Probe relaxation and direct/inverse, portmanteau, and active/stative agreement in Guarani

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1 Introduction

A significant amount of recent work in theoretical syntax argues that the operation Agree is a complex and highly structured mechanism and there have been many influential proposals about the fine structure of Agree (Chomsky 2000, 2001; Anagnostopoulou 2003; Béjar 2003; Béjar and Rezac 2003, 2009; Rezac 2003; Preminger 2014; Deal 2015, 2024; Coon and Keine 2021: amongst many others). An important idea, and a recurring theme across proposals, is that the search behavior of an Agree probe may change over the course of the derivation. Some have argued that probes become more picky over the course of the derivation (e.g. *dynamic interaction* (Deal 2024)), while others have argued that probes become less picky (e.g. *probe impoverishment* (Béjar 2003) and *chameleon probes* (Georgi 2010)). In this paper, based on evidence from Paraguayan Guaraní (henceforth, Guarani), I argue in favor of the idea that probes become less picky over the course of the derivation.

The evidence comes from three generalizations of verbal agreement in Guarani, listed in (1), which have all received attention in previous literature: i) *direct/inverse* agreement in transitives (Payne 1994; Woolford 2016; Zubizarreta and Pancheva 2017a; Estigarribia 2020), ii) a portmanteau in local direct scenarios (1>2) (Rose 2015), and iii) active/stative agreement in intransitives (Velázquez-Castillo 1991, 2002; Zubizarreta and Pancheva 2017b).

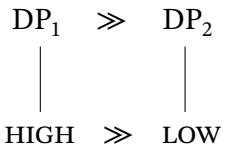
(1) *Generalizations of Guarani verbal agreement:*
   a. *direct/inverse agreement:*
   the highest ranking argument on the PH (1>2>3) controls agreement
   b. *portmanteau in local direct:*
   1>2 configurations result in a portmanteau representing features from both arguments
   c. *active/stative agreement:*
   direct/inverse agreement in unergatives and unaccusatives, respectively

The first two generalizations (direct/inverse and portmanteau in 1>2) are person hierarchy effects which make reference to the hierarchy in (2). The third (active/stative split) does not reference the hierarchy directly, but exhibits many parallels with the direct/inverse system. In this paper, I develop an analysis which captures all three generalizations, including their interplay, by adopting a theoretical tool which I refer to as *probe relaxation* that allows probes to become less picky upon failed first-cycle Agree.

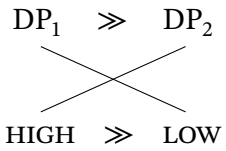
(2) *Person Hierarchy for Guarani:*
   1st persons > 2nd persons > 3rd persons

Direct/inverse: Guarani has direct/inverse agreement (also known as hierarchical agreement (Nichols 2001)). That is, that the verbal morphology is sensitive to whether or not the configuration is *direct* or *inverse*. A direct configuration (3) is one in which the structurally higher DP is also higher on the PH in (2) (e.g. more featurally specified). An inverse configuration (4) is one in which the structurally *lower* DP is higher on the PH in (2). For Guarani, direct configurations give rise to subject agreement, while inverse configurations give rise to object agreement (with the outranking object).

(3) *Direct*



(4) *Inverse*



Local direct portmanteau: Unlike in other direct configurations (1>3, 2>3, 3>3), in 1>2 configurations the verbal agreement marker references the features of *both* the object *and* the subject (Rose 2015; Zubizarreta and Pancheva 2017a; Estigarribia 2020). This adds a layer of complexity to the direct/inverse verbal agreement paradigm because, even though the subject outranks the object (1>2), the object still controls agreement.[1] By contrast in 2>1 the 1st person object controls agreement.

Active/stative: Intransitives in Guarani are often divided into two classes: i) active and ii) stative (Mithun 1991; Velázquez-Castillo 1991, 2002; Payne 1994). Active verbs take what *looks like* transitive direct (subject) agreement. While stative verbs take what *looks like* transitive inverse (object) agreement. In other words, some intransitives appear to be "direct", while others appear to be "inverse" insofar as their morphology is concerned. In both cases, however, they are intransitives with a single argument.

The analysis which I will put forth in this paper builds off of a shift in the empirical perspective on these agreement patterns in Guarani and by allowing probes to become less picky across the course of the derivation. On the empirical side, I will show that the fundamental difference between direct/active and inverse/stative is whether the argument which controls agreement is an External Argument (EA) or an Internal Argument (IA). This perspective helps unify the active/stative split and the direct/inverse system by treating them as effectively one in the same. Direct/active agreement is the result of EA agreement, while inverse/stative agreement is the result of IA agreement. This is supported by novel diagnostics of unaccusativity in Guarani which suggest that stative verbs are unaccusative and active verbs are unergative.[2] However, it requires an Agree calculus where the direct/inverse system does not rely on the presence of two arguments.

With this new empirical perspective, I propose that probes may Merge picky but, upon failed first-cycle Agree, relax their search condition to [φ] to be able to Agree with a wider

[1] Rose (2015) shows that the combination of the first two patterns (1>2>3 + 1>2 port) is widespread in the Tupi-Guarani family. The two Tupi-Guarani languages which exhibit 1>2>3 and no portmanteau are Avá-Canoeiro (Borges 2006) and Kayabi (Dobson 1997) where only the 1st person is referenced in 1>2.

[2] For another syntactic perspective on the active/stative split see Zubizarreta and Pancheva (2017b).

range of DPs in subsequent cycles. I refer to this *probe relaxation* and define it in (5). Probe relaxation draws direct inspiration from previous work that suggests that picky probes may settle for a non-ideal agreement controller like *probe impoverishment* (Béjar 2003) and *chameleon probes* (Georgi 2010). Probe relaxation thus adds to the literature on probes with flexible search conditions. Unlike previous accounts, however, I couch probe relaxation in the interaction and satisfaction model of Agree (Deal 2015, 2024).[3]

(5) *Probe relaxation:*
If a π probe on head H bears an interaction condition X (where X $\neq$ [φ] and X geometrically entails [φ]) and first-cycle Agree fails because there is no DP that bears X in the domain of H, the probe relaxes its interaction condition to [φ] upon reprojection.

Once we adopt probe relaxation into our model of Agree the empirical facts from Guarani are captured straightforwardly. That is, that probe relaxation forms derivational natural classes for each of the generalizations in (1) affording a unified account of all three generalizations. Guarani thus provides evidence for the fact that probes become less picky across the course of the derivation, along the lines of previous work (Béjar 2003; Georgi 2010). It is worth noting that probe relaxation is the *opposite* of dynamic interaction because, unlike dynamic interaction, with probe relaxation probes become *less* picky. Despite this, probe relaxation obviates the need dynamic interaction and derives some of the same effects, plus more which I take to suggest that it can replace dynamic interaction in our model of Agree.

The rest of this paper is organized as follows. Section 2 and Section 3 are empirically focused and introduce the transitive (Section 2) and intransitive (Section 3) agreement paradigms in Guarani, reporting on data from original fieldwork on the three generalizations in (1). Section 3 additionally concludes that the "active/stative" split is best understood as the unaccusative split through novel language-internal diagnostics like passivization and agreement. Section 4 introduces the interaction and satisfaction model of Agree (without probe relaxation) and demonstrates its success in capturing the direct/inverse agreement pattern, but shows that it does not straightforwardly extend to the other generalizations. Section 5 introduces probe relaxation as a means of capturing all three generalizations in Guarani in a unified manner. Section 6 considers alternative accounts. Section 7 concludes with a brief note on the typological predictions of probe relaxation and cross-linguistic empirical evidence in favor of it.

2 Transitive verbal agreement in Guarani

Guarani is a Tupí-Guarani language spoken by roughly five million people primarily in Paraguay but also in small bordering regions of Argentina and Brazil. Previous descriptive

[3] *Dynamic interaction* (Deal 2024) also allows for flexible search conditions on probes. However, it is worth noting that probe relaxation is the opposite of dynamic interaction (Deal 2024). Furthermore, I will argue that probe relaxation may derive effects that Deal (2024) attributes to dynamic interaction. This raises the possibility that probe relaxation may replace dynamic interaction in our model of Agree.

work on the language includes Gregores and Suarez (1967); Estigarribia (2020) and previous theoretical work includes Tonhauser (2006, 2007, 2011a,b, 2020); Tonhauser and Colijn (2010); Zubizarreta and Pancheva (2017a,b); Pancheva and Zubizarreta (2019); Zubizarreta (2022), amongst others. In particular, the pattern of transitive agreement presented here has been previously been analyzed in Payne (1994); Woolford (2016); Zubizarreta and Pancheva (2017a). The pattern of intransitive agreement has been previously analyzed in Velázquez-Castillo (1991, 2002). All data, unless otherwise noted, was collected during in-situ and remote fieldwork with native speakers from Coronel Oviedo and Caaguazú, Paraguay.[4]

Below is a list of person markers used in direct configurations in Guarani (6).

(6) *Direct agreement morphemes:*

a. *a*: 1SG subject
b. *re*: 2SG subject
c. *o*: 3 subject
d. *ro*: 1EXCL subject
e. *ja*: 1INCL subject
f. *pe*: 2PL subject
g. *ro*: 1>2SG portmanteau
h. *poro*: 1>2PL portmanteau

In direct configurations, where the subject is at least as high as the object on the PH, the subject controls agreement. This is shown in (7) with 1>3 configurations in which the 1st person subject (either singular (7a), exclusive (7b), or inclusive (7c)) controls agreement.

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

b. ore **roi**-pỹtỹvõ { Tamara-pe / ichupe / ha'e-kuera-pe }
we.EXCL **1EXCL.SUBJ**-help { Tamara-DOM / him/her / s/he-PL-DOM }
'We (excl.) helped Tamara / him/her / them.' (1EXCL>3/3PL: agreement with subject)

c. ñande **jai**-pytyvõ { Romi-pe / ichupe / ha'e-kuera-pe }
we.INCL **1INCL.SUBJ**-help { Romi-DOM / him/her / s/he-PL-DOM}
'We (incl.) helped Romi / him/her / them.' (1INCL>3/3PL: agreement with subject)

In 2>3 direct configurations, as in (8) with a 2nd person (singular (8a) or plural (8b)) subject and 3rd person object, the 2nd person subject controls agreement.

[4]To be more precise, all data represented here are from first-language native speakers of Guarani who learned Spanish at a later age. While there are certain dialectical differences across the language region, w.r.t. the facts reported here all speakers from Coronel Oviedo and Caaguazú share the judgements. If there are different judgements due to geographical, socio-economic, or any other reasons these will be made evident.

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

b. peẽ **pe**-pytyvõ { Juam-pe / ichupe / ha'e-kuera-pe }
y'all **2PL.SUBJ**-help { Juan-DOM / him/her / s/he-PL-DOM }
'Y'all helped Juan / him/her / them.' (2PL>3/3PL: agreement with subject)

In 3>3 configurations, the 3rd person subject controls agreement.[5] It is important to point out that 3rd persons never control number agreement in Guarani. Regardless of whether the subject is singular (9a) or plural (9b) the agreement is the same: *o-*.

