

A formal characterization of person-based alignment

The case of Paraguayan Guaraní

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Abstract We put forth a formal analysis within the Minimalist framework of argument alignment in languages with one type of direct/inverse system. Our proposal involves the cyclical application of a *phase-edge Person constraint*, which ensures that a [+Participant] argument (when present) is promoted from the verbal (vP) to the inflectional (IP) domain. We illustrate the proposed analysis with Paraguayan Guaraní, a language with direct/inverse alignment whose morpho-syntax has received little attention from a formal perspective. Paraguayan Guaraní does not mark tense morphologically in Infl(ection); instead, the overt realization of Infl varies depending on the person specification of the arguments. We refer to languages of this type as *Generalized P(erson)-languages*, in contrast to *Restricted P-languages*, whose direct/inverse system is limited to the vP domain and whose Infl encodes tense (e.g., Hungarian and Kashmiri). Building on insights in Ritter and Wiltschko (2014) on the anchoring function of Infl, we link the distinction between the two types of language to the presence vs. absence of an *interpretable tense feature* and its complementary *interpretable person feature* in the Infl node of the clausal structure.

Keywords Direct/inverse orders · Person hierarchy · Person agreement · Phases · Paraguayan Guaraní

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1 Introduction

In this paper,¹ we will be concerned with a particular person-sensitive phenomenon, in which there is an interaction of the P(erson)-hierarchy with structural hierarchy, best known in the Algonquian literature as the *direct vs. inverse orders* (De Lancey 1981; Silverstein 1976; Klaiman 1992; Ura 1996; Aissen 1997; Nichols 2001; Bruening 2001, 2005; Bliss 2005, 2013; among many others). We argue that Guaraní, an indigenous Tupian language of South America, also has a direct/inverse system, a point that has already been made by Payne (1994) from a functionalist perspective, yet challenged by Velázquez-Castillo (2007). Based on data from Paraguayan Guaraní (much of which is described by Velázquez-Castillo 1996, 2002, 2007 within a functionalist approach), we argue that these two orders are a product of distinct Agreement relations related to a distinct syntactic organization of arguments. We relate such a person-centered system to the typological difference in the role of Infl(ection) established by Ritter and Wiltschko (2014). These authors have proposed that Infl has the dedicated function of anchoring the described event to the speech event and that languages may differ in the exact way Infl achieves this function: in terms of the Speech Time (via a Tense-specified Inflection) or in terms of Speech Participants (via a Person-specified Inflection). While Ritter and Wiltschko (2014) do not formally relate the anchoring role of Infl to direct/inverse systems,² we advance the proposal that there is a direct connection between the two for a certain type of direct/inverse system, namely a system where Infl is specified for person and not tense. This is in contrast to another type of direct/inverse system, which is compatible with an Infl specified for tense (e.g., Hungarian, Kiss 2013). The two types of direct/inverse systems differ in certain crucial respects. We refer to direct/inverse languages in which Infl is specified for person as *Generalized P-languages*, and to direct/inverse languages in which Infl is specified for tense as *Restricted P-languages*. In this paper, we will be concerned with Generalized P-languages only, with Paraguayan Guaraní as a case study. We briefly comment on Restricted P-languages at the end of the paper, but return to them in detail in forthcoming work.

The Generalized P-languages under discussion here give primacy to participants in the speech event (Speaker and Addressee) but also make further fine-grained distinctions. These languages give primacy either to the Speaker, as is the case in some Algonquian languages such as Blackfoot (Bliss 2013), as well as in Paraguayan Guaraní;

¹The data reported here is based on field work conducted primarily in 2013 and 2014. Our main consultants were two women (ages 45–50), whose first language is Guaraní, and who learned Spanish for the purpose of schooling (around 7 years of age), but continued to use Guaraní in their daily lives, and who consider themselves fluent bilinguals. Both currently live in Asunción or the surrounding area (where field work was conducted). One of them (originally from Concepción) is an elementary school teacher and the other (originally from San Pedro) teaches Guaraní to foreigners. We have used elicited production as well as grammaticality judgement techniques, followed by questions to confirm subtleties of meaning and use. Our fieldwork was complemented with other sources, namely Guasch (1956), Guasch and Ortiz (2008), and Krivoshein de Canese (1998), Velázquez-Castillo (1996, 2002, 2007).

²Ritter and Wiltschko (2014:fn. 9) note that Aspect, like Infl, has an abstract function that can be instantiated by language-particular substantive content, and refer to Bliss et al. (2010) for an analysis of Blackfoot's direct/inverse system as instantiating person-based Aspect. Wiltschko (2014) also analyzes the direct/inverse system of Blackfoot in terms of Aspect encoding a person-based point of view.

or to the Addressee, as in Plains Cree (De Lancey 2002) and Nishnaabemwin (Valentine 2001, cited in Béjar and Rezac 2009).³ The Algonquian languages also make a fine-grained distinction among 3rd persons: namely, between the so-called proximate and obviative 3P. Since the latter distinction does not exist in Paraguayan Guaraní, we will put it aside. The part of the P-hierarchy (understood as a pre-theoretical generalization) that will be relevant for our present purpose is stated in (1) below. Importantly, this P-hierarchy is divided into two parts: a universal and a variable component (a distinction also recognized for Algonquian by Macaulay 2005). See Lockwood and Macaulay (2012) for a recent overview.

- (1) *Person-hierarchy in Generalized and Restricted P-languages:*
- a. Participant > 3P (Universal)
 - b. (i) 1P > 2P or (ii) 2P > 1P (Language particular)

In both Generalized and Restricted P-languages, the distinction between direct vs. inverse orders is descriptively as follows. The direct order is observed with intransitives and with transitive structures in which the external argument is higher than the object on the P-hierarchy (where object includes both internal arguments and Possessors of incorporated inalienable objects). On the other hand, the inverse order arises when the object is higher on the P-hierarchy than the external argument. Based on data from Paraguayan Guaraní, we will argue, in line with Bruening (2001, 2005) for Passamaquoddy and Bliss (2005, 2013) for Blackfoot, that the difference between the two orders in Generalized P-languages is structurally reflected in the hierarchical organization of the object with respect to the external argument.⁴

The universal distinction between 1P/2P and 3P has been recognized since Benveniste (1971) as a grammatical distinction in terms of the presence vs. absence of person-value specification, adopted by Harley and Ritter (2002), among others, in the domain of pronouns, and extended to the agreement domain by Béjar and Rezac (2003), Adger and Harbour (2007), among others. While we assume that Benveniste's insight in making a distinction between 1P/2P and 3P is fundamentally correct, we recognize that we still want to define agreement relations with 3P arguments. To that end, we adopt Nevins' (2007) proposal that while 1P and 2P are specified positively for person, 3P is specified too, but negatively. In particular, 1P and 2P are specified as [+Participant], with the [+/- Author] feature distinguishing between the two. On the other hand, 3P is specified as [-Participant, -Author]. Note that the Proximate vs. Obviative distinction found in Algonquian can be incorporated within this feature system by assuming an overarching [+Prox] vs. [-Prox] feature. While 1P and 2P are defined as [+Prox, +Participant], 3P is defined as [-Participant], specified either as [+Prox] or [-Prox].⁵

³See Macaulay (2005) on the variability and complexity of Algonquian verbal morphology, which has led to much disagreement on the primacy relations among [+Participant] arguments in this language family.

