is sensitive to which DP it copied which features from.

(25) *2>1 inverse construction:*



(26) *Probe in 2>1 inverse:*

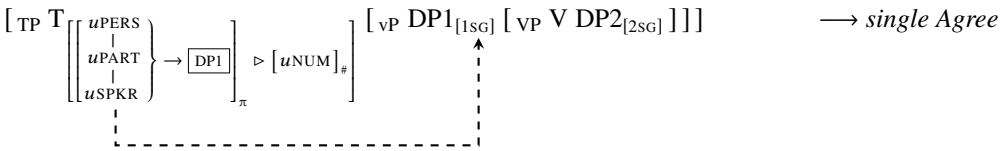
$$T = \left[\pi = \left\{ \left[\begin{bmatrix} \text{PERS} \\ | \\ \text{PART} \\ | \\ \text{ADDR} \end{bmatrix} [\,\text{NUM}\,] \right]_{\boxed{\text{DP1}}}, \left[\begin{bmatrix} \text{PERS} \\ | \\ \text{PART} \\ | \\ \text{SPKR} \end{bmatrix} [\,\text{NUM}\,] \right]_{\boxed{\text{DP2}}} \right\} \right]$$

Configurations involving 2nd person direct (2>3) and inverse (3>2) play out very similarly however I skip their derivations for space. The difference being only that the [ADDR] feature of the 2nd person is copied over instead of the [SPKR] feature. In 3>3 configurations, the π probe will only copy the [PERS] feature from the 3rd person EA and result in the probe bearing only [PERS] which directly corresponds to the 3rd person VI in (18c).

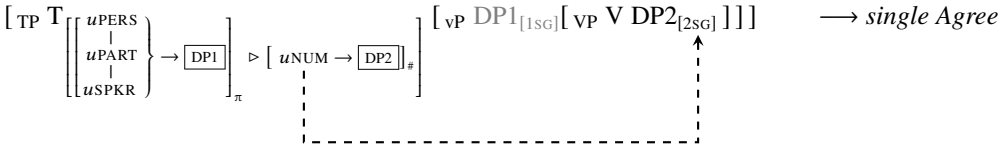
4.3. The portmanteau

Recall that Guarani, like many other languages, has a secondary # probe which searches the structure after the π probe. Once the π probe has had all of its features valued, if there is an argument which bears a [NUM] feature, the # probe will agree with it. With this, the derivation for a 1SG>2SG portmanteau proceeds as follows: first, the π probe on T will search its domain for the closest DP to agree with. In this case, it finds the 1st person EA. The 1st person Goal DP's feature geometry is such that every segment on the probe finds a corresponding match and therefore, there is only single Agree between the probe and the 1st person DP (27). Just as in a 1>3 configuration, the π probe copies over all of the features of the EA and the 1st person is subsequently deactivated to further agreement operations (Georgi 2013; Kalin and van Urk 2015; Oxford 2017; Paparounas and Salzmann 2023). The # probe will then search its domain and agree with the closest DP which bears a [NUM] feature. In a 1>2, it finds the 2nd person IA and copies over its number feature (28).

(27) *1>2 π Agrees first:*



(28) *1>2 # Agrees second*



The EA's deactivation upon agreeing with the π probe is precisely what allows for the # probe to ignore it and agree with the 2nd person IA that bears [NUM]. The # probe will subsequently copy over the features of the 2nd person IA. The resulting probe structure is in (29) which corresponds to the VI for the portmanteau in (20). Crucially, only single Agree is established by each probe as opposed to the inverse in which double Agree is established by the π probe. It is important to point out that the # probe only establishes Agree with DPs which bear a [NUM] feature (i.e. 1st/2nd persons). Crucially, a # probe will thus never establish

Agree with a 3rd person object. As a consequence, no portmanteau is predicted to surface with 3rd person objects which is supported by the empirical data introduced in Section 2.