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

b. ha'e-kuera **oi**-pytyvõ { Juam-pe / ichupe / ha'e-kuera-pe }
s/he-PL **3.SUBJ**-help { Juan-DOM / him/her / s/he-PL-DOM }
'They helped Juan / him/her / them.' (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 2017a) which represents the person features of the subject and the number of the object as in (10).[6] This is the only person marker in the direct which is also sensitive to the features of the object. If the object is singular, the portmanteau that surfaces is *ro-* (10a), while if the object is plural it surfaces as *poro* (10b).[7]

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

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

c. ore **poroi**-pytyvõ (peẽ-me)
we.EXCL **1>2PL.PORT**-help (y'all-DOM)
'We (excl.) helped y'all.' (1EXCL>2PL: portmanteau)

[5]It is clear that it is the subject based on the fact that 3rd person unergative/unaccusative agreement markers are distinct: i) *o-* = unergative/3>3, ii) *i-* = unaccusative.

[6]This is a common trait among the other members of the Tupi-Guarani language family (Rose 2015). Most languages in the family express the 1>2 agreement with a portmanteau or a generic plural human object form.

[7]There is a sensible 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* is the 1>2 portmanteau. However, as discussed in Rose (2015), the diachronically reconstructed form of this marker is *opo* (Jensen 1990). There are other resources which claim it is the marker for generic plural Human objects (Jensen 1990; Cabral 2001). Taking what previous literature has discussed into account, I consider this *poro* a single morpheme.

The table in (11) represents all of the inverse agreement prefixes in Guarani. The inclusive/exclusive distinction for 1st person plurals and the 2nd person singular/plural distinction still hold. Notice, however, that there is no inverse markers for 3rd persons. This is because 3rd persons are the lowest-ranking argument on the PH in (2) and, cannot meet the conditions for inverse agreement because they outrank no other arguments.

(11) *Inverse agreement morphemes:*

a. *che*: 1SG object

b. *nde*: 2SG object

c. *ore*: 1EXCL object

d. *ñande*: 1INCL object

e. *pende*: 2PL object

Inverse configurations, unlike direct configurations, are those in which the object outranks the subject. In these cases, the object controls agreement on the verb for person and number. As in (12) where the 1st person object controls agreement because it outranks either the 2nd person or 3rd person subject. There are no (apparent) inverse number effects in Guarani and regardless of whether the 2nd/3rd person subject is plural, the 1st person object controls agreement.

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

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

Just as in the direct, the morphology is also sensitive to 1st person exclusive and inclusive plurals. These person markers surface as *ore* for exclusive (14a) and *ñande* for inclusive (14b).

(14) a. { Romi / ha'e / ha'e-kuera / nde / peẽ } **orei**-pỹtỹvõ (oréve)
{ Romi / s/he / s/he-PL / you / y'all } **1EXCL.OBJ**-help (us)
'Romi / s/he / they / you / y'all helped us.' (3/3PL/2/2PL>1EXCL: agreement with object)

b. { Romi / ha'e / ha'e-kuera / nde / peẽ } **ñande**-pỹtỹvõ (ñandéve)
{ Romi / s/he / s/he-PL / you / y'all } **1INCL.OBJ**-help (us)
'Romi / s/he / they / you / y'all helped us.' (3/3PL/2/2PL>1INCL: agreement with object)

2nd person objects also control agreement on the verb if they outrank the subject. This will only occur in 3>2 constructions because 2nd persons only outrank 3rd persons on the

PH (2). The person prefix for singular 2nd person objects is *nde* (15a) and for 2nd person plural objects it is *pende* (15b).

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

b. { Tamra / ha'e / ha'e-kuera } **pende**-pytyvõ (peẽ-me)
{ Tamara / s/he / s/he-PL } **2PL.OBJ**-help (y'all-DOM)
'Tamara / s/he / they helped y'all.' (3/3PL>2PL: agreement with object)

Inverse agreement is required in inverse configurations. Failure to agree with the higher ranking object, and instead agreeing with the lower ranking subject, results in ungrammaticality (16). In (16a), the verb incorrectly agrees with the lower ranking 3rd person subject. Similarly in (16b) where the verb agrees with the lower ranking 2nd person subject, instead of the 1st person object. Finally in (16c) the verb fails to agree with the out ranking 2nd person object.

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

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

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

Woolford (2016) and Zubizarreta and Pancheva (2017a) analyze these inverse markers as *clitics*, not genuine φ-agreement. This is an appealing analysis of these markers because all of the inverse agreement markers, except the 2nd person plural, are homophonous with the personal pronouns. However, aside from the homophony with object pronouns, there is no clear evidence that the inverse markers are clitics rather than genuine φ-agreement. Notably, they appear in the same position as the subject agreement, and they are in complementary distribution with the subject agreement markers. This would be surprising if one was the result of genuine φ-agreement and the other of cliticization (cf., e.g., Spanish, where object cliticization shows no interactions with subject agreement). Furthermore, the portmanteau markers in 1>2 configurations would require that the morphology jointly realize subject φ-agreement and an object clitic as a portmanteau, which as far as I know is not independently attested. These interactions between direct and inverse markers follow more naturally if both are analyzed as genuine φ-agreement, and this is the view I will adopt here. Finally, phonological processes such as nasal harmony and dipthongization of the final vowel of the agreement markers does not distinguish between direct and inverse agreement markers and apply to all.

I am not aware of evidence that the structural relationship between subject and object differs between direct and inverse configurations.[8] (17) illustrates this for scope. In 3>3 direct configurations, the subject obligatorily outscopes the object (17a). This is also the case in direct configurations (17b) and in 3>1 inverse configurations (17c).

(17) a. peteĩ mbo'ehara oi-pytyvõ opavave mitã-me
a teacher 3.SUBJ-help every girl-DOM
'A teacher helped every girl.' (direct: ∃ ≫ ∀, *∀ ≫ ∃)

b. peteĩ ore-aty-gua oi-pytyvõ opavave-pe mitã-nguera
one 1.EXCL.POSS-group-from 3.SUBJ-help every-DOM girl-PL
'One of us helped every girl.' (direct: ∃ ≫ ∀, *∀ ≫ ∃)

c. peteĩ ij-aty-gua ore-pytyvõ opavave-pe (ore-ve)
one 3.POSS-group-from 1.EXCL.OBJ-help every-DOM (us-DOM)
'One of them helped every one of us.' (inverse: ∃ ≫ ∀, *∀ ≫ ∃)

I will therefore pursue a purely Agree-based account of the direct/inverse system. Under my analysis, inverse agreement will be the result of single Agree with the IA (1st/2nd person) and direct agreement will be agreement between a relaxed probe and its specifier.

The person agreement paradigm in transitives is represented in the table below (18). The inverse configurations are shaded, the configurations which give rise to a portmanteau are boxed, and the direct configurations are left unshaded. This table thus represents two of the three generalizations in Guarani: i) direct/inverse and ii) portmanteau in local direct. I will reference this table again in the analysis section in order to demonstrate that an adequate analysis of these generalizations is accomplished by grouping the shaded, boxed, and unshaded into their own natural classes of derivations.

(18) *Person combinations and agreement (inverse = shaded, portmanteau = boxed)*

	1SG Agent	1EXCL	1INCL	2SG	2PL	3SG	3PL
1SG Patient	✗	✗	✗	1SG	1SG	1SG	1SG
1EXCL	✗	✗	✗	1EXCL	1EXCL	1EXCL	1EXCL
1INCL	✗	✗	✗	✗	✗	1INCL	1INCL
2SG	1>2SG	1>2SG	✗	✗	✗	2SG	2SG
2PL	1>2PL	1>2PL	✗	✗	✗	2PL	2PL
3SG	1SG	1EXCL	1INCL	2SG	2PL	3SG	3SG
3PL	1SG	1EXCL	1INCL	2SG	2PL	3SG	3SG

[8] It is common in languages with inverse marking to have movement of the object above the subject or some type of movement (Oxford 2022).

3 Intransitive verbal agreement in Guarani and unaccusativity

As mentioned above, Guarani intransitives are often categorized as either *active* or *stative* (Mithun 1991; Velázquez-Castillo 1991, 2002: amongst others). This classification is based on the semantics of the roots that bear either active or stative agreement.[9] However, in this section I will demonstrate that the distinction between these two classes of verbs is syntactic and not strictly-semantic. In particular, I follow recent work on recasting other active/stative splits as unaccusativity (Kroeger 1990; Golluscio 2007; Ko 2020) and propose that the same holds in Guarani. The shift in perspective from semantic to syntactic is motivated through two novel language-internal diagnostics for unaccusativity.

Before proceeding, consider a table of the intransitive agreement markers in (19). The agreement markers in the column labeled *unergative* are homophonous with the direct agreement markers outlined above. The only exception is the absence of the 1>2 portmanteau forms, but because these require an object they are not expected to appear in intransitives. Moving on to the agreement markers in the column labeled *unaccusative*, these are homophonous with the inverse agreement markers outlined above. The notable exception is the presence of the *i-* for 3rd person unaccusatives (boxed in (19)). This 3rd person unaccusative agreement marker *i-* has an extremely narrow distribution and never appears in transitive clauses. The only place it appears is with 3rd person unaccusative verbs.

(19) *Unergative and unaccusative agreement markers in Guarani:*

	unergative	**unaccusative**
1SG	*a-*	*che-*
1EXCL	*ro-*	*ore-*
1INCL	*ja-*	*ñande-*
2SG	*re-*	*nde-*
2PL	*pe-*	*pende-*
3	*o-*	*i-*

In the analysis section I will demonstrate that probe relaxation allows us to group the unergative and direct, on the one hand, and the unaccusative and inverse on the other hand into natural classes based on their derivations. Crucially, for an account of all three

[9]For another analysis of these intransitives in Guarani, see Zubizarreta and Pancheva (2017b). There, the authors propose that stative intransitives are nominalized possessive structures. However, based on my fieldwork these structures are not nominal nor possessive structures because: i) they cannot be pluralized (**ha'e i-mandua-kuera* 's/he 3-remember-PL') and ii) there is a difference in meaning between the truly possessed structure and the stative predicate forms of possessed nominals. For example, the root *memby* 'child of woman' may be formed into a predicate *(che) che-memby* 'I 1-have.kids'. Without the doubled pronoun *che*, the sentence is the same as the possessive form *che-memby* 'my kid'. However, one cannot double the pronoun with the possessive meaning **che che-memby* 'my 1-kid'. Because of this clear asymmetry between possessed structures and stative predicates, I adopt the unaccusative split perspective and an Agree based analysis (discussed below).

generalizations in Guarani to be successful it must distinguish between: i) direct/inverse derivations, ii) portmanteau derivations, and iii) unergative/unaccusative.

3.1 Problems with the strictly-semantic perspective

The semantic distinction applies straightforwardly to many verbs in Guarani. As concrete examples, consider the active intransitive *guata* 'to walk' in (20a). This verb describes the *action* of walking and therefore takes active morphology. On the other hand, a verb like *mandu'a* 'to remember', as in (20b), describes a stative event of remembrance, and therefore takes stative morphology.

(20) a. (ha'e) o-guata
(s/he) 3.SUBJ-walk
'S/he walks.'

b. (ha'e) **i**-mandu'a
(s/he) **3.OBJ**-remember
'S/he remembers.'

However, not all verbs in Guarani fit as cleanly based on the semantics of their root alone. Many verb roots which are commonly characterized as having stative semantics like *mano* 'to die/to be dead' in (21a) or *kirirĩ* 'to be quiet' in (21b) take *active* morphology.[10]

(21) a. (ha'e) **o**-mano
(s/he) **3.SUBJ**-die
'S/he is dead.'

b. (ha'e) **o**-kirirĩ
(s/he) **3.SUBJ**-quiet
'S/he is being quiet.'