⁴This has also been suggested by Andrade Freitas (2011) for Ava Guaraní, a language closely related to Paraguayan Guaraní. See also fn. 18.

⁵In an apparent contradiction with this feature system, Bliss (2005:42, 2013:253–254) gives examples of obviative-marked 1P and 2P pronouns in Blackfoot, but she notes that Blackfoot is unique among the Algonquian languages in this respect (Bliss 2013:253) (and in fact analyzes the obviative morphemes in

We argue that the core distinction between direct and inverse orders as well as its specific instantiation in individual languages relies on the notions of *P-uniqueness* and *P-primacy*. *P-uniqueness* requires that no two *p*-valued arguments can have the same *p*-value in a given syntactic domain. *P-primacy* singles out either 1st person or 2nd person for a *P*-unique status, depending on the language. In a given language *P-uniqueness* may be active on its own or in combination with *P-primacy*.

We propose to incorporate the notions of *P-uniqueness* and *P-primacy*, together with the structural condition of *P-prominence*, as a *P-constraint on phases*, the domain in which interface conditions on the syntactic computation are naturally stated. More precisely, this constraint ensures the visibility within the phase domain of a *P*-unique argument that can map onto a speech act participant (an interface notion). The *P*-constraint is triggered by an interpretable and valued *p*-feature on the head of the phase.

(2) *P-constraint on phases*

- a. The *P*-constraint applies to phases that contain one or more [+Participant]-specified Ds. (*Domain of application*)
- b. There must be a [+Participant]-specified D located at the edge of phase β that enters into an agreement relation with the interpretable person feature on the head of β . (*P-prominence*)
- c. There can be at most one D in β eligible to satisfy (b). (*P-uniqueness*)
- d. In cases where more than one D can satisfy (b) in β and where one D is specified as [+Author] and the other as [-Author], then for any given language L, the D that satisfies (b) is specified as (i) [+Author] or (ii) [-Author]. (*P-primacy*)

The *P*-constraint, as stated in (2), has four components: Domain of application, *P*-prominence, *P*-uniqueness and *P*-primacy. These components encode some universal aspects of direct/inverse alignment but also lend themselves to parametrization so as to capture language variation, in particular the degree of granularity that a language makes regarding person distinctions. For example, the *P*-constraint in Algonquian languages, which make a finer distinction among 3Ps, will have a broader domain of application, namely it will apply to phase domains that contain one or more [+Prox] Ds. In Paraguayan Guaraní, on the other hand, the domain of application is narrower as it includes only phase domains that contain one or more [+Participant] Ds. The next clause of the *P*-constraint, *P*-prominence, encodes the fundamental distinction between local and non-local arguments that (as far as we know) all languages with direct/inverse systems make. It also introduces a structural component to that distinction, requiring a local (i.e., [+Participant]) argument to appear at the edge of the phase. Next, *P*-uniqueness, when active in a language, ensures that a distinction is made between local arguments as well, and since it applies over the whole phase, not just the phase edge, it effectively precludes local configurations. Allowing such combinations, and encoding a ranking between 1P and 2P, is the role of *P*-primacy.

terms of case and number marking). Aissen (1997:706), following the Algonquianist tradition, considers the proximate/obviative distinction relevant only to third person nominals. We do not address the issue of proximate/obviative marking further given that it is orthogonal to the immediate concerns of this paper.

P-primacy, when active, effectively weakens the effects of P-uniqueness, allowing 1P and 2P arguments to co-occur in the same domain, despite the fact that both are [+Participant] and so are both eligible to satisfy P-prominence. It is possible that there are languages that do not make a distinction between 1P and 2P for the purposes of the direct/inverse system. For such languages, it would mean that P-primacy and P-uniqueness are not active, or only P-uniqueness is. We return to these issues in forthcoming work, in particular regarding the sub-set of languages that we refer to as *Restricted P-languages*.

Note that our P-constraint has important connections with the *Person Licensing Constraint* proposed in Béjar and Rezac (2003): *1st and 2nd person features must enter into an Agree relation with a functional category* (adopted by Béjar and Rezac 2009; Coon and Preminger 2012; Preminger 2014 and subsequent works). However, our P-constraint shifts the requirement on agreement away from the person feature on Ds, which does not require licensing, to the person feature on the phase head, which is the feature that triggers the P-constraint. The feature on the phase head is interpretable and valued, and so the agreement relation that is established between it and the person feature on 1P and 2P (also interpretable and valued) is not for purposes of feature valuation, as in the usual Agree model (Chomsky 2000), but it serves to identify the argument that anchors the described event to the speech event. Also, importantly, our P-constraint adds the notion of phase as the relevant domain, and the edge-of-phase as the relevant structural position.

The P-constraint makes crucial use of the notion of *phase* (Chomsky 2001, 2008). Phases restrict the structure-building computation of the clause in a cyclical and local manner. These local domains of computation are cyclically linked through a condition on phase-edges: the head of a phase domain and its left edge are *visible* to the next level of computation, but not what is contained within the sister of the phase head. The array of syntactic constituents that constitute phases is still very much under debate (see Bošković 2014 for recent discussion). Our working hypothesis here is that a functional (or semi-functional) head that introduces an external argument and/or an interpretable person feature defines a phase. The phase domains that will be relevant to our discussion of Paraguayan Guaraní are Infl, *v*, and a possessor-licensing D. In Generalized P-languages like Paraguayan Guaraní, Infl introduces an *interpretable person feature*, and thus Infl defines a phase, in contrast to Restricted P-languages in which Infl introduces an *interpretable Tense-feature*. On the other hand, in both types of languages, a possessor-licensing D that introduces an external argument and/or an interpretable person feature would constitute a phase.

In proposing to treat the person features on Infl and *v* in Generalized P-languages as *interpretable*, we draw on parallels with tense and aspect features on these heads, which are interpretable in languages like English. Interpretable tense and aspect features in such languages work together to regulate the temporal relation between speech time and the time of the described event, i.e., they temporally anchor the described event to the speech event, and thus to discourse. Similarly, we suggest that interpretable person features on Infl and *v* in P-languages regulate the relation between speech event participants and participants of the described event, anchoring the described event to the speech event (in the spirit of Ritter and Wiltschko's 2014 proposal on the role of Infl). We postpone a detailed analysis of the semantic content

of interpretable person on Infl and *v* for future work, highlighting here only the explicit link with the semantically contentful temporal system in languages like English. In taking the person features on probes in P-languages to be interpretable, we do not consider the key computations underlying the distinction between direct/inverse orders to be reducible to feature checking, as this notion is usually understood. In this we diverge from existing formal accounts of direct/inverse systems (e.g., Bruening 2001, 2005; Bliss 2005, 2013; Béjar and Rezac 2009).

The P-constraint applies across phase domains in Generalized P-languages ensuring that a [+Participant] event-argument is promoted from lower to higher domains of computation (i.e., from the *v*-domain to the Infl-domain).⁶ Why are the [+Participant] event-arguments given a privileged status in Generalized P-languages? The answer to this question is grounded in the notion of event-anchoring mentioned earlier. According to Ritter and Wiltschko (2014), this is the function of Infl. *Speech Act Participants* have a privileged status in anchoring the described event to the speech event in P-languages, just like the *Time of Speech Act* has a privileged status in anchoring the described event to the speech event in languages where Infl is specified for tense.⁷ We therefore formulate the insight behind the generalized application of the P-constraint (2) as follows:

- (3) The cyclical application of the *P-constraint* in Generalized P-languages ensures that a [+Participant] event-argument is promoted from lower to higher domains of computation up to the Infl domain, where anchoring to the speech event is achieved via *Speech-Participant*.