(29) *Features in 1>2*sg*:*

$$\text{T} = \left[\pi = \left\{\left[\left[\begin{array}{c}\text{PERS}\\|\\\text{PART}\\|\\\text{SPKR}\end{array}\right]\ [\ \text{NUM}\ ]\right]_{\boxed{\text{DP1}}}\right\} \rhd\ \# = \left\{\left[\left[\begin{array}{c}\text{PERS}\\|\\\text{PART}\\|\\\text{ADDR}\end{array}\right]\ [\ \text{NUM}\ ]\right]_{\boxed{\text{DP2}}}\right\}\right] \longrightarrow \text{VI: } \textit{ro}\ (1{>}2\textsc{sg.port})$$

5. Conclusion and extensions

In this paper, I developed a strictly Agree-based analysis of the Guarani direct/inverse agreement system in which the verb consistently agrees with the highest ranking argument along the Person Hierarchy. The particular model of Agree adopted is based largely on that of Cyclic Agree from Béjar (2003) and Béjar and Rezac (2009) with some analytical divergences that space limitations prevent me from adequately exploring. I showed that, following (Béjar 2003) and Béjar and Rezac (2009), the crucial syntactic distinction between the direct and inverse is how many arguments the probe Agrees with. More specifically, single Agree between a probe and a single goal gives rise to a single value on the probe while double Agree between a probe and *two* goals gives rise to a multi-valued probe with one value from each DP. The Vocabulary Items (VIs) for the direct/inverse thus differ in how many values they are able to express. The direct VIs express only one value on the probe while the inverse VIs express two. One empirical challenge that remains for my analysis and any analysis of the transitive agreement system, is the stative intransitives in which inverse agreement surfaces in the presence of only a single argument.

References

Aissen, Judith. 1997. On the syntax of obviation. *Language* 73:705–750.

Aissen, Judith. 1999. Markedness and subject choice in Optimality Theory. *Natural Language & Linguistic Theory* 17:673–711.

Béjar, Susana. 2003. Phi-syntax: A theory of agreement. Doctoral Dissertation, University of Toronto, Toronto.

Béjar, Susana, and Milan Rezac. 2009. Cyclic agree. *Linguistic Inquiry* 40:35–73.

Bliss, Heather, Elizabeth Ritter, and Maritna Wiltschko. 2020. Inverse systems and person hierarchy effects. In *The Routledge Handbook of North American Languages*, 193–209. Routledge.

Chomsky, Noam. 2000. Minimalist inquiries: The framework. In *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, 89–155. Cambridge, MA: MIT press.

Chomsky, Noam. 2001. Derivation by phase. In *Ken Hale: A life in language*, 1–52.

Coon, Jessica, and Stefan Keine. 2021. Feature gluttony. *Linguistic Inquiry* 52:655–710.

Deal, Amy Rose. 2015. Interaction and satisfaction in φ-agreement. In *Proceedings of NELS 45*, 179–192. Amherst, MA: GLSA.

Deal, Amy Rose. 2022. Interaction, satisfaction, and the PCC. *Linguistic Inquiry* 1–56.

Estigarribia, Bruno. 2020. *A grammar of Paraguayan Guarani*. Series Grammars of World and Minority Languages. London: UCL Press.

Foley, Steven, and Maziar Toosarvandani. 2022. Extending the Person-Case Constraint to gender: Agreement, locality, and the syntax of pronouns. *Linguistic Inquiry* 53:1–40.

Georgi, Doreen. 2013. Deriving the distribution of person portmanteaux by relativized probing. In *Proceedings of NELS 42*, ed. Stefan Keine & Shayne Sloggett, 155–168. Amherst, MA: GLSA.

Givón, Talmy. 1994. *Voice and inversion*. Amsterdam: John Benjamins.

Gregores, Emma, and Jorge A Suarez. 1967. *A Description of Colloquial Guarani*. The Hague, Netherlands: Mouton.