The inverse also holds for verbs that have canonically active (or eventive) semantics, but show stative morphology. Two clear cases are in (22). (22a) shows that an active verb like *hasẽ* 'to cry' takes stative morphology. In addition, the verb *to change* 'amb'ue' takes stative morphology. It is unclear how the verb whose meaning describes the change of state from one state to another could be construed as stative.

(22) a. (ha'e) **i**-hasẽ
(ha'e) **3.OBJ**-cry
'S/he cried.'

b. (ha'e) **iñ**-ambu'e
(s/he) **3.OBJ**-change
'S/he changed.'

[10]It is worth noting that these stems can *never* take stative morphology.

The problem with a strictly-semantic characterization or analysis of these facts is especially clear when considering examples like *kirirĩ* 'to be quiet' and *pyaguapy* 'to be calm' side by side. These verbs have very similar semantics—they both describe some state of being calm or quiet. However, they take different morphology (one active, the other stative). These facts are puzzling under a semantic account or description.

(23) a. (ha'e) **o**-kirirĩ
(s/he) **3.SUBJ**-quiet
'S/he is being quiet.'

b. (ha'e) **i**-pyaguapy
(S/he) **3.OBJ**-calm
'S/he is calm.'

The strictly-semantic generalization/perspective does not cover enough empirical ground in Guarani to adopt. Therefore, I follow the intuition from Kroeger (1990); Golluscio (2007); Ershova (2017); Ko (2020); amongst others, that languages with morphology that is sensitive to the "active/stative" split have morphology which tracks the unergative/unaccusative split, and not strictly semantic differences in the root. Because of this, I will drop the terminology "active/stative" for the remainder of this paper and adopt unergative and unaccusative. In particular for Guarani, I classify unergative and unaccusative verbs as in (24).

(24) *Unergative/unaccusative classification in Guarani:*

a. Intransitive verbs in Guarani which take *direct* morphology are *unergative*.

b. Intransitive verbs in Guarani which take *inverse* morphology are *unaccusative*.

In the remainder of this section, I will show that this *re*classification of the "active/stative" to unergative/unaccusative is directly motivated by language-internal diagnostics of the argument position in these intransitives. These diagnostics are outlined in (25) as well as their results or rather how they're effect plays out in Guarani intransitives.[11]

(25) *Diagnostics for unaccusativity in Guarani:*

a. **passivization**: only unergatives, but not unaccusatives may be passivized.

b. **agreement controlling arguments**: additional arguments of unergative verbs can control agreement, additional arguments of unaccusative verbs cannot

[11] It has been argued that unergative intransitive verbs are in fact underlyingly transitive and simply have an implicit object (Bobaljik 1993; Laka 1993b). These arguments, however, have been called into question (Preminger 2012). In addition, it makes the prediction that all unergative verbs should allow for additional arguments like how *guata* 'to walk' allows for an object like *chéve* 'me' or *jagua* 'dog'. This is not the case: intransitive unergative verbs like *yta* 'to swim' cannot take an object. The same holds for *ñani* 'to run'.

3.2 Diagnostic 1: passivization

Passives of transitives

Passives in Guarani are formed with the prefix *je-* (nasal allomorph *ñe*), which occurs between the person marker prefix and the verbal root. Passives are challenging to elicit in Guarani because speakers vastly prefer to use the active form of the sentence (Estigarribia 2020). However, examples can be elicited. W.r.t. morphology, passives take direct forms of the person markers, even though the demoted agent outranks the theme. The inverse agreement baseline is shown in (26a) and the passive form in (26b). Notice that between (26a) and (26b) the morphology changes from inverse to direct. An additional example with a 3rd person argument is given in (26c). Notice again that direct morphology surfaces, not inverse.

(26) a. (ha'e-kuera) che-nupa (chéve)
(s/he-PL) 1SG.OBJ-hit (me)
'They hit me.' (active 3>1 transitive)

b. (che) a-**ñe**-nupa
(I) 1SG.SUBJ-**PASS**-hit
'I got hit.' (1st person passive)

c. (ha'e) o-**ñe**-nupa
(s/he) 3.SUBJ-**PASS**-hit
'S/he got hit.' (3rd person passive)

Across the board, passives cannot take inverse/stative agreement (27).

(27) a. *che-ñe-nupa
1SG.OBJ-PASS-hit
Int: 'I got hit.'

b. *i-ñe-nupa
3.OBJ-PASS-hit
Int: 'S/h got hit.'

In addition, passives cannot take *by-phrases*. Descriptively, there can only be one overtly realized argument in a passivized transitive clause (adverbs or adjuncts are allowed). Whenever there are two arguments expressed in the passive of a transitive, speakers reject the sentence and instead use the active version. This is not an uncommon trait and many languages do not allow for overt *by*-phrases in passives. In my fieldwork I have found that all transitive verbs I tested in Guarani may be passivized (but with some difficulty as mentioned).

Passivizing intransitives

Unergative verbs in Guarani may be passivized to receive an impersonal interpretation (Zubizarreta and Pancheva 2017a; Estigarribia 2020) and generally correspond to the meanings of impersonal passives in other languages (Comrie 1977; Perlmutter 1978).[12] These are shown in (28). The unergative verbs *jeroky* 'to dance' in (28a), *mano* 'to die' in (28b), *kiriĩ* 'to be quiet' in (28c), and *kuaa* 'to know' in (28d) may all be passivized.[13]

(28) a. o-**je**-jeroky
3.SUBJ-**PASS**-dance
'There was a lot of dancing.' (context = wedding)

b. o-**ñe**-mano
3.SUBJ-**PASS**-die
'There was lots of dying/death.' (context = war/battle)

c. o-**ñe**-kiriri̇̃
3.SUBJ-**PASS**-quiet
'There was a lot of silence/a lot people shut up.' (context = football match)

d. o-**je**-kuaa
3.SUBJ-**PASS**-know
'There was a lot of knowing/meeting.' (context = conference/meeting)

However, despite contextual saliency like crying/remembrance at the funeral, unaccusative verbs *cannot* be passivized (29). A possible confound is the fact that passives can never take inverse agreement (mentioned above). To avoid this confound, namely that the forms in (29) are bad on grounds independent of the passivization of an unaccusative, I tested these forms with direct agreement and they are equally unacceptable (if not worse) to native speakers of the language (30).

(29) a. *i-**ñe**-h-asẽ
3.OBJ-**PASS**-DIR-cry
Int: 'There was crying.' (context = funeral)

b. *i-**ñe**-mandu'a
3.OBJ-**PASS**-remember
Int: 'There was remembering.' (context = funeral/wake)

[12]Both Zubizarreta and Pancheva (2017a) and Estigarribia (2020) demonstrate that this construction is available for "active" intransitives in Guarani. However, I believe this is the first record of the observation that, in Guarani, this cannot be done with "stative" intransitives.

[13]The contexts here may be important to clarify. For (28a) it should be self explanatory that at weddings there is a lot of dancing. (28b) may be used to describe a particularly violent battle in a war or a bloody night of violence on the streets. (28c) can be used at a football match where the home team has a goal scored against them and the entire stadium goes silent. (28d) can be used after leaving a successful meeting in which many people met/ended up knowing a lot of things.

c. *i-**je**-japu
3.OBJ-**PASS**-lie
Int: 'There was lying.' (context = political speech)

(30) a. *o-**ñe**-h-asẽ
3.SUBJ-**PASS**-DIR-cry
Int: 'There was crying.' (context = funeral)

b. *o-**ñe**-mandu'a
3.SUBJ-**PASS**-remember
Int: 'There was remembering.' (context = funeral/wake)

c. *o-**je**-japu
3.SUBJ-**PASS**-lie
Int: 'There was lying.' (context = political speech)

According to native speakers, in order to approximate the meaning of the impersonal passive with a unaccusative root as in (29b), one may use a form like (31). However, they note that this sentence still doesn't have the exact same meaning as the grammatical passivization of unergatives above in (28).

(31) (heta) i-h-asẽ/japu/mandu'a
(lots) 3.OBJ-DIR-cry/lie/remember
'S/he (or they) cried/lied/remembered (a lot).'

Passivization, in particular of intransitives to derive the impersonal passive, is a common diagnostic of unergativity cross-linguistically. For example German (32) and Spanish (33) both show the same unergative/unaccusative split w.r.t. passivization as Guarani. The difference of course being that in German/Spanish *sterben/morir* 'die' is unaccusative but in Guarani *mano* 'to die' seems to be unergative.

(32) *German unergatives, but not unaccusatives, may be passivized:*

a. es wurde getanzt/gegessen
it became danced/eaten
'There was a lot of dancing/eating.'

b. *es wurde gestorben/gefallen
it became died/fallen
Intended: 'Many people died/fell.'

(33) *Spanish unergatives, but not unaccusatives, may be passivized:*

a. se bailó/comió
REFL danced/ate
'There was a lot of dancing/eating.'

b. *se murió/cayó
REFL died/fell
Intended: 'many people died/fell.'

A central assumption about these impersonal passives and the fact that unaccusatives may not undergo such a process is that, if passivization involves *demotion* of a subject, then verbs or constructions which do not contain a subject may not be passivized. If the structure of unaccusatives is such that their sole argument is introduced as the complement of V (in the VP, not spec,*v*P) then these arguments cannot be demoted to a position they already occupy (Comrie 1977; Perlmutter 1978).

3.3 Controlling agreement in Guarani

While the preceding diagnostic has been applied in other languages to diagnose unaccusativity, the next diagnostic is more specific to Guarani. In short, only additional arguments of unergative verbs may control agreement and additional arguments of unaccusative verbs cannot control agreement. I will argue that this follows straightforwardly from the differences in sole argument position in each verb class: unergatives can freely add an argument as complement of V but in unaccusatives this position is already filled and so the argument must be introduced by other means. Those other means, as outlined here, is by forming an applicative of an unaccusative. Before diving into the specifics, a broader knowledge of what arguments control agreement in Guarani is necessary.

Recall that Guarani exhibits direct/inverse agreement in transitives. Direct Objects (DO) of *di*transitives behave like DOs in transitives in that they also control inverse agreement when they outrank the subject. In a sentence like (34a) the 1st person DO outranks the 3rd person subject and may control agreement. Not central to this discussion, but of general interest, is that it *need* not control agreement as shown in (34b).[14]

(34) a. Laure **che**-me'ẽ (chéve) ichupe
Laure **1SG.OBJ**-give (me) to.him
'Laure gave me to him.' (S=3, DO=1, IO=3)

b. Laure **o**-me'ẽ (chéve) ichupe
Laure **3.SUBJ**-give (me) to.him
'Laure gave me to him.' (S=3, DO=1, IO=3)

Indirect Objects (IO) of ditransitives, on the other hand, *cannot* control agreement, even if they outrank the subject as in (35a). Instead, the subject must control agreement as in (35b).

[14] For a sketch of an analysis of this, see Appendix A for evidence that ApplP is a phase in Guarani and, if the DO escapes this phase, it may control agreement. Otherwise it is inaccessible to the probe.

(35) a. *Laure **che**-me'ẽ ichupe (chéve)
Laure **1SG.OBJ**-give him (to.me)
Int: 'Laure gave him to me.' (S=3, DO=3, IO=1)

b. Laure **o**-me'ẽ ichupe (chéve)
Laure **3.SUBJ**-give him (to.me)
'Laure gave him to me.' (S=3, DO=3, IO=1)

The same applies for arguments like possessives (36a)/(36b), or obliques/PPs as in (36c)/(36d). Across the board these types of additional arguments which bear special case markers cannot control agreement.