As mentioned earlier and reiterated here again, we recognize that there are languages that have both an interpretable tense feature in Infl and a direct/inverse system. These languages, which we refer to as Restricted P-languages, can be characterized within our system as having an interpretable *p*-feature on *v*, but not on Infl. We do not address this type of language in detail in the present paper, but we will briefly comment on it at the end and return to it in forthcoming work.

The paper is organized as follows. We present in Sect. 2 the basic facts of the inflectional system in Paraguayan Guaraní and in Sect. 3, the details of the proposed P-constraint and its implications, as well as two arguments for object promotion in the inverse order. In Sect. 4, we show that the P-constraint also applies to DPs with possessors, and we propose to extend the analysis developed in Sect. 3 to account for the P-interaction of inalienable possessors of incorporated objects with the external argument of the verbal domain. The predictions of our analysis for the reflexive and

⁶The above approach contrasts with the cyclical application proposed by Béjar and Rezac (2009), who argue for one single domain of agreement, namely a verbal domain with multiple *v*-s (no Infl domain) and no syntactic object promotion. Our approach is more in line with Bruening (2001, 2005) and Bliss (2013). See Sect. 6 for further elaboration.

⁷It might be useful to draw a deeper analogy between interpretable Person and interpretable Tense at an abstract formal level. The function of interpretable Tense is to establish an ordering relation between time-arguments, namely between Speech Time and Event Time (mediated by Reichenbach's 1947 R-time). Similarly, interpretable Person on the head of a phase has the function of ordering event-arguments, assigning structural primacy to one over the other. This is in line with Ritter and Wiltschko (2014) and Wiltschko (2014), who formalize this property in terms of the feature +/-coincidence.

the causative constructions of Paraguayan Guaraní are examined in Sect. 5. A comparison with other formal approaches to direct/inverse systems is given in Sect. 6. We conclude in Sect. 7 with a summary and possible extensions, as well as certain conceptual questions that the current analysis raises and that we believe merit further investigation. In the [Appendix](#), we discuss how the proposed analysis works for more complex cases such as combinations of reflexive, transitive and causative structures.

2 The inflectional system in Paraguayan Guaraní: The basic data

In this section, we present the basic facts concerning the inflectional system in Paraguayan Guaraní. The language is classified as Nominative/Accusative in the *World atlas of language structures online* (Comrie 2013). It is without Tense specification in Infl. Tonhauser (2010, 2011) argues that Paraguayan Guaraní lacks grammatical tense altogether. Paraguayan Guaraní further draws a distinction between direct and inverse orders (Payne 1994). Thus Paraguayan Guaraní qualifies as a Generalized P-language. Although the discussion given below is restricted to simple root clauses, the same analysis extends to subordinate clauses.⁸

Payne (1994) proposed that various languages of the Tupí-Guaraní family (including Paraguayan Guaraní) have a direct/inverse system comparable to the one found in Algonquian, namely a system that is sensitive to the P-hierarchy in its grammatical organization of arguments in transitive clauses. It is argued there that such languages have two complementary sets of verbal inflectional paradigms: Set 1, which references the Agent (A) and Set 2, which references the Patient (P). Set 1 appears with a wide range of intransitives and with transitives in which $A > P$ in the P-hierarchy; Set 2 with transitives in which $P > A$ in the P-hierarchy. Set 2 is said to appear with a subset of stative intransitives as well and for this reason, Paraguayan Guaraní has been analyzed as having split intransitives (Velázquez-Castillo 2007).⁹ We do not agree with the split intransitive view and propose an alternative analysis in Zubizarreta and Pancheva (2017) (see fn. 34 for a short preview). In the present paper, we will focus on canonical transitive structures.

⁸The Algonquian languages are known to give rise to a distinct “conjunct order” in subordinate clauses, inexistent in Paraguayan Guaraní. Whether this difference should be attributed to some other fundamental difference in the properties of subordination in the two languages remains to be investigated.

⁹Velázquez-Castillo (2007), working within a functionalist framework, proposes a different account of Paraguayan Guaraní inflection. The author argues that the language has an active/inactive inflectional system. The active reflects the presence of an “active event source” and the inactive reflects the presence of “inactive event sites” (a view first put forth for Paraguayan Guaraní in Velázquez-Castillo 2002). The former notion refers to “a participant construed as the initiator or origin of a dynamic event” and the latter to “a participant construed as containing the situation denoted by the predicate.” Velázquez-Castillo furthermore relates the active/inactive dichotomy to the notion of point of view as discussed by De Lancey (1981). We find no place for Velázquez-Castillo’s active-inactive ontology in our formal framework and this renders the comparison of the two analyses difficult (if not impossible) to undertake in a meaningful way at this point in time. It is important to note however that both analyses acknowledge the relevance of point of view.

Table 1 Direct inflectional paradigm

External argument	SINGULAR	PLURAL	
		EXCL.	INCL.
1P	<i>a-</i> <i>ro-</i> with 2SG object <i>po-</i> with 2PL object	<i>ro-</i>	<i>ja- /ñā-</i>
2P	<i>re-</i>	<i>pe-</i>	
3P	<i>o-</i>	<i>o-</i>	

2.1 The direct order patterns

We will first examine the inflectional paradigm in the case of direct order patterns. These include intransitive and transitive structures in which the external argument is higher on the P-hierarchy than the object (where ‘object,’ as we will see later, includes both internal arguments and Possessors of incorporated inalienable *n*Ps). In these cases, the inflectional paradigm consists of a set of prefixes that reference the external argument, summarized in Table 1 and referred to as the *direct inflectional paradigm*.^{10,11}

Note that in direct order transitive structures with 1SG external argument and 2P object, the form of the prefix is different from all other cases with 1SG external argument (i.e., intransitives and transitives with 3P object). In the latter case, the prefix is *a-*, but when the object is 2SG, the prefix is *ro-* and when the object is 2PL the prefix is *po-*. Morphemes that cross-reference the external argument and the object in this manner are referred to as “portmanteaux affixes” in the literature, and we will refer to them here by that name. Although portmanteau morphemes are not exclusive to languages with a direct/inverse system, they are common in this type of language (De Lancey 1981), and they appear precisely in direct order configurations with two [+Participant] arguments. It is possible to view such portmanteau affixes in the direct inflectional paradigm as the morphological marking of the P-ordering among participants formalized in our system as clause (d) of the P-constraint (2). Notably, a portmanteau prefix is absent in the inverse case of 2SG external argument and 1P

¹⁰The 1PL inclusive in the direct inflectional paradigm has two allomorphs which depend on the oral vs. nasal nature of the following morpheme (throughout the paper we use the Leipzig glossing convention):

- (i) (Ñande) *ja-jahu*
(we.INCL) 1PL.INCL-bathe
‘We.INCL bathe.’
- (ii) (Ñande) *ñā-mbo-jahu ichupe*
(we.INCL) 1PL.INCL-TR-bathe him/her
‘We.INCL bathe him/her.’