Halle, Morris, and Alec Marantz. 1993. Distributed Morphology and the pieces of inflection. In *The view*

from Building 20 Essays in Linguistics in Honor of Sylvain Bromberger, ed. Ken Hale and Samuel Jay Keyser, 111–176. Cambridge, MA: MIT Press.

Halle, Morris, and Alec Marantz. 1994. Some key features of Distributed Morphology. In *Papers on Phonology and Morphology*, 275–288. Cambridge, MA: MIT working papers in linguistics.

Hammerly, Christopher. 2021. A verb raising analysis of the Ojibwe VOS/VSO alternation: Lessons for feature copying and movement. *Manuscript, University of Minnesota, Twin Cities* .

Harley, Heidi, and Elizabeth Ritter. 2002. Person and number in pronouns: A feature-geometric analysis. *Language* 482–526.

Heck, Fabian, and Marc Richards. 2010. A probe-goal approach to agreement and non-incorporation restrictions in Southern Tiwa. *Natural Language & Linguistic Theory* 28:681–721.

Jensen, Cheryl. 1990. Cross-referencing changes in some Tupí-Guaraní languages. *Amazonian linguistics: Studies in lowland South American languages* 393–405.

Kalin, Laura, and Coppe van Urk. 2015. Aspect splits without ergativity: Agreement asymmetries in Neo-Aramaic. *Natural Language & Linguistic Theory* 33:659–702.

Klaiman, Miriam Holly. 1992. Inverse languages. *Lingua* 88:227–261.

Marantz, Alec. 1997. No escape from syntax: Don't try morphological analysis in the privacy of your own lexicon. *University of Pennsylvania working papers in linguistics* 4:14.

Nichols, Lynn. 2001. The syntactic basis of referential hierarchy phenomena: Clues from languages with and without morphological case. *Lingua* 111:515–537.

Oxford, Will. 2017. The activity condition as a microparameter. *Linguistic Inquiry* 48:711–722.

Oxford, Will. 2019. Inverse marking and Multiple Agree in Algonquin: Complementarity and variability. *Natural Language & Linguistic Theory* 37:955–996.

Oxford, Will. 2022. A tale of two inverses. *Manuscript, University of Manitoba* .

Paparounas, Lefteris, and Martin Salzmann. 2023. First Conjunct Clitic Doubling, the Person Case Constraint, and First Conjunct Agreement: Insights from Modern Greek. *Glossa: a journal of general linguistics* 8.

Payne, Doris. 1994. The Tupí-Guaraní inverse. *Voice: Form and function* 27:313–340.

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

Rose, Françoise. 2015. When "You" and "I" mess around with the hierarchy: a comparative study of Tupi-Guarani hierarchical indexing systems. *Boletim do Museu Paraense Emílio Goeldi. Ciências Humanas* 10:347–369.

Stegovec, Adrian. 2020. Taking case out of the Person-Case Constraint. *Natural Language & Linguistic Theory* 38:261–311.

Velázquez-Castillo, Maura. 1991. The semantics of Guaraní agreement markers. In *Annual Meeting of the Berkeley Linguistics Society*, volume 17, 324–335.

Velázquez-Castillo, Maura. 2002. Grammatical relations in active systems: The case of Guaraní. *Functions of Language* 9:133–167.

Woolford, Ellen. 2016. Two types of portmanteau agreement: Syntactic and morphological. In *Optimality theoretic syntax, semantics, and pragmatics: From uni-to bidirectional optimization*, ed. Henriëtte de Swart Erin Zaroukian Géraldine Legendre, Michael T. Putnam, 111–135. New York: Oxford University Press.

Zubizarreta, María Luisa, and Roumyana Pancheva. 2017. A formal characterization of person-based alignment: The case of Paraguayan Guaraní. *Natural Language & Linguistic Theory* 35:1161–1204.

Zuñiga, Fernando. 2006. *Deixis and alignment: Inverse systems in indigenous languages of the Americas*. Amsterdam: John Benjamins.