(36) a. o-ho che-roga-pe
3.SUBJ-go my-house-LOC
'He went to my house.'

b. *che-ho che-roga-pe
1SG.OBJ-go my-house-LOC
Int: 'He went to my house.'

c. (ha'e) o-h-ekýi nde-hegui ne-ñe'ẽ
(s/he) 3.SUBJ-DIR-take you-OBL your-language
'S/he is taking away your language.' (adapted from Estigarribia (2020))

d. *(ha'e) nde-r-ekýi nde-hegui ne-ñe'ẽ
(s/he) 2SG.OBJ-INV-take you-OBL your-language
'S/he is taking away your language.'

To summarize, aside from subjects in spec,*v*P, only Direct Objects of (di)transitives may control agreement. No other arguments can control agreement. I set aside the particular analysis of *why* these arguments cannot control agreement but suggest that there are two logical possibilities which differ depending on one's assumptions about these oblique markers in Guarani (case marking or PPs): i) Guarani is a case discriminating language w.r.t. φ-agreement or ii) PPs block φ-agreement. They are similar in nature and it is unclear how, in Guarani, one could tease apart the different predictions that each analysis makes.

Additional arguments of intransitives

Unergative verbs may freely introduce an additional argument. This is shown in (37a) in which the intransitive *guata* 'to walk' takes an argument *jagua* 'dog'. If this additional argument outranks the subject on the person hierarchy like in (37b), this argument can crucially control agreement. The same applies to the unergative verb *kuaa* 'to know': the subject can control agreement in (37c) and the object can when it outranks the subject (37d).

(37) a. (che) a-guata (jagua)
(I) 1SG.SUBJ-walk (dog)
'I walked (the dog).'

b. jagua che-guata (chéve)
dog 1SG.OBJ-walk (me)
'The dog walked me.'

c. (che) ai-kuaa (Romi-pe)
(I) 1SG.SUBJ-know (Romi-DOM)
'I know/met (Romi).'

d. Romi che-kuaa (chéve)
Romi 1SG.OBJ-know (me)
'Romi knows/met me.'

Unaccusative verbs may also (relatively) freely introduce additional arguments. This is shown in (38a) in which there is an additional 1st person oblique argument. However, although this 1st person oblique outranks the 3rd person subject, it *cannot* control agreement (38b). The same applies for the other unaccusative verb *japu* 'to lie' in (37c)/(37d).[15] What is important about the verb *japu* 'to lie' is that the argument it introduces is always marked with the DOM suffix *-pe* or, for person pronouns, *-ve*. Thus the object of (37b) and (38d) are string identical but one can control agreement and the other cannot.

(38) a. (ha'e) i-mandu'a (**cherehe**)
(s/he) 3.OBJ-remember (**me.OBL**)
'S/he remembers (me).'

b. *(ha'e) **che**-mandu'a (**cherehe**)
(s/he) **1SG.OBJ**-remember (**me.OBL**)
Int: 'S/he remembers me.'

c. (ha'e) i-japu (**chéve**)
(s/he) 3.OBJ-lie (**me**)
'S/he lies (to me).'

d. *(ha'e) **che**-japu (**chéve**)
(s/he) **1SG.OBJ**-lie (**me**)
Int: 'S/he lies to me.'

Clearly there is a similarity between the argument structures of these alternating unergative verbs and transitives because the additional arguments may control agreement. On the other hand, there is a parallel between IOs and the additional arguments of unaccusative intransitives. This helps explain why additional arguments of unergatives control agreement: they are Merged as complement of V in the VP like an object in a transitive clause.

[15]There are a few other PPs/cases which are used to introduced arguments for other intransitives. For example, the verb *heserái* 'to forget' introduces arguments with *hegui* which roughly means 'from/about'. The choice of PP seems to be dependent on the particular unaccusative verb.

This position (the complement of V) is already occupied in unaccusative verbs because this is where the sole argument is introduced. Therefore, to introduce another argument it must be Merged in a different position. Namely, these additional arguments of unaccusative verbs are Merged in spec,ApplP as obliques and are applicatives of unaccusatives (Baker 2014; Deal 2019; den Dikken 2023) and have the following structure (39)

(39) $[_{vP}\ v\ [_{\text{ApplP}}\ \text{DP/PP}\ \ \text{Appl}\ [_{\text{VP}}\ \text{V}\ \ \text{DP}\ ]\ ]\ ]$

3.4 Empirical summary

Before proceeding to the analysis and theoretical discussion, it is worth revisiting all three generalizations which will need to be accounted for. They are listed in (40). For transitives, the highest ranking argument on the PH (1>2>3) controls agreement (40a) and local direct scenarios (1>2) result in a portmanteau (40b). For intransitives, I argued that so-called "active" verbs are, in fact, unergative and so-called "stative" verbs are, in fact, unaccusative. This syntactic perspective differs from previous proposals but is supported by language-internal diagnostics of unaccusativity like passivization and which arguments can/cannot control agreement. In the following sections I develop a principled theoretical analysis of the generalizations presented in this section.

(40) *Generalizations of Guarani verbal agreement:*

a. *direct/inverse agreement:*
the highest ranking argument on the PH (1>2>3) controls agreement

b. *portmanteau in local direct:*
1>2 configurations result in a portmanteau representing features from both arguments

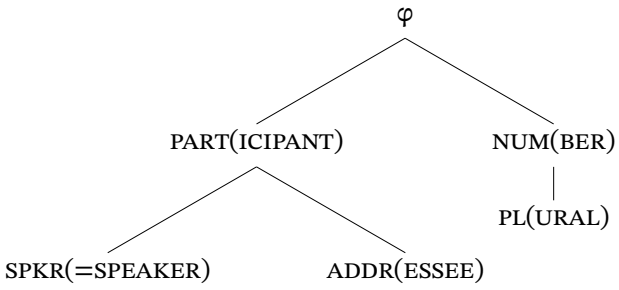
c. *active/stative agreement:*
direct/inverse agreement in unergatives and unaccusatives, respectively

4 Interaction and satisfaction (Deal 2015, 2024)

In this section, I will introduce the interaction and satisfaction model of Agree (Deal 2015, 2024). In particular, the model of Agree which I adopt in this paper is that of Deal (2015) in which satisfaction requires interaction and there is no dynamic interaction. I will demonstrate that the interaction and satisfaction model of Agree is successful in capturing some (e.g. 1>3/3>1 direct/inverse), but not all (e.g. the portmanteau in 1>2 or active/stative split), of the agreement patterns in Guarani. This will motivate the adoption of probe relaxation into the interaction and satisfaction model of Agree in the next section where I demonstrate that this combination successfully captures all agreement patterns in a unified and elegant manner.

Following Harley and Ritter (2002) and Béjar (2003), features on DPs are structurally complex themselves. They are built up in geometries as in (41). These geometries allow us to refer to the relative complexity of feature geometries between different persons in a language. The full geometry represents the features expressed by a 1st person inclusive pronoun. This follows because 1st person inclusive includes 1st persons which are made up of [φ, PART, SPKR]. It also expresses 2nd person ([ADDR]) and plural features which entail [NUM,PL]. 3rd persons, on the other hand, are the least-specified DPs: minimally containing [φ].[16]

(41)



Following much work on PH effects (Béjar 2003; Béjar and Rezac 2009; Deal 2024; Clem 2022: a.m.o) I assume that Agree occurs in *cycles* and proceeds simultaneously with structure building. Upon first Merge, the search space of a probe on *v* will only be the complement of *v* (the VP). *v* then introduces the subject/EA/specifier and undergoes reprojection. This reprojection redefines the search space of Agree that the probe on *v* has access to. Namely, it can now only see into its specifier. This architecture is model-independent: one can adopt such a view of Agree/structure building under a Béjar and Rezac-style model where probes are articulated into unvalued segments [*u*F], or a Deal-style analysis in which probes bear conditions (interaction/satisfaction). The process of cyclic Agree and the domain updating associated with expansion is shown in (42).[17]

(42) a. **Step 1:** [$_{vP}$ v_{φ} $\boxed{[\,_{VP}\ V\ DO\,]}$] (search domain is boxed)

b. **Step 2:** [$_{vP}$ Subj v_{φ} [$_{VP}$ V DO]]

c. **Step 3:** [$_{vP}$ $\boxed{\text{Subj}}$ v_{φ} [$_{VP}$ V DO]]

Unlike models of Agree which operate under the assumption that probes carry unvalued segments [*u*F] which must find the corresponding [F] feature to value it, Deal's (2015; 2024) interaction and satisfaction model of Agree instead involves two conditions

[16] 3rd persons of course can differ in their features as in gender/number. Because 3rd persons in Guarani have no gender nor number distinction. I consider them to bear only φ.

[17] The domain of the probe in the second-cycle of Agree in (42) is restricted to its specifier. This is an assumption made in more recent literature (Deal 2015, 2024; Clem 2022, 2023: amongst many others). However, in the original formulation of Cyclic Agree from Béjar and Rezac (2009) the probe reprojects *above* the EA such that the domain of the probe is its entire c-command domain. This plays a role in the Guarani data discussed, however, I believe it is completely possible to reconcile the analysis to fit either definition of the domain of the reprojected probe .

on probes: i) an interaction condition and ii) a satisfaction condition. The interaction condition dictates what features a probe may Agree with and/or copy over. The satisfaction condition determines what feature, upon interacting with it, will halt a probes search.[18] This model has been adopted to account for person restrictions like the PCC (Deal 2024), inverse agreement and marking (Oxford 2022; Clem 2022), and, most recently, Case assignment (Clem and Deal to appear).

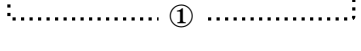
4.1 Interaction and satisfaction and direct/inverse agreement in Guarani

To see how interaction and satisfaction conditions on the probe work in action, recall the pattern of transitive verbal agreement in Guarani outlined in Section 2. The highest ranking argument on the PH (1>2>3) always controls agreement. To capture a similar pattern in the related language Tupinambá, Deal (2024) proposes that *v* bears the following conditions: [INT:φ, SAT: SPKR]. With these settings, the probe will be able to Agree with any DP that bears at least [φ] but will stop Agreeing once it finds a DP that bears [SPKR]. Generally speaking, under the interaction and satisfaction model of Agree, inverse configurations will give rise to single Agree and direct configurations will give rise to double Agree—a feature of the model that Deal (2024) uses to derive the Person Case Constraint (PCC) across a variety of languages.

The derivation of 3>1 inverse configuration, in which the probe is fully-satisfied in the first-cycle because its satisfaction condition is met, is shown in (43). This results in a probe with only 1st person features as in (43d). This will correspond to the Vocabulary Item for 1st person inverse agreement: *che-*.

(43) *Derivation of 2/3>1 inverse:*

a. [$_{vP}$ $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V 1SG]] (1st cycle [SPKR] satisfies probe)



b. [$_{vP}$ 3/2SG $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V 1SG]] (EA introduced)

c. [$_{vP}$ 3/2SG $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V 1SG]] (no Agree)

d. *che* ⇔ [φ,PART,SPKR]$_{\varphi}$ (example (12) above)

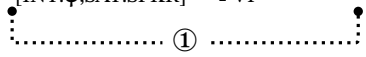
In a 1>3 direct configuration, on the other hand, the probe will Agree with both because both meet the probe's interaction condition. However, the structurally higher 1st person argument meets the probe's satisfaction condition and will therefore cause the probe to stop once the probe Agrees with it. The derivation is shown in (44) and the resulting complex

[18] This is the original and principled formulation of satisfaction from Deal (2015) in which satisfaction *entails* (i.e. requires) interaction. This is the view that I adopt here. However, in more recent work, this assumption is no longer made (Deal 2024; Clem 2022; Clem and Deal to appear).

probe structure, with features from both DPs, is shown in (44d). This will correspond to the Vocabulary Item for 1st person direct agreement: *a-*.