¹¹A sub-class of verbs inserts an *-i* between the prefix and the verbal root. This class of verbs is referred to as *airéal*, while the other class of verbs are known as *areal*. Verbal roots typically belong to one or the other of the two classes; it is a morphological property of roots not unlike Spanish verbal conjugation classes. In some cases one and the same root may have two forms, but crucially with a very different lexical meaning, e.g., *-ke*: *ake* ‘sleep’ (*areal*) vs. *aike* ‘enter’ (*airéal*). For the sake of simplicity and consistency, we use examples from the areal class only.

Table 2 Subject pronouns

	1P	2P	3P
SG	<i>che</i>	<i>nde</i>	<i>ha'e</i>
PL	<i>ñande</i> (incl), <i>ore</i> (excl)	<i>peẽ</i>	<i>ha'e-kuéra</i>

object, suggesting that such prefixes are not an instance of multiple agreement with [+Participant] arguments.¹² In the case of Guaraní, it is particularly noteworthy that the prefix *ro-* is also the inflectional prefix in all structures with 1PL EXCL external argument, in intransitives and transitives alike. (If the object is 2PL, *po-* appears to be also an option). The prefix *ro-* clearly signals that the discourse participant Addressee is excluded from being identified as part of the event-participant with the role of agent. We know that when the Addressee coincides with an event participant (for example, a patient argument), it is grammatically identified with the 2P feature. Therefore, it is not surprising that the 1PL EXCL prefix *ro-* gets co-opted as the portmanteau marker in the case of transitives where the external argument is 1SG and the object is 2SG: *the 2P patient is excluded from being part of the agent of the event, signaling the departure from the default expectation that a [+Participant] argument occupy the most prominent structural position.* (When the 2P object is plural, a distinct portmanteau prefix is used, namely *po-*.) Guaraní thus stands in stark contrast to Surinam Carib, a language which lacks the direct/inverse divide and where the portmanteau prefix for both 1 > 2 and 2 > 1 syntactic contexts is also the morphological exponent for 1PL INCL (Georgi 2011); a type of morphological overlap that we do not expect to arise in languages with a direct/inverse system. (see Georgi (2011) for extensive discussion of languages with portmanteau affixes, and Woolford (2016) for a distinction between syntactic and morphological portmanteau agreement).

We note that the subject-referencing prefixes can optionally co-occur with a lexical DP subject and a strong subject pronoun, as expected for agreement affixes. We give the full subject pronoun paradigm in Table 2.

We exemplify the direct order patterns with the intransitive verb *jahu* 'to bathe' in (4) and its transitive counterpart *mbo-jahu*, derived from the intransitive root via the addition of the transitivizer prefix *mbo-*, in (5) and (6). The examples in (6) illustrate the portmanteau prefixes (abbreviated PORT) mentioned earlier. The 3P pronominal object in (5) can be dropped only if it is recoverable from the immediate discourse context. On the other hand, the 2P pronominal object is null in informationally unmarked contexts; see (6).¹³ We attribute the null status of the 2P pronominal object in

¹²Woolford (2016) also reaches the conclusion that the portmanteau morphemes of Guaraní mark only subject agreement, not agreement with both subject and object. In her terminology, Guaraní exhibits a case of *morphological* portmanteau agreement, which is the spell out of agreement with a single argument in the context of another feature specification. *Syntactic* portmanteau agreement, on the other hand, involves the spell out of multiple agreement, with features collected from all participating arguments.

¹³An overt 2P oblique pronoun can appear in multiple positions. It is interpreted as emphatic/contrastive and requires a special context. We will not discuss the syntax of emphatic pronouns, which are generally still poorly understood.

(i) (NDEVE) (che) (NDEVE) ro-mbo-jahu-ta (NDEVE)
 (you) (I) (you) PORT-TR-bathe-FUT (you)
 'I will bathe YOU (not someone else).'

Table 3 Direct and indirect object strong pronouns

	1P	2P	3P
SG	<i>chéve</i>	<i>ndéve</i>	<i>ichupe</i>
PL	<i>ñandéve</i> (incl), <i>oréve</i> (excl)	<i>peême</i>	<i>ichupe-kuéra</i>

these cases to the fact that it is locally identifiable via the portmanteau prefix, which morphologically signals that the object is 2P (see further below for a formal analysis of this prefix). The proposed analysis of a null 2P object is thus comparable to the analysis of subject *pro*-drop in Italian and other Romance languages, where the licensing of null subjects is attributed to the rich agreement morphology on the verb (e.g., Rizzi 1982).¹⁴ (In order to avoid confusion, in what follows we will ignore emphatic object pronouns consistently. All overt object pronouns in the examples cited are to be interpreted as non-emphatic.)

- (4) a. (Che) *a-jahu*
(I) 1SG-bathe
'I bathe.'
- b. (Nde) *re-jahu*
(you) 2SG-bathe
'You bathe.'
- (5) a. (Che) *a-mbo-jahu ichupe / Juan-pe*
(I) 1SG-TR-bathe him / Juan-PE
'I bathe him/Juan.'
- b. (Nde) *re-mbo-jahu ichupe / Juan-pe*
(you) 2SG-TR-bathe him / Juan-PE
'You bathe him/Juan.'
- (6) a. (Che) *ro-mbo-jahu*
(I) PORT-TR-bathe
'I bathe you.SG.'
- b. (Ore) *po-mbo-jahu*
(we.EXCL) PORT-TR-bathe
'We.excl bathe you.PL.'

We summarize the direct object pronouns in Table 3; as we will see below, the first and second person strong pronouns only surface as indirect objects (unless the direct object is interpreted emphatically, as mentioned earlier). Overt pronouns are exclusively animate in Paraguayan Guaraní.

Note that animate lexical direct objects in Paraguayan Guaraní have a Differential Object Marker (DOM), the suffix *-pe*; see examples in (5).¹⁵ This same suffix appears

¹⁴We do not think that the asymmetry between 3P pronouns and [+Participant] pronouns is due to the fact that the latter are recoverable from the immediate speech act context (a suggestion made by one of the reviewers). As we know, many languages drop 3P object pronouns frequently, Brazilian Portuguese being one of them. This language is particularly relevant in that it has lost its 3P clitic (giving rise to the null 3P object drop) but has maintained its 1P and 2P clitics, which are obligatorily present in the clause (see Kato 2003).

¹⁵Bossong (2009) attributes the presence of *-pe* on direct objects in Paraguayan Guaraní to contact with Spanish. See also Shain and Tonhauser (2011), who corroborate this conclusion based on corpus studies;

with indirect objects; see (7). Crucially, DOs can be both reflexivized and passivized, while IOs cannot (see Sect. 5). This suggests that DOs are DPs (with *-pe* analyzed as DOM), while IOs are PPs (with *-pe* analyzed as a Preposition).

- (7) Pédro o-me'ẽ-ta ichupe/María-pe heta jopói
 Pédro 3SG-give-FUT her/María-PE lots gifts
 'Pédro will give her/María lots of gifts.'

2.2 The inverse order patterns

Inverse orders are transitive structures in which the external argument (2P or 3P) is lower in the P-hierarchy than the object (1P or 2P). In such cases, *in lieu of the prefixes that reference the external argument* (summarized in Table 1), we find a 1P or a 2P weak object pronoun (summarized in Table 4).

Note that the weak object pronouns have exactly the same form as the subject pronouns, except for the 2P plural, which is slightly different (compare Table 2 and Table 4). Unlike the subject and strong object pronouns, the 1P and 2P object pronouns in the inverse system are atonic (Guasch 1956:97–99), and they are sensitive to the phonological properties of the root, i.e., as seen in Table 4, the 1P plural and the 2P singular weak pronouns have two allomorphs, one that appears with oral roots and the other with nasal roots. All of this suggests that the markers for 1P and 2P in the inverse paradigm are weak pronominal counterparts of the strong 1P and 2P subject pronouns of the direct paradigm, and that as weak pronouns they are integrated into the inflectional system of the verb. Therefore, in line with Guasch (1956) we assume that they are not affixes but pronominal clitics. The view that the portmanteau markers in the direct order are 1P/2P agreement prefixes while the markers for 1P/2P in the inverse order are incorporated clitics, is also found in Woolford (2016).¹⁶

The complementarity between the prefixes that reference the external argument and the object clitics is a central generalization in the Paraguayan Guaraní inflectional system that needs to be accounted for. We submit that the *P-constraint* (2) underlies the above-mentioned complementarity, which constitutes the most significant evidence that Paraguayan Guaraní is a Generalized P-language, i.e., its Infl is specified with an interpretable *p*-feature and not with an interpretable tense feature. These weak object pronouns appear in pre-verbal position (i.e., the inflectional domain) in what is otherwise a VO language, the post-verbal position being the informationally unmarked position for 3P objects. This complementarity, illustrated in (8) below, suggests that pronominal clitic objects raise from the verbal domain into the

these authors furthermore argue that the occurrence of *-pe* as DOM is governed by animacy and topicality. It is possible that *-pe* has been adopted as a mark of [+Prox] objects, a conjecture that merits further investigation.

¹⁶As we said earlier, we will not address here the syntax of emphatic pronouns, which can appear in multiple positions in the clause, but we note that an oblique emphatic strong pronoun can co-occur with a clitic object pronoun in sentences with an inverse structure:

- (i) (CHEVE) nde (CHEVE) che=mbo-jahu-ta (CHEVE)
 (me) you (me) 1SG OBJ=TR-bathe-FUT (me)
 'You will bathe ME (and not someone else).'

Table 4 Inverse inflectional paradigm¹⁷

Object	External argument	
	2P	3P
1P	SG: <i>che</i> PL: <i>ñande/ñane</i> (incl), <i>ore</i> (excl)	SG: <i>che</i> PL: <i>ñande/ ñane</i> (incl), <i>ore</i> (excl)
2P		SG: <i>nde / ne</i> PL: <i>pende /pene</i>

inflectional domain in the case of the inverse order, in a way to be made precise in Sect. 3.¹⁸

- (8) a. i. *(Nde) *re-mbo-jahu* chéve (direct order)
(you) 2SG-TR-bathe me
ii. (Nde) *che=mbo-jahu* (inverse order)
(you) 1SG OBJ=TR-bathe
'You bathe me.'
- b. i. *(Ha'e) *o-mbo-jahu* ndéve (direct order)
((s)he) 3SG-TR-bathe you
ii. (Ha'e) *ne=mbo-jahu* (inverse order)
((s)he) 2SG OBJ=TR-bathe
'(S)he bathes you.'
- c. i. *(Ha'e) *o-mbo-jahu* peẽme (direct order)
((s)he) 3SG OBJ=TR-bathe you.PL
ii. (Ha'e) *pene=mbo-jahu* (inverse order)
((s)he) 2PL OBJ=TR-bathe
'(S)he bathes you.all.'

Importantly, the cases with 1P external argument and 2P object take a portmanteau prefix and do not involve promotion of the 2P object; cases such as (6) belong to the direct paradigm. An argument for this conclusion will be provided in the next section.

¹⁷The 2SG, 2PL, and 1PL object clitics in the indirect inflectional paradigm have two allomorphs, depending on whether the immediately following morpheme (root or prefix) is oral or nasal: *nde* (oral)/ *ne* (nasal), *pende* (oral)/ *pene* (nasal), *ñande* (oral)/ *ñane* (nasal). e.g., (i) vs. (ii):

(i) (Ha'e) *nde-juka*
(s)he 2PS-kill
'(S)he killed you.'

(ii) (Ha'e) *ne-mbo-jahu*
(s)he 2PS-TR-bathe
'(S)he bathes you.'

¹⁸As mentioned in fn. 4, an object movement analysis of the weak object pronouns in the *inverse* inflectional paradigm is also proposed by Andrade Freitas (2011) for Ava Guaraní. This author attributes the object preposing of [+Participant] pronouns to their specific/presuppositional nature. Such an analysis does not directly relate the particularities of the inflectional system to the reordering of arguments, and in particular it does not provide an answer for the lack of object promotion in the case of 1 > 2 (i.e., direct orders).

Note furthermore that there are no weak pronoun counterparts to the IO strong pronouns, nor to any oblique pronouns, which clearly indicates that only DOs can raise into the inflectional domain. Furthermore, as mentioned earlier, only DOs reflexivize and passivize (see Sect. 5).

It is relevant to compare the strong subject pronouns, summarized in Table 2, with the object clitics in Table 4. Subject pronouns are strong in the sense that they are not part of the inflectional domain. (Subject pronouns, like all strong pronouns in Paraguayan Guaraní, can be dropped if recoverable from context.)

There are three arguments in favor of the view that subject pronouns are not part of the inflectional domain, in contrast with pronominal object clitics: (1) While object clitics are part of the same accentual domain as the verb and its prefixes, subject pronouns are not; (2) While object clitics undergo nasal harmony when followed by a nasal prefix or root (see fn. 10 and 17), subject pronouns do not undergo nasal harmony; (3) The prefix part of the discontinuous negative morpheme “*nda/na ... (r)i*” precedes the object clitics as well as all verbal prefixes, but follows subject pronouns, as exemplified in (9).¹⁹

- (9) a. (Nde) *na-che=mbo-jahú-i* (inverse order)
 (you) NEG-1SG OBJ=TR-bathe-NEG
 ‘You don’t bathe me.’
 b. (Ha’e) *na-ne=mbo-jahú-i* (inverse order)
 ((s)he) NEG-2SG OBJ=TR-bathe-NEG
 ‘(S)he doesn’t bathe you.’

Finally, we note that there is a significant gap in the inflectional paradigm of Paraguayan Guaraní, stated in (10). More specifically, cases that involve 1SG external argument and 1PL object (or vice-versa) or 2SG external argument and 2PL object (or vice-versa) do not exist. This is also the case in other P-languages, such as the Algonquian languages (e.g., Déchaine 1999; Harley and Ritter 2002; Bliss 2013). We note that the notion of P-uniqueness that the P-constraint imposes on phase domains (the whole phase, not just the edge) with one or more [+Participant]-specified DPs (or [+Proximate]-specified DPs in the case of Algonquian) readily accounts for the generalization in (10), thus establishing an intrinsic link between that generalization and the P-constraint as stated in (2). We return to this point in Sect. 6.

- (10) There are no object clitics in cases of partial referential overlap.

To summarize, Generalized P-languages can be defined as having the following set of properties: (1) Person feature, but no Tense feature, realized in Infl; (2) sensitivity to the P-hierarchy; (3) either the external argument or the object’s person feature realized in Infl, as determined by the P-hierarchy, but crucially not both. (If the external argument’s *p*-feature is realized in Infl, we have the direct order and if the object *p*-feature is realized in Infl, we have the inverse order). We submit that 1–3 are characteristic properties of Generalized P-languages. We noted furthermore

¹⁹The negative prefix *nda-* becomes *na-* in (9) because it is part of an accentual group that contains a nasal morpheme, namely *mbo-*; cf. the oral vs. nasal forms of the subject prefixes and object clitics mentioned in fn. 10 and 17.

that direct/inverse systems with an active P-uniqueness component do not allow for referential overlap between two arguments within the phase domain to which the P-constraint applies.