(44) *Derivation of 1>3 direct:*

a. [$_{vP}$ $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V 3SG]] (1st cycle [φ] copied to probe)



b. [$_{vP}$ 1SG $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V 3SG]] (EA introduced)

c. [$_{vP}$ 1SG $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V 1SG]] (probe satisfied by Agree w/ EA)

d. $a \Leftrightarrow [[\varphi], [\varphi,\text{PART,SPKR}]]_{\varphi}$ (example (7a) above)

4.2 Problems for the interaction and satisfaction model in Guarani

While the interaction and satisfaction model successfully derives the direct/inverse agreement pattern in Guarani, it faces problems which will be solved in Section 5 with the adoption of probe relaxation. Before that, I wish to make explicit the problems that the interaction and satisfaction model faces in Guarani: i) it does not make the correct empirical distinction for 3>3 and 3rd person intransitives, ii) it cannot derive the 2>3/3>2 distinction, and iii) it does not explain why, in Guarani, there is only a portmanteau in 1>2 but not 2>3, 1>3, 3>3.

4.2.1 3>3 and 3rd person intransitives

Before exploring how the interaction and satisfaction model fares w.r.t. 3>3 configurations and intransitives, I repeat the crucial data in (45). Observe that the agreement in 3>3 (45a) and 3rd person unergatives (45b) is the same: *o-* (**bolded** in (45)). This is not the agreement marker that appears in 3rd person unaccusatives where, instead, the *i-* is used (boxed in (45c)). I wish to stress that, based on this data, the empirical facts strongly support an analysis which groups 3>3 and 3rd person unergatives together, to the exclusion of 3rd person unaccusatives.

(45) *3rd person agreement in Guarani:*

a. Huã **oi**-pytyvõ Kalo-pe
John **3SUBJ**-help Carlos-DOM
'John helped Carlos.' (3>3: *o-*)

b. Huã **o**-guata
John **3SUBJ**-walk
'John walked.' (3rd unerg.: *o-*)

c. Huã i-h-asẽ
John 3OBJ-DIR-cry
'John cried.' (3rd unacc.: *i-*)

With the data in (45) in mind, we may now consider a 3>3 direct configuration in which the 3rd person subject marker (*o-*) surfaces. Here, there is double Agree with both 3rd persons because both arguments meet the interaction condition on the probe, but neither meet the satisfaction feature (46). The resulting Vocabulary Item in (46d) contains two instances of the [φ] feature: one from each 3rd person DP. This will correspond to the Vocabulary Item for 3rd person subject agreement: *o-*.

(46) *Derivation of 3>3 direct:*

a. [$_{vP}$ $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V 3SG]] (1st cycle [φ] copied to probe)

① ① ①

b. [$_{vP}$ 3SG $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V 3SG]] (EA introduced)

c. [$_{vP}$ 3SG $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V 3SG]] (probe copies [φ] from EA)

② ②

d. $o \Leftrightarrow [[\varphi], [\varphi]]_{\varphi}$ (example (45a) above)

Moving on to intransitives, recall that 3rd person unergative agreement is the same as 3>3 agreement (*o-*), but different from 3rd person unaccusative agreement (*i-*). The derivation in (47) shows the derivation of a 3rd person unergative in which the probe fails to Agree in the first cycle, but Agrees with the EA in the second cycle resulting in the probe structure in (47d) with a single value of the [φ] feature. Thus, we will need to modify the specification of our VI rule for 3rd person subject agreement (*o-*) to simply be a single instance of [φ] on the probe.[19]

(47) *Derivation of 3rd person unergative:*

a. [$_{vP}$ $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V]] (1st cycle failed Agree)

b. [$_{vP}$ 3SG $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V]] (EA introduced)

c. [$_{vP}$ 3SG $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V]] (probe copies [φ] from EA)

② ②

d. $o \Leftrightarrow [\varphi]_{\varphi}$ (example (45b) above)

Finally, 3rd person unaccusative verbs result in successful Agree in the first-cycle and failed Agree in the second cycle (the inverse of 3rd person unergatives), resulting in the probe

[19] Of course, there are other solutions but this is the most immediately available for consideration.

structure in (48c) with a single value of the [φ] feature. Notice that the probe structures for 3rd person unergative and 3rd person unaccusative verbs are the same because, over the course of each of the derivations, only a single copy of [φ] is copied over. This is crucially different from 3>3 transitives in which two instances of [φ] are copied over [[φ],[φ]].[20]

(48) *Derivation of 3rd person unaccusative:*

a. $[_{vP}\ v_{[INT:\varphi,SAT:SPKR]}\ [_{VP}\ V\ 3SG\ ]\ ]$ (1st cycle [φ] copied to probe)

b. $[_{vP}\ v_{[INT:\varphi,SAT:SPKR]}\ [_{VP}\ V\ 3SG\ ]\ ]$ (no EA introduced)

c. *i-* ⇔ $[\varphi]_{\varphi}$ (example (45c) above)

The empirical facts of Guarani suggest that the derivations for 3>3 and 3rd person unergatives must form a natural class w.r.t. the features copied by the probe. There are thus two problems for a simple interaction and satisfaction account as just presented: i) the probe copies the same features in both types of intransitives (only a single copy of [φ]) despite realizing different morphology (*o-* in unergatives and *i-* in unaccusatives) and ii) none of the probe structures in intransitives match the probe structure in 3>3 transitives which is spelled out as *o-*, the same as in 3rd person unergatives. No morphological rule or principle can reconcile either of these problems. I will show that probe relaxation directly avoids this problem and correctly groups 3>3 and 3rd person unergatives together to the exclusion of 3rd person unaccusatives.

4.2.2 Other problems for interaction and satisfaction and Guarani

Before proceeding to the discussion of probe relaxation, it is worth pointing two other potential problems with the interaction and satisfaction model of Agree w.r.t. Guarani verbal agreement: i) the 2>3 and 3>2 distinction and ii) portmanteau in only 1>2. In 2>3 and 3>2 both DPs meet the interaction condition on the probe, but neither meet the satisfaction condition. This means that their derivations will be parallel and there is no clear way to distinguish between them. Despite this, the verb hosts different morphology in either configuration: *re-* in 2>3 and *nde-* in 3>2. Deal's (2024) solution for a similar pattern in the related language Tupinambá is to adopt dynamic interaction of the [PART] feature. With this, if the probe Agrees with a 2nd person IA, it will only be able to Agree with other [PART]-bearing DPs in subsequent cycles. Thus preventing Agree with the 3rd person EA in 3>2.

While dynamic interaction of [PART] derives the 2>3/3>2 distinction, another question that arises with the interaction and satisfaction model is why the portmanteau form only appears in 1>2. In the interaction and satisfaction model with dynamic interaction,

[20] It may be tempting to propose that these 3rd person unergative verbs are hidden transitives which would help derive the same probe structure between 3>3 and 3rd person unergatives. However, as mentioned above, this cannot be the case because unergative verbs like *ñani* 'to run' and *yta* 'to swim' cannot take an object.

there is double Agree in 1>3, 2>3, 3>3, and 1>2. However, the only configuration which shows a portmanteau is 1>2. By adopting the interaction and satisfaction model of Agree, double Agree occurs more broadly in the paradigm than the morphology suggests is necessary. In fact, the same agreement surfaces in 1>3, 2>3, and 3>3 as in intransitives with just a single argument. In all cases, therefore, the morphology expresses the features of the subject and the subject only. The unique member of the paradigm, which results in morphology that expresses features from both, is 1>2. These problems are not fatal to an interaction and satisfaction model and one may stipulate these patterns (see fn. 21), but it does not follow in a principled manner.[21] Because of the fact that dynamic interaction does not extend straightforwardly to all three generalizations in Guarani, I will maintain the core interaction and satisfaction model of Agree, but adopt probe relaxation. This combination (int/sat + relaxation) will straightforwardly capture all three generalizations in Guarani.

5 Probe relaxation

The motivation for adopting probe relaxation into our model of Agree from Guarani is largely theoretical. However, there is strong empirical evidence that something like probe relaxation is required independently. Before introducing the data, it will be helpful to understand precisely what type of pattern to look for. Patterns which are representative of probe relaxation are those in which a probe will prefer to Agree with something specific but, if there is nothing that meets its search condition, it will settle for something else. To further define what one should look for, a formal definition of probe relaxation is provided in (5). It states that a probe with a search condition X (that is not φ but *entails* φ) may relax to φ upon failed first-cycle Agree.

(49) *Probe relaxation:*
If a π probe on head H bears an interaction condition X (where X ≠ [φ] and X geometrically entails [φ]) and first-cycle Agree fails because there is no DP that bears X in the domain of H, the probe relaxes its interaction condition to [φ] upon reprojection.

Considering the feature geometry above in (41), there are multiple possibilities including [ADDR] ⇝ [φ]. This relaxation path represents a language in which agreement preferentially takes place with 2nd persons but, in the absence of a 2nd person, agreement takes place with anything. Quechua, a language spoken by 7.2 million people across Peru, Ecuador, Bolivia, and Chile, exhibits precisely this pattern. It involves what the literature has described as the "[Addressee]-driven Subject Marking Anomaly (A-SMA)" (see Muysken (1981); Weber (1983); Milliken (1984); Van de Kerke (1996); Julca Guerrero (2008);

[21] For example, one may imagine that [↑φ] is dynamic by only on 3rd person DPs. The probe would start out with [PART] as its interaction condition and only upon hitting a 3rd person object would it update its interaction condition to [φ]. This essentially derives the effects of probe relaxation with dynamic interaction (thanks to Amy Rose Deal for pointing out this alternative to me!). It's unclear, however, whether this could capture all three generalizations in Guarani.

Myler (2017); amongst many others). Put in plain terms, the pattern can be thought of as: "2nd person or (canonical) subject".[22]

The basic agreement pattern for "subject" clitics in Huaylas Quechua (as described in Julca Guerrero (2008)) is that 2nd persons control agreement regardless of whether they are the subject (50a) or the object (50b). Notice that Quechua differs from Guarani in that, in Quechua, the 2nd person clitic is always realized the same: *nki-*.[23]

(50) *2nd persons consistently control agreement:*

a. kuya-**nki**
love-**2**
'You love him/her.' (Julca Guerrero 2008: 9b, p. 25) (2>3: 2nd person clitic)

b. kuya-shu-**nki**
love-2INV-**2**
'S/he loves you.'(Julca Guerrero 2008: 11, p. 26) (3>2: 2nd person clitic)

However, if there is no 2nd person in the clause, the subject controls agreement. In 1>3 configurations as in (51a) the 1st person subject controls agreement. While in 3>1 configurations (51b) the 3rd person subject controls agreement. Unlike Guarani, 1st persons and 3rd persons in Quechua do not seem to compete against each other for agreement in the same way. In other words, there does not seem to be hierarchical agreement of 1st/3rd persons. Instead, probes in Quechua only prefer Agreeing with 2nd persons (the hierarchy seems to be 2>1/3).