In the next section, we turn to the formalization of the inflectional system of Paraguayan Guaraní within the Minimalist framework (Chomsky 1995, 2001). In that framework, functional categories play a major role in the licensing of arguments via agreement, in local configurations constrained by the phase-based computation of the structure-building process. We show that the proposed analysis can give a coherent formal account of Generalized P-languages as exemplified by Paraguayan Guaraní.

3 The formal analysis

We assume the Minimalist premise that *phase heads that carry phi-features (in particular, a p -feature) function as probes that search for a DP to agree with in their domain*; in particular v and Infl, which are the phase heads under discussion in this section. More specifically, while v probes for a DP within the domain of its sister V, Infl probes for a DP at the edge of v , the domain of V being invisible to Infl. (Throughout the paper, we mark the D(P)s that constitute a chain in bold, with the non-parenthesized D as the head of the chain. Arrows indicate the relevant agreement relations.) Note that we depart from the usual formulation of the probe-goal relation as initiated by an uninterpretable and unvalued feature, seeking valuation. The probe here is an *interpretable* and *valued* p -feature on the phase head. For this reason, we do not use the term Agree (Chomsky 2000), instead we use the term “agreement” to refer to the formal relation between two sets of interpretable and valued p -features: on the phase head and on the argument at its edge. We also, on occasion, use “agreement” as an overarching term for both types of formal relations (i.e., also including cases that qualify as an Agree relation).

$$(11) \quad [I [D [v [V(D)]]]]$$

As mentioned in Sect. 1, we propose that the P-constraint (2) is triggered by the presence of an interpretable [+Participant]-specified feature on the head of the phase. Generalized and Restricted P-languages differ with respect to the location of the interpretable p -feature: while in Generalized P-languages, both Infl and v carry an interpretable p -feature and define phase domains, in Restricted P-languages only v does. See Sect. 6 for some further discussion. In this section, we develop a formal analysis to model the distinction between direct and inverse orders in a Generalized P-language, and we show that the proposed mechanics also provides the basis for a description of the portmanteau morphology, which, we suggest, is commonly used in direct/inverse systems as a way to mark the ordering relations among [+Participant] event-arguments.

3.1 The inflectional paradigm in the direct order

The direct order paradigm in the case of intransitives is straightforward. The sole D at the edge of v is the external argument; therefore, Infl agrees with it, which means

concretely that the *phi*-features of D should match those of Infl. The *phi*-features on Infl are spelled-out as prefixes, summarized earlier in Table 1. More interesting is the case of transitive structures, in particular, the ones with a portmanteau prefix. The challenge here is to describe how the shape of the morpheme that spells-out the *phi*-features of the external argument D is contingent on the *phi*-features of the object. This can be accounted for to the extent that *v* enters into an agreement relation with the object and *v* is in the domain of Infl. We elaborate below.

If the object is 3P, *v* will not be syntactically specified for a positive Participant feature, but if the object is 1P or 2P, *v* will be marked accordingly. To illustrate, compare example (5a) with (6a); these are repeated in (12) and (13) with their associated structures. In both cases, the external argument is a [+Participant]-specified D and it has primacy over other Ds in the same domain; see P-constraint (2). Therefore, the external argument meets the requirements of the P-constraint at the *v*-phase. Furthermore, Infl agrees with the external argument and promotes it to its edge, thus complying with the P-constraint at the Infl-phase level as well. We may assume that the strong DP subjects in Paraguayan Guaraní are above IP, in a Topic projection or adjoined to IP (whether they are contrastive or non-contrastive). The external argument *pro* within *v*P agrees with this IP-peripheral DP, possibly via binding.^{20,21}

(12) a. Che *a*-mbo-jahu ichupe = (5a)

I 1SG-TR-bathe him/her
'I wash her/him.'

b. [**D** I_[1SG] [*v* (**DP**_{1SG}) [*v* *v*_p [V DP_p]]]]

(13) a. Che *ro*-mbo-jahu = (6a)

I PORT-TR-bathe
'I wash you.sg.'

b. [**D** I_[1SG] [*v* (**DP**_{1SG}) [*v* *v*_[2SG] [V DP_{2SG}]]]]

The prefixes that reference the external argument are the morpho-phonological realization of the agreement relation between the external argument and Infl. As we

²⁰A reviewer asks how the overt DP subject and the *pro* in Spec, *v*P are linked, given the Phase Impenetrability Condition (PIC). If the overt DP is adjoined to IP, it is at the edge of the IP phase and the *pro* at the edge of the *v*P phase would be accessible to it. The situation will be different if the DP is in a Topic phrase, outside the IP phase. But we know that relations such as co-reference and pronominal binding do not obey the locality of phases, so an argument from PIC does not rule out an analysis of the overt DP being in Spec, TopP.

²¹Note that in direct orders, like (12) and (13), *v* defines two distinct agreement relations: one triggered by an interpretable and valued *p*-feature (with the external argument) and one triggered by an uninterpretable and unvalued *p*-feature (with the object). We assume that the latter relation is universal for transitive structures in all languages, including those without direct/inverse systems. On the other hand, in a Generalized P-language like Paraguayan Guaraní, the interpretable *p*-feature on *v* is inherited from Infl. The presence of two types of agreement features on the same phase head, one interpretable and one uninterpretable, is in line with similar proposals about dual agreement features on DPs, motivated by variation in semantic vs. syntactic agreement. For instance, the variation exhibited in *The committee is/are meeting*, can be accounted for if the collective nominal *committee* has dual number features, an interpretable plural and an uninterpretable singular feature, with either being able to control agreement (Wurmbrand 2012; building on Wechsler and Zlatić 2000; Wechsler 2011; a.o.).

have shown in Table 1, particularly noteworthy is the case of the prefixes that reference the 1P external argument since they are portmanteau morphemes. The category v defines a phase; therefore, Infl can see the D at the edge of v as well as the head v . This is sufficient information to formulate the spell-out rule for the portmanteau cases. To illustrate, consider the case of the PORT prefixes *ro-* and *po-* in the case of 1SG external argument; we propose that the spell out of Infl in (12)/(13) can be taken care of by the following *contextual allomorphy* rule.²² (A similar rule can be formulated for the cases of 1PL EXCL external arguments.) In such cases, Infl syntactically agrees with a 1SG external argument, but gets morphologically spelled-out as a portmanteau morpheme via the morphological rule below.

- (14) 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-*.

We submit the conjecture that the existence of such a contextual allomorphy rule indicates that Paraguayan Guaraní (and other languages with a direct/inverse system) use the portmanteau morpheme to morphologically mark the structural asymmetry among [+Participant] DPS in the direct order.

3.2 The inflectional paradigm in the inverse order

We turn next to the inverse order, where the object is higher than the external argument with respect to the P-hierarchy. The basic ingredients of the analysis have already been laid out in the previous section. To recapitulate, 1) there is an agreement relation between an interpretable p -feature on v (the probe) and the DP object, and 2) this relation involves positively specified Participant-values in the case of 1/2P but not in the case of 3P. Furthermore, agreement can trigger promotion of the object to the edge of the probe, in this case to the edge of v . Let us assume that this second option is always available to the computation but it is not chosen unless it is needed to comply with a grammatical requirement. In the case under discussion, this requirement is the *P-constraint* in (2).

The P-constraint applies at each phase-domain. In cases where the external argument DP at the edge of v is lower in the P-hierarchy than the object, *movement of the object to the edge of v* nullifies the initial hierarchical relation between the external argument D and the internal argument D: after promotion both are hierarchically equivalent, and both are now equidistant from Infl. We exemplify with (8a), repeated in (15a). Its v -structure is as in (15b), which merges with Infl and gives rise to (15c). Infl in turn enters into a probe-goal relation with a DP within its domain, namely with one of the two DPs at the edge of v , and more specifically with the one that is higher in the P-hierarchy. In this case, if Infl were to agree with the external argument DP_{2SG}, the P-constraint would be violated. Recall that in Paraguayan Guaraní, in cases where there is more than one [+Participant]-specified DP, the D that satisfies clause (b) of the P-constraint is the D specified as [+Author]; see the P-primacy clause (d) of P-constraint (2). The alternative would be for Infl to agree with the internal argument

²²See Béjar and Rezac (2009) for a similar proposal for portmanteau morphemes but with different mechanics, which assume that a probe can value across multiple heads; see Sect. 6.

DP_{1SG}; this agreement relation triggers promotion of the internal argument D to the edge of Infl, thus complying with the P-constraint at the level of the Infl-phase domain. Thus, in the inverse order, it is the internal argument in the form of a clitic pronoun that ultimately ends up at the edge of Infl (more concretely, as a D adjoined to Infl). The output of these series of computations is shown in (15c).

- (15) a. (Nde) che=mbo-jahu = (8a)
 (you) 1SG OBJ=TR-bathe
 ‘You bathe me.’
- b. [_v DP_{1SG} [_v DP_{2SG} [_v v [_{1SG}] [V (DP_{1SG})]]]]
- c. [I DP_{1SG} I [_{1SG}] [_{vP} (DP_{1SG}) [_{vP} DP_{2SG} [_{vP} v [_{1SG}] [V (DP_{1SG})]]]]]]

The proposal that the object is promoted in the inverse order in Algonquian is already found in Bruening (2001) and Bliss (2013) (although there are some differences between these authors’ proposals and ours, see Sect. 6). Paraguayan Guaraní provides two arguments in favor of the object promotion analysis, and in particular for the instantiation of that proposal along the lines outlined above. One piece of evidence is provided by the distribution of object pronouns mentioned in 1.1. Recall that in direct patterns like those in (5), the prefixes reference the external argument, and in cases like (6) with a portmanteau prefix, the prefix is the morphological exponent of an agreement relation with the external argument in the context of a 2P object. In other words, the external argument and the object are not in competition to enter into an agreement relation with Infl: they belong to distinct agreement domains. On the other hand, in the inverse case like (8)/(9), the object is a preverbal clitic in complementary distribution with the prefix that references the external argument, because the object and the external argument are in the same agreement domain. Given that Paraguayan Guaraní is a VO language,²³ the most parsimonious analysis is that the preverbal object clitics originate within the VP and are then promoted to a position higher than VP—as in more familiar languages, like Romance (except that in Romance the subject agreement affix co-occurs with object clitics because they belong to different domains of agreement). We repeat the minimal pairs in (16) and (17).²⁴

²³On word order in Paraguayan Guaraní, see Velázquez-Castillo (1996) and Tonhauser and Colijn (2010). These works firmly establish that Paraguayan Guaraní is a VO language. On the other hand, the corpus-based study of Tonhauser and Colijn shows that familiar or discourse-old subjects can be preverbal or postverbal. In the present work, we assume that the external argument is introduced by *v* as a *pro* and that it is related to a clause peripheral position. We will not address here the non-trivial issue of how VSO orders are generated.

²⁴A reviewer suggests that the complementarity that we observe in Paraguayan Guaraní may be the same phenomenon as the one observed in Celtic languages such as Irish (McCloskey and Hale 1984) and Breton (Jouitteau and Rezac 2006). We do not think the two exemplify the same phenomenon. In the Celtic language the complementarity is between a null subject that triggers agreement vs. overt DPs that do not. This is not the case for Paraguayan Guaraní: overt DP and null subjects in this language co-occur with agreement. It is only in the inverse system that the complementarity arises between a prefix and an object

- (16) a. (Che) *ro-mbo-jahu* (direct order)
 I PORT-TR-bathe
 ‘I bathe you.sg.’
 b. (Ore) *po-mbo-jahu*
 we.EXCL PORT-TR-jahu
 ‘We.excl. bathe you.PL.’
- (17) a. (Nde) *che=mbo-jahu* (inverse order)
 (you) 1SG OBJ=TR-bathe
 ‘You bathe me.’
 b. (Ha’e) *ne=mbo-jahu*
 ((s)he) 2SG OBJ=TR-bathe
 ‘(S)he bathes you.’

The marking of the initial consonant of the verbal root in the productive “triforme” class of verbs provide a second piece of evidence for the promotion analysis. The verbal root in the *triforme*-class has three morphological realizations: a *t*-initial nominal form and two complementary verbal forms—an *r*-initial verb and an *h*-initial verb; e.g., *techa* (N) ‘sight,’ *recha* (V), *hecha* (V). The *r*-initial root surfaces in the inverse paradigm (18) and the *h*-initial root in the direct paradigm (19), including the cases with a portmanteau prefix (e.g., (19b)).

- (18) a. (Nde) *che=recha* (inverse order)
 (you) 1SG=see
 ‘You see me.’
 b. (Ha’e) *nde=recha*
 ((s)he) 2SG=see
 ‘(S)he sees you.’
- (19) a. (Nde) *re-hecha ichupe* (direct order)
 (you) 2SG-see him/her
 ‘You see her/him.’
 b. (Che) *ro-hecha*
 (I) PORT-see
 ‘I see you.’

We can understand the *r*-initial root as the morpho-phonological signature of the syntactic chain in (15b), i.e., *the externalization of object D to the edge of v*. We formulate the rule below.

(20) *Spell-out rule for triforme roots (the r-rule):*

If the head of a phase *c*-commands a triforme root within the phase and agrees with a DP that has been raised to its edge, the root is spelled out as *r*-initial. Otherwise, the root is *h*-initial.

We note that the *r*-rule as formulated above is very close to Nevins and Sandalo’s (2011) analysis of the infix *d*: in Kadiwéu. These authors say in Sect. 2.3 of their

clitic. Note furthermore that the complementarity cannot be morphological since it involves an affix and a clitic. Only affixes can compete for the same morphological slot.

paper: “We take the morpheme *-d:-*, an inverse marker, to be ν agreement with a [+Participant] object. (This may be related to the obligatory promotion of the 1st/2nd person arguments out of the verb phrase.) In other words, it is not an ‘inverse’ marker, but rather a marker of object agreement of a certain type on ν .” Indeed, we do not think that the *r-* on triforme verbs is an inverse marker in Guaraní either, contra Payne (1994), and in agreement with Velázquez-Castillo (2007). As we will see later, the same *r-root/h-root* alternation can be found in nominal phrases headed by a triforme noun with a single argument (a fact already noted by Velázquez-Castillo 2007), so it cannot be analyzed as an inverse marker. In the proposed formal analysis, the *r-form* is a morphological signature of an agreement relation between a phase-head (namely ν in the case of transitive verbs) and a DP that has been promoted to the edge of that phase. We will show that the *r-rule* (20) can be readily extended to apply to nominals with a single argument.