(51) *Subject controls agreement in absence of 2nd person:*

a. kuya-**a**
love-**1SUBJ**
'I love him/her.' (Julca Guerrero 2008: 9b, p. 25) (1>3: 1st person clitic)

b. maqa-ma-**n**
hit-1INV-**3SUBJ**
'S/he loves me.' (Julca Guerrero 2008: 8b, p. 24) (3>1: 3nd person clitic)

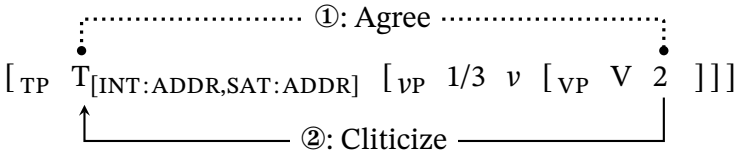
This is quite striking. The probe preferentially Agrees with 2nd persons, but if there is none it settles for the canonical subject. I argue that this is direct empirical evidence for the process of probe relaxation: T's φ-probe bears the interaction condition [ADDR] when it is Merged, but the interaction condition relaxes to [φ] upon failed first-cycle Agree. This also requires that T move the subject to spec,TP and that it restricts its search domain to its specifier just as *v* does in Guarani. T thus bears a [•D•] feature to move the subject

[22]Quechua is a large language family with lots of variation. I choose to explore this pattern in the Huaylas dialect as documented in Julca Guerrero (2008).

[23]Without showing how probe relaxation first this may seem puzzling. However, it follows directly from a difference in probe height between the two languages. Myler (2017) shows that the probe responsible for this clitic is high, on T. Because of this position, when it searches the structure if there is a 2nd person the probe will always have access to it on the first cycle and the first cycle alone. In Guarani, on the other hand, the probe may Agree with 1st and 2nd persons in either cycle (more details below).

to spec,TP.[24] The derivation of a 2nd person object clitic on T is shown in (52). Because this derivation involves satisfaction on the first-cycle I only represent it in a single step. T Merges into the structure with the interaction condition [ADDR] and when it finds the 2nd person object it Agrees with it and cliticizes it—skipping over the 1st or 3rd person EA. The derivation of a structure with a 2nd person subject plays out identically, except for the position of the 2nd person. It is important to note that, under probe relaxation, the specific interaction condition allows the probe to *ignore* certain DPs in the structure as it does in Quechua.

(52) *Clitic doubling with 2nd person objects:*



When there is no 2nd person in the structure, the probe fails to Agree in the first-cycle. From here, the high probe on T moves the subject from spec,*v*P to its specifier (satisfying its EPP feature), relaxes its search condition, and Agrees with whatever moves to its specifier. This will be either a 1st or 3rd person, depending on the structure. To see how this plays out, consider the derivation in (53). In the first-cycle of Agree (53a) Agree fails because neither argument is 2nd person. This failed Agree will cause the probe to relax its search condition from [ADDR] to [φ] (53b). From here, the [•D•] feature on T moves the subject to its specifier (53c) and Agrees with it (53d). This successfully derives the "2nd person or subject" pattern outlined briefly here.

(53) *Clitic doubling with 3rd person subject:*

a. **Step 1:** [TP T[I:ADDR,S:ADDR] [... DP_{3SG} [... DP_{1SG}]]] ⟶ failed Agree

b. **Step 3:** relaxation: [INT:ADDR] ⇝ [INT:φ]

c. **Step 3:** [TP $DP_{[3SG]}$ T[INT:φ,SAT:ADDR] [... ~~$DP_{[3SG]}$~~ [... $DP_{[1SG]}$]]]

d. **Step 4:** [TP $DP_{[3SG]}$ T[INT:φ,SAT:ADDR] [... ~~$DP_{[3SG]}$~~ [... $DP_{[1SG]}$]]]

Quechua provides direct empirical evidence that something like probe relaxation is independently required to adopt into our model of Agree. In the remainder of this section, I return to the discussion of three generalizations in Guarani. As I showed in Section 4, the base interaction and satisfaction model without probe relaxation cannot extend straightforwardly to all three. However, I will now show that by adopting probe relaxation into the interaction and satisfaction model all three generalizations are naturally captured.

[24]For work on cyclic Agree with higher probes and cyclic expansion, see Keine and Dash (2022); Clem (2023).

5.1 Probe relaxation in Guarani

Having empirically motivated that probe relaxation is independently motivated in our theory of Agree, we can observe the theoretical evidence for probe relaxation in Guarani. In the rest of this section, I show that adding probe relaxation to the interaction and satisfaction model of Agree allows for a straightforward and unified analysis of all three generalizations in Guarani. I will being with the direct/inverse and show that the inverse is the result of single Agree and no relaxation, while the direct is the result of relaxation and then single Agree with the EA. This will extend directly to intransitives where unergatives involve relaxation and unaccusatives (except 3rd person unaccusatives) do not. Finally, the portmanteau in local direct scenarios is the only cell in which double Agree arises for probe relaxation and it therefore follows that this is the only cell in the paradigm which gives rise to special portmanteau morphology.

The probe will Merge with an interaction condition of [PART] as in (54a) but, upon failed first-cycle Agree and reprojection, the probe will relax its interaction condition to [φ] as in (54b). Thus, the interaction condition is different from the base interaction and satisfaction model without probe relaxation, but the satisfaction condition remains the same ([SPKR]). The only DPs that bear [PART] and therefore may take part in first-cycle Agree are 1st and 2nd person.

(54) *Probe relaxation in Guarani:*

a. *Probe specification upon Merge:*
$v_{[\text{INT:PART, SAT:SPKR}]}$

b. *relaxation:*
[INT:PART] $\rightsquigarrow$ [INT:φ]

c. *Probe specification upon relaxation:*
$v_{[\text{INT:}\varphi\text{, SAT:SPKR}]}$

I preface the analysis by presenting the Vocabulary Items I assume for Vocabulary Insertion for Guarani. They are stated in (55). Observe that the 1st person inverse and 1st person direct probe has copied the same features (all features that a 1st person bears). The inverse and direct VIs are distinguishable at the level of their interaction condition. In the direct, because the probe relaxed, the interaction condition will be [φ] and in the inverse the interaction condition will be [PART] because no relaxation took place. The same applies to 2nd person direct/inverse. This is appealing because, as demonstrated, the same agreement surfaces in 2nd person unergatives as in 2>3. However, without a 3rd person object in a 2nd person unergative, we may derive the same probe structure.

(55) *Table of VIs in Guarani under a probe relaxation analysis:*

Inverse VIs	**(no relaxation, single Agree)**		
1SG.OBJ:	$[\text{SPKR}]_{\text{INT:PART}}$	↔	*che-*
1EXCL.OBJ:	$[\text{SPKR,PL}]_{\text{INT:PART}}$	↔	*ore-*
1INCL.OBJ:	$[\text{SPKR,PL,ADDR}]_{\text{INT:PART}}$	↔	*ñande-*
2SG.OBJ:	$[\text{ADDR}]_{\text{INT:PART}}$	↔	*nde-*
2PL.OBJ:	$[\text{ADDR,PL}]_{\text{INT:PART}}$	↔	*pende-*
Portmanteau VIs	**(no relaxation, double Agree)**		
1>2SG.PORT	$[\{\{\text{SPKR}\},\{\text{ADDR,SG}\}\}]_{\text{INT:PART}}$	↔	*ro-*
1>2PL.PORT	$[\{\{\text{SPKR}\},\{\text{ADDR,PL}\}\}]_{\text{INT:PART}}$	↔	*poro-*
Direct VIs	**(relaxation, single Agree)**		
1SG.SUBJ:	$[\text{SPKR}]_{\text{INT:}\varphi}$	↔	*a-*
1EXCL.SUBJ:	$[\text{SPKR,PL}]_{\text{INT:}\varphi}$	↔	*ro-*
1INCL.SUBJ:	$[\text{SPKR,ADDR,PL}]_{\text{INT:}\varphi}$	↔	*ja-*
2SG.SUBJ:	$[\text{ADDR}]_{\text{INT:}\varphi}$	↔	*re-*
2PL.SUBJ:	$[\text{ADDR,PL}]_{\text{INT:}\varphi}$	↔	*pe-*
3SUBJ:	$[\varphi]_{\text{INT:}\varphi}$	↔	*o-*
3rd person unaccusative	**(relaxation, no Agree)**		
3OBJ	$[\ \_\_\ ]_{[\text{INT:}\varphi]}$	↔	*i-*

5.1.1 Direct agreement involves relaxation, single Agree with EA

I will begin by showcasing the derivations which involve probe relaxation. Namely, direct transitives with 3rd person objects. These configurations result in failed first-cycle Agree because either one of two things: i) the object is 3rd person and therefore does not meet the interaction condition of [PART] or ii) there is no object as in unergatives. After failing to Agree and after the EA is introduced by *v*, the φ-probe on *v* relaxes its interaction condition to [φ] and searches its specifier. The derivation of a 1>3 configuration is shown in (56). The derivation for 2>3 will proceed nearly identically and so it is omitted for space.[25]

(56) *Derivation of 1>3 direct:*

a. **Step 1:** $[\ _{vP}\ \ v_{[\text{INT:PART,SAT:SPKR}]}\ \ [\ _{VP}\ \ \text{V}\ \ 3\text{SG}\ \ ]\ ]$ (failed Agree)

b. **Step 2:** *relaxation:* [INT: PART] ⇝ [INT: φ]

c. **Step 3:** $[\ _{vP}\ \ 1\text{SG}\ \ v_{[\text{INT:}\varphi,\text{SAT:SPKR}]}\ \ [\ _{VP}\ \ \text{V}\ \ 3\text{SG}\ \ ]\ ]$ (EA introduced)

[25]The difference being twofold: i) the probe copies 2nd person features resulting in a probe structure that matches the 2nd person direct VI and ii) the probe is not satisfied because it did not interact with a DP that bears [SPKR].

d. **Step 4:** [$_{vP}$ 1SG $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V 3SG]] (probe satisfied by EA)

e. **Step 5:** *a-* ⇔ [SPKR[PART[φ]]]$_{[INT:\varphi]}$ (example (7a) above)

In a 3>3 configuration, the probe relaxes and Agrees with the EA only, just like the other cases of direct agreement like 1>3 and 2>3. The probe will bear a single copy of [φ] and match the VI for 3rd person subject agreement *o-*. This derivation will essentially parallel the derivation of a 3rd person unergative which helps explain why they result in the same morphology. Notice, however, that unlike above with the simple interaction and satisfaction model, here only a single instance of the feature [ϕ] is copied over to the probe.

(57) *Derivation of 3>3 direct:*

a. **Step 1:** [$_{vP}$ $v_{[INT:PART,SAT:SPKR]}$ [$_{VP}$ V 3SG]] (1st cycle failed Agree)

b. **Step 2:** *relaxation:* [INT: PART] ⇝ [INT: φ]

c. **Step 3:** [$_{vP}$ 3SG $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V]] (EA introduced)

d. **Step 4:** [$_{vP}$ 3SG $v_{[INT:\varphi,SAT:SPKR]}$ [$_{VP}$ V]] (probe copies [φ] from EA)

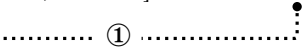
e. **Step 5:** *o-* ⇔ [φ]$_{[INT:\varphi]}$

5.1.2 Inverse agreement involves single Agree, no relaxation

The derivation for 2/3>1 will be nearly identical to the derivation for 3>1 in the interaction and satisfaction model outlined above. This is because the satisfaction condition on the probe remains as [SPKR] (even with the adoption of probe relaxation) and the IA is 1st person and therefore bears [SPKR], causing the probe to cease searching upon Agreeing with it. The important difference to notice is the difference in *interaction* condition. Previously, it was [φ] but under probe relaxation the interaction condition will start out as [PART]. Because the IA meets the probe's interaction condition of [PART] there is no relaxation and successfuly first-cycle Agree. The derivation is shown in (58) and results in a probe that has copied 1st person features but bears an interaction condition of [PART] (58d).

(58) *Derivation of 2/3>1 inverse:*

a. **Step 1:** [$_{vP}$ $v_{[INT:PART,SAT:SPKR]}$ [$_{VP}$ V 1SG]] (probe satisfied by [SPKR])



b. **Step 2:** [$_{vP}$ 2/3 $v_{[INT:PART,SAT:SPKR]}$ [$_{VP}$ V 1SG]] (EA introduced)

c. **Step 3:** [$_{vP}$ 2/3 $v_{[INT:PART,SAT:SPKR]}$ [$_{VP}$ V 1SG]] (no Agree with EA)

d. **Step 4:** *che-* ⇔ [SPKR[PART[φ]]]$_{[INT:\ PART]}$

The derivation for an inverse 3>2 configuration will result in single Agree with the 2nd person IA, but no Agree relation will be established between the probe and the EA. This follows because first-cycle Agree is successful and therefore the probe does not relax. In order for the probe to Agree with 3rd persons, it must relax. A 3>2 derivation results in a probe with only 2nd person features, and an interaction feature of [PART].[26]

(59) *Derivation of 3>2 inverse:*

a. **Step 1:** [$_{vP}$ $v_{[INT:PART,SAT:SPKR]}$ [$_{VP}$ V 2SG]] (probe Agrees with IA)

b. **Step 2:** [$_{vP}$ 3 $v_{[INT:PART,SAT:SPKR]}$ [$_{VP}$ V 2SG]] (EA introduced)

c. **Step 3:** [$_{vP}$ 3 $v_{[INT:PART,SAT:SPKR]}$ [$_{VP}$ V 2SG]] (no Agree with EA)

d. **Step 4:** *nde-* ⇔ [ADDR[PART[φ]]]$_{[INT: PART]}$

5.1.3 Portmanteau in 1>2 involves double Agree, no relaxation

The fact that a portmanteau only appears in 1>2 is captured directly under probe relaxation with a [PART] interaction condition on the probe. This is because, if both arguments bear [PART] and the lower one does not meet the satisfaction condition of the probe, then only in these configurations will double Agree take place. This double Agree results in a complex probe structure which contains features of both DPs. It is therefore derivationally unlike any other configuration and because of this results in special portmanteau morphology. The derivation of a 1>2 configuration is shown in (60).

(60) a. **Step 1:** [$_{vP}$ $v_{[INT:PART,SAT:SPKR]}$ [$_{VP}$ V 2SG]] (first-cycle Agree w/ IA)

b. **Step 2:** [$_{vP}$ 1 $v_{[INT:φ,SAT:SPKR]}$ [$_{VP}$ V 2SG]] (EA introduced)

c. **Step 3:** [$_{vP}$ 1 $v_{[INT:φ,SAT:SPKR]}$ [$_{VP}$ V 2SG]] (Agree with EA)

d. **Step 4:** *ro-* ⇔ [{{SPKR},{ADDR,SG}}]$_{INT:PART}$

Recall from the table above that the inverse configurations, the portmanteau, and the direct should form natural classes in so far as their derivations are concerned. This is precisely what probe relaxation accomplishes in Guarani: the inverse is the result of single Agree with no relaxation, the portmanteau is double Agree with no relaxation, and the direct is relaxation and single Agree with the EA. Having captured the first two general-

[26] Recall that this is the configuration for which Deal (2024) proposes that dynamic interaction of [PART] is necessary. However, it follows straightforwardly under probe relaxation.

izations in Guarani, the next section explores how probe relaxation readily extends to the final generalization—the intransitive agreement split.

5.1.4 Probe relaxation and the intransitive agreement split

Recall that the major empirical contribution of this paper is the suggestion that the direct/active and inverse/stative agreement systems may be explained through the position of the argument which controls agreement. In direct/active the argument is an EA and in inverse/stative the argument is an IA. We may now proceed to see how probe relaxation relates direct/active agreement, on the one hand, and inverse/stative agreement on the other. 1st and 2nd person unaccusatives will proceed almost identically to their inverse counterparts (2/3>1 and 3>2, respectively). In 1st/2nd person unaccusatives, first-cycle Agree is successful because the IA bears [PART], but no Agree takes place with the EA because in unaccusatives there is none present. 1st and 2nd person unergatives will also play out like their direct (1>3 and 2>3) counterparts. First-cycle Agree fails because there is no object in unergatives and therefore the probe reprojects, relaxes, and Agrees with the EA. Because of the direct parallels between direct/active and inverse/stative I will skip these derivations for space.

The more interesting cases are the 3rd person intransitives which, as explored above, are troublesome for a basic interaction and satisfaction model of Agree without probe relaxation. As alluded to, the derivation of 3rd person unergatives will proceed similarly to 3>3. Failed first-cycle Agree will cause the probe to relax its interaction condition to [φ] and Agree with the EA. The only difference is that in 3>3 the reason the probe relaxes is because the IA does not meet the interaction condition, but in 3rd person unergatives there is simply no object. Despite the different structures and reasons for relaxation, the probe will only copy a single copy of [φ], corresponding to the Vocabulary Item for 3rd person subjects: *o-*.

(61) *Derivation of 3rd person unergative:*

a. **Step 1:** [$_{v\text{P}}$ $v_{[\text{INT:PART,SAT:SPKR}]}$ [$_{\text{VP}}$ V]] (1st cycle failed Agree)

b. **Step 2:** *relaxation:* [INT: PART] ⇝ [INT: φ]

c. **Step 3:** [$_{v\text{P}}$ 3SG $v_{[\text{INT:}\varphi\text{,SAT:SPKR}]}$ [$_{\text{VP}}$ V]] (EA introduced)

d. **Step 4:** [$_{v\text{P}}$ 3SG $v_{[\text{INT:}\varphi\text{,SAT:SPKR}]}$ [$_{\text{VP}}$ V]] (probe copies [φ] from EA)

e. **Step 5:** *o-* ⇔ $[\varphi]_{[\text{INT: }\varphi]}$

3rd person unaccusatives, on the other hand, will result in failed first-cycle Agree, but because there is no EA, there will be no Agree at all. This is because, in order for the probe to Agree with its specifier. Assuming the probe is on the reprojected *v*P, it c-commands nothing and therefore cannot Agree with anything. In order for it to Agree with the 3rd

person sole argument of the unaccusative, Agree would need to be able to happen through dominance which is a highly non-standard assumption.

(62) *Derivation of 3rd person unaccusative:*

a. **Step 1:** [$_{vP}$ $v_{[\text{INT:PART,SAT:SPKR}]}$ [$_{VP}$ V 3SG]] (1st cycle failed Agree)

b. **Step 2:** *relaxation:* [INT: PART] ⇝ [INT: φ]

c. **Step 3:** [$_{vP}$ $v_{[\text{INT:φ,SAT:SPKR}]}$ [$_{VP}$ V]] (*no* EA introduced)

d. **Step 4:** *i-* ⇔ [___]$_{[\text{INT: φ}]}$

5.1.5 Probe relaxation as the default in passives

Recall from the empirical discussion that passives in Guarani always exhibit direct agreement, not inverse. The data are repeated from (26) and (27) are repeated in (63a) and (63b) respectively.

(63) a. (che) a-**ñe**-nupa
(I) 1SG.SUBJ-**PASS**-hit
'I got hit.' (1st person passive)

b. *che-**ñe**-nupa
1SG.OBJ-**PASS**-hit
Int: 'I got hit.'

I propose that this follows from the fact that the φ-probe on v_{PASS} Merges with an already relaxed interaction condition of [φ]. Therefore, the probe will be able to successfully Agree with the argument in a passive on the first-cycle, regardless of its feature composition. This is supported by the fact that we never observe inverse morphology in passives—the relaxed probe simply Agrees with the demoted agent. This also explains why passive morphology is always direct: the Vocabulary Items all involve an interaction condition of [φ].

5.2 Analytical summary and the role of probe relaxation in Guarani

Recall the empirical pattern, of which a simplified summary table is shown in (64). Here, the shaded cells correspond to inverse configurations, the boxed to the portmanteau, and the cells with nothing additional correspond to direct. Intentionally, the shaded cells involve single Agree and no relaxation. The boxed cell involves double Agree but no relaxation (portmanteau). Finally the unshaded/unboxed cells involve relaxation and single Agree. Probe relaxation in Guarani makes exactly these cuts and only these cuts. It therefore derives all three generalizations in Guarani straightforwardly.

(64) *Person combinations and agreement (inverse = shaded, portmanteau = boxed)*

	1 Agent	2	3
1 Patient	✗	1.OBJ	1.OBJ
2	1>2	✗	2.OBJ
3	1.SUBJ	2.SUBJ	3.SUBJ

In this section I have shown that the interaction and satisfaction model of Agree with probe relaxation captures all three generalizations in Guarani. Probe relaxation affords the analysis many things including cycle-tracking (even for intransitives) and restricting double Agree to only 1>2. To briefly sum up once again: i) inverse configurations give rise to single Agree with the IA and no relaxation, ii) the portmanteau is the result of double Agree with IA and EA and no relaxation, and iii) direct configurations give rise to single Agree with the EA upon relaxation. The need for probe relaxation finds strong theoretical support from Guarani and strong empirical support from Quechua. At the outset of this paper I discuss other predicted relaxation patterns and potential languages which exhibit these patterns.

6 Alternative analyses and discussion

6.1 Alternative 1: Zubizarreta and Pancheva (2017a)

For Zubizarreta and Pancheva (2017a), the direct/inverse agreement pattern is the result of a P-constraint with two crucial requirements: i) if a [+PART] DP is in the domain of a head, that head constitutes a phase and ii) all [+PART] DPs must move to the edge of the phase they are in. With this, an inverse configuration like 3>1 involves movement of the 1st person to the specifier of *v* where it competes directly with the 3rd person for Agree on Infl via Best Match (Coon and Bale 2014; van Urk 2015; Oxford 2019). In 1>3 no movement is required because the 1st person is already in spec,*v*P and it simply controls agreement on Infl.

The portmanteau found in 1>2 is handled by the Vocabulary Insertion rule in (65) which states that: i) if Infl Agreed with a 1st person, ii) if Infl's sister is *v*, and iii) *v* Agreed with a 2nd person, then the portmanteau form is used. I argue that this type of conditional non-local Vocabulary Insertion rule is less principled than the double-Agree-as-portmanteau analysis presented above with probe relaxation. It also begs the question as to whether or not syntactic heads may intervene between Infl and *v* to block this.[27]

(65) *Vocabulary Insertion rule for 1>2 portmanteau (Zubizarreta and Pancheva 2017a):* If the interpretable p-feature of Infl is 1SG D when its sister node *v* is 2SG, it is spelled out as *ro-* (if SG) and as *po-* (if PL), otherwise it is spelled out as *a-*.

[27]For example, causative, reflexive, and reciprocal morphology appears between the person prefix and the root (Zubizarreta and Pancheva 2017a; Estigarribia 2020).

The analysis from Zubizarreta and Pancheva (2017a) also requires the stipulation that the P-constraint can be violated in 1>2 because there already is a [+PART] DP in the phase edge of *v*P in 1>2—the 1st person EA. This is, however, not the case in 2>1 where the 1st person *must* raise to the phase edge and control inverse agreement. It is unclear what type of syntactic underpinnings are assumed for the machinery that makes this class of calculation. It also seems that in 1>2 the 2nd persons failure to move to spec,*v*P requires the knowledge that there will be a 1st person Merged in spec,*v*P to satisfy the P-constraint—a look ahead problem.

Finally, it is unclear how the unergative/unaccusative distinction could be made under this system. Their model predicts that both unergative and unaccusative *v*'s would host a 1st person in their specifier: the former through Merge and the latter through movement. Once here, because the probe in on Infl there will be no way of distinguishing between unergative/unaccusative agreement because the argument is in the same position. Additionally, if the P-constraint only deals with DPs that bear [+PART] then the distinction between 3rd person unergative and unaccusative cannot be made. I will therefore choose to adopt the Agree-based analysis proposed above which incorporates probe relaxation into the interaction and satisfaction model of Agree.

6.2 Alternative 2: probe impoverishment (Béjar 2003)

As mentioned, probe relaxation is a direct extension of probe impoverishment from Béjar (2003). Probe impoverishment, unlike probe relaxation, is couched in a [*u*F] model of Agree (Chomsky 2000, 2001) as opposed to an interaction and satisfaction model of Agree (Deal 2015). This means that Agree is established between unvalued segments ([*u*F]) and goals which bear the relevant feature that the particular segment is looking for ([F]). Articulated probes are built up from more than one segment and it is articulated probes which may undergo impoverishment. An example of probe impoverishment is shown in (66) where an articulated probe impoverishes from [[*u*PART[*uφ*]] to [*uφ*]. The parallels between probe impoverishment and probe relaxation are clear: the basic idea is the same in that probes Merge picky but become less picky across the course of the derivation. In addition, both are processes triggered by failed Agree.

(66) *Probe impoverishment from Béjar (2003):*

$$v = \left[\begin{array}{c} u\varphi \\ | \\ u\text{PART} \end{array} \right]_{\pi} \quad \longrightarrow \quad v = \left[\; u\varphi \; \right]_{\pi}$$

The crucial difference between probe relaxation and probe impoverishment as formulated in Béjar (2003) is the definition of Match—the prerequisite to establishing an Agree relationship. For Béjar (2003), all of the features on a goal must Match all of the unvalued segments on the probe in full. If a goal is only a partial Match for the probe, Agree fails and the unmatched segments are deleted (probe impoverishment). This will not extend straight-

forwardly to Guarani because, assuming a probe in (67), this probe can only Agree with arguments that bear at least a [SPKR] feature. If there is no argument that bears [SPKR], the probe will impoverish. While this successfully captures the 1>3/3>1 distinction, it fails to derive 2nd person object agreement in 3>2 and 1>2.

(67) *Probe impoverishment for Guarani:*

$$v = \left[\begin{array}{c} u\varphi \\ | \\ u\text{PART} \\ | \\ u\text{SPKR} \end{array}\right]_{\pi}$$

In Guarani 2nd person objects control agreement in both 3>2 (inverse) configurations and 1>2 (portmanteau). The probe in (67) cannot Agree with 2nd person objects in the first cycle. Therefore, in 3>2 and 1>2 Agree will fail in the first cycle and there will be only EA agreement. One may remedy this by assuming a simpler probe as in (66) that may Agree with any DP that bears [PART]. This would capture the 3>2 data.

Recall that Guarani exhibits a portmanteau in 1>2 configurations. A probe that only bears [uPART] and [$u\varphi$] as in (66) will be exhausted by a 2nd person object in 1>2. This requires the addition of an added probe (Béjar and Rezac 2003, 2009) to Agree with the 1st person EA. However, the probe will also be exhausted in the first cycle of 2>1 configurations in which the subject does not control agreement. It is unclear how to derive the added probe in 1>2 but to prevent it from being inserted in 2>1. One may propose a special Person Licensing Condition (PLC) for Guarani which is specific to 1st persons but this is not independently motivated in Guarani. I will therefore adopt the Agree-based analysis introduced here which incorporates probe relaxation into the interaction and satisfaction model of Agree.

6.3 Point of discussion: probe relaxation in a [*u*F] model of Agree (Béjar and Rezac 2009)

As mentioned, probe relaxation itself is model-independent. That is, that probe relaxation may also be implemented in a Béjar and Rezac [uF] model of Agree just as easily. In the current paper, I adopted an interaction and satisfaction model of Agree. The main reason for this is because, as I argued, probe relaxation obviates the need for dynamic interaction in 1>2>3 agreement patterns. It therefore makes the most sense to compare dynamic interaction and probe relaxation in the same model. That said, let us consider how probe relaxation would work under a Béjar and Rezac style model of Agree.

Instead of the interaction condition being updated upon failed Agree, the probe will gain a segment on top of the existing segments. For example, a probe may go from specified to only Agree with DPs that bear [PART] and/or [SPKR] as in the probe on the left in (54), to relaxing and being able to Agree with DPs that bear at least [φ] in the probe on the right.

This would successfully derive all three generalizations in Guarani for the same reason that probe relaxation captures all three generalizations under the interaction and satisfaction model of Agree.

(68) *probe relaxation under Béjar and Rezac style analysis:*

$$v = \begin{bmatrix} u\text{PART} \\ | \\ u\text{SPKR} \end{bmatrix}_{\pi} \quad \longrightarrow \quad v = \begin{bmatrix} u\varphi \\ | \\ u\text{PART} \\ | \\ u\text{SPKR} \end{bmatrix}_{\pi}$$

To see how the derivation plays out in 3>3, consider the derivation in (69). First-cycle Agree fails because none of the segments on the probe can be valued by the IA (69a). From here, the probe relaxes and reprojects above both arguments. Upon reprojection it gains the [$u\varphi$] segment which allows it to Agree with any DP that bears at least [φ]. It will Agree with the EA and the EA only.

(69) a. *Failed Agree:*

$[_{vP} \quad v_{I[u\text{PART}\,[u\text{SPKR}]]} \quad [_{VP} \quad V \quad DP_{3SG}\,]\,]$

b. *Relaxation:* [uPART [uSPKR]] $\rightsquigarrow$ [$u\varphi$ [uPART [uSPKR]]]

c. $[_{vP} \quad v_{II[u\varphi\,[u\text{PART}\,[u\text{SPKR}]]]} \quad DP_{3SG} \quad v_{I[u\varphi\,[u\text{PART}\,[u\text{SPKR}]]]} \quad [_{VP} \quad V \quad DP_{3SG}\,]\,]$

Unlike Béjar and Rezac's (2009) analysis of 3>3 configurations in which the probe Agrees with the IA and then an added probe Agrees with the EA (parallel to inverse configurations on their account), probe relaxation treats 3>3 as direct and involves only single Agree with the EA.[28] I leave to future work a more thorough exploration of probe relaxation in a [uF] framework.

7 Conclusion and outlook

In this paper, I have provided evidence for the view that the search behavior of Agree-probes may change across the course of the derivation. In particular, I have argued that Agree-probes may become *less picky* across the course of the derivation via a mechanism I refer to as *probe relaxation*. The evidence comes from three agreement generalizations in Guarani which are uniformly captured by probe relaxation. By not Agreeing with 3rd

[28] A question arises about the consequences of the probe reprojecting above the EA as it does in Béjar and Rezac (2009) or if the probe can only see into its specifier as in the analysis assumed here and other work (Deal 2015, 2024; Clem and Deal to appear). This may lose the distinction between 3rd person unergative and unaccusative because the reprojected probe will c-command the entire structure and therefore may Agree with either the EA or IA. However, one may remedy this by assuming that when the probe reprojects in an unaccusative it is on the *v*P and not *v* anymore and therefore cannot Agree with anything because it c-commands nothing, it only dominates arguments.

persons in the first cycle of Agree, the analysis forms derivational natural classes of all three generalizations in Guarani. Probe relaxation is a powerful tool which finds empirical support from another language, Quechua, and precedence from previous literature which argues that Agree-probes become less picky across the course of the derivation (Béjar 2003; Georgi 2010). What remains unexplored is the typology of relaxation patterns predicted by this theory.

Assuming the geometry in (41) and the definition of probe relaxation in (49), one predicts the following relaxation patterns (70). We have seen already evidence for the [ADDR] ⇝ [φ] and [PART] ⇝ [φ] patterns from Quechua and Guarani, respectively. Enxet, a Mascoian language spoken in the Gran Chaco of Paraguay, exhibits a 1>2/3 hierarchy (Elliott 2021). Elliot (2021) reports that 1st persons always control agreement. However, in their absence, the canonical subject controls agreement. This means that Enxet is the [SPKR] counterpart of the Quechua relaxation pattern (2>1/3). Therefore, all relaxation paths in the domain of person agreement are attested.

(70) *Predicted typology of relaxation patterns:*

relaxation path	**hierarchy**	**candidate language/pattern**
SPKR ⇝ φ	1>2/3	**Enxet verbal agreement (Elliott 2021)**
ADDR ⇝ φ	2>1/3	**Quechua subject agreement**
PART ⇝ φ	1/2>3, 1>2>3	**Guarani, Basque ERG displacement (Laka 1993a)**
PL ⇝ φ	PL>SG	**Mordvin Georgi (2010)**
NUM ⇝ φ	??	??

In the domain of number, a [PL] ⇝ [φ] relaxation path represents omnivorous number in which plurals are preferentially Agreed with but, in their absence, a singular controls agreement. It may also represent the type of pattern described in Georgi (2010) in which a number probe morphs into a person probe across the course of the derivation. Following Barrie (2015), Onondaga exhibits a three-way omnivorous number agreement pattern in which plurals rank highest, then duals, then singulars. If we assume the # branch of the geometry is more complex and includes Dual, then Onondaga may be readily captured under probe relaxation. Barrie (2015) analyzes Onondaga number agreement using probe impoverishment of which probe relaxation is a direct extension. [NUM] ⇝ [φ] may be a harmlessly redundant relaxation pattern because [NUM] and [φ] are often indistinguishable in languages.

The Onondaga facts from Barrie (2015) may provide interesting insight into the precise nature of relaxation. In particular, whether or not relaxation must be *absolute* as in Quechua and Guarani or *incremental*. Incremental relaxation would be a case where a probe relaxes from something highly picky to something less-picky, but not [φ]. Onondaga may be a case of this because, while plurals outrank everything else, duals still outrank

singular. It may be the case that the probe relaxes from [PL]⇝[DU] instead of [φ]. Incremental relaxation may be another way to conceive of a classic Silverstein Hierarchy Silverstein (1976). As mentioned in fn. 1, Avá-Canoeiro (Borges 2006) and Kayabi (Dobson 1997) are two Tupi-Guarani languages that exhibit a 1>2>3 hierarchy with no portmanteau in 1>2. This may be a case of probe incremental relaxation from [SPKR] to [PART]. More research is required to understand the complete picture of the cross-linguistic typology of relaxation.

Finally, probe relaxation is an amendment to the original interaction and satisfaction model of Agree as proposed in Deal (2015). The interaction and satisfaction model has been previously amended. Most notably with the recent addition of dynamic interaction Deal (2024) which is another case of flexible search conditions on probes. Probe relaxation is the opposite of dynamic interaction but, in fact, is an alternative as well (see the discussion in Section 4 and 5 of this paper). It is unclear whether both probe relaxation and dynamic interaction are required in the interaction and satisfaction model of Agree.

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