To summarize, in this section we proposed a formal analysis of the direct and inverse orders in Paraguayan Guaraní, based on the cyclical application of the P-constraint (2). We gave two arguments in favor of a cyclical object promotion in the inverse order based on 1) the distribution of pronominal objects and subject-agreement prefixes, and 2) the *r-root/h-root* alternation. Importantly, our analysis relates the two properties: it is precisely in the case of complementarity between 1P/2P clitics and subject prefixes that we see the *r-root*.

Furthermore, these two arguments clearly show that the order 1P > 2P belongs to the direct paradigm, in contrast with the order 2P > 1P, which belongs to the inverse paradigm. To account for the special (portmanteau) morphology associated with the former, we proposed a *contextual allomorphy rule*, and suggested that such a rule has precisely the function of morphologically encoding the ordering relations among [+Participant] arguments, as determined by the language-particular part of the P-constraint.²⁵

We turn next to the case of Possessors and inalienable possessed nominals, and show that the analysis proposed in this section can be readily extended to these cases. That Possessors participate in the direct and inverse orders in certain cases is notable because it illustrates that the inflectional system described and analyzed in Sects. 2 and 3 does not only apply to co-arguments, underscoring its syntactic nature. Importantly, possessors provide a crucial argument for why the *r/h-*alternation should not be analyzed as inverse marking.

²⁵As mentioned in fn. 3, Nevins and Sandalo (2011) have shown that Kadiwéu is a 2 > 1 person system, except when the object is 1PL in which case it flips to a 1 > 2 system. These authors argue that this state of affairs is due to a combination of factors: the portmanteau nature of the 1PL object (which fuses person and number), the *Coherence Constraint* that governs the syntax/morphology mapping (which they attribute to Trommer 2008) and the need to realize inverse marking in the language. In order to render Nevins and Sandalo’s analysis of Kadiwéu compatible with the phase-based syntactic analysis proposed here we would need to assume a phase-based syntax/morphology mapping that applies in parallel to the syntactic computation. This is a very interesting view, which we adopt for Guaraní’s compounding rule; see fn. 31.

Table 5 Possessor pronouns

	1P	2P	3P
SG	<i>che</i>	<i>nde/ne</i>	∅ (prefix <i>i-</i> in the case of regular nouns)
PL	<i>ñande/ñane</i> (incl), <i>ore</i> (excl)	<i>pende/pene</i>	∅ (prefix <i>i-</i> in the case of regular nouns)

4 The extended cases: Possessors, inalienable objects, and inalienable incorporation

4.1 The inalienable constructions

We summarize the Possessor pronominal paradigm in Table 5. There are two classes of nouns in Paraguayan Guaraní: regular nouns, for which the 3P Possessor is marked by the prefix *i-*, and the so-called *triforme nouns*, in which the 3P Possessor is null but the root is *h-*initial. More specifically, as we will see below, the prefix *i-* is the morphological exponent of the agreement relation between D and a null pronominal 3P Possessor in the nominal domain, in the same way the prefix *o-* is the morphological exponent of the agreement relation between Infl and a null pronominal external argument in the clausal domain. On the other hand, the 1P and 2P Possessor pronouns are morpho-phonologically identical to the 1P and 2P object clitic pronouns (cf. Table 4) and we therefore give them the same analysis as pronominal clitics. As we will see later, this is further justified by the fact that 1P and 2P possessors raise into the inflectional domain in the case of incorporated possessed nominals, just like the 1P and 2P internal verbal arguments do.

The *triforme* class of nouns is very productive in Paraguayan Guaraní, particularly among nouns with an inalienable Possessor argument, either *intrinsically* inalienable (as in the case of body parts and kinship relations) or inalienable Possessors *by extension* (as in the case of ‘house’). Like the *triforme* verbs discussed earlier, *triforme* nouns have three forms, with distinct initial consonants depending on the grammatical context.²⁶ We exemplify below with one rendition of the inalienable construction, i.e., the non-incorporated form (the alternative form where the body part is incorporated into the predicate is discussed further below).²⁷ An interesting pattern emerges

²⁶Other examples of individual-denoting *triforme* nouns are given below: core inalienables, such as body parts (i), kinship inalienable relations (ii), as well as what can be considered inalienables by extension as in (iii).

- (i) *tesa – resa – hesa* ‘eye’, *topepi – ropepi – hopepi* ‘eyelid’, *topea – ropea – hopea* ‘eyelashes’, *tova – rova – hova* ‘face’, *tetyma – retyma – hetyma* ‘leg’, *tembe – rembe – hembe* ‘lip’, *tái – rái – hái* ‘teeth’, *tañyka – rañyka – hañyka* ‘jaw’, *tāmbira – rāmbira – hāmbira* ‘gums’, *tague – rague – hague* ‘hair’, *ta’anga – ra’anga – ha’anga* ‘image’
- (ii) *túa – rúa – húa* ‘father’, *teindy – reindy – heindy* ‘sister of boy’, *tovaja – rovaja – hovaja* ‘brother- or sister-in-law’
- (iii) *óga – róga – hóga* ‘house’, *okē – rokē – hokē* ‘door’, *ovetā – rovetā – hovetā* ‘window’, *tape – rape – hape* ‘road, path’, *taity – raity – haity* ‘nest’, *tembi’u – rembi’u – hembí’u* ‘food’, *tupi’a – rupi’a – hupi’a* ‘egg’, *tupā – rupā – hupā* ‘God’, *téra – réra – héra* ‘name’, *tuvicha – ruvicha – huvicha* ‘leader’

²⁷A reviewer notes that examples like those in (21) and (22) are “marked forms” and that the forms with incorporation of the inalienable noun (an alternative construction discussed further below in the text)

here, namely that triforme nouns with a 1P and 2P Possessor or with a lexical DP Possessor are *r*-initial, while triforme nouns with a 3P null Possessor pronoun are *h*-initial; cf. (21a, b, d) and (21c). Such facts clearly show that the *r*-root is not an inverse marker, as already noted by Velázquez-Castillo (2007).²⁸

- (21) *tova* ‘face’ (*t*-initial in citation contexts)
- a. (Nde) *re-johéi che rova* (ky’a)
(you) 2SG-wash 1POSS face (dirty)
‘You wash my (dirty) face.’
 - b. (Ha’e) *o-johéi nde rova* (ky’a)
((s)he) 3SG-wash 2POSS face (dirty)
‘(S)he washes your (dirty) face.’
 - c. (Che) *a-johéi hova* (ky’a)
(I) 1SG-wash 3POSS.face (dirty)
‘I wash her/his (dirty) face.’
 - d. (Che) *a-johéi María rova* (ky’a)
(I) 1SG-wash María face (dirty)
‘I wash María’s (dirty) face.’

In the case of inalienable regular (non-triforme) nouns, the 3P Possessor is morphologically signaled by the prefix *i*-: e.g., *i-po* ‘his hand.’

- (22) *po* ‘hand’ (regular noun)
- a. (Nde) *re-johéi che po* (ky’a)
(you) 2SG-wash 1POSS hand (dirty)
‘You wash my (dirty) hands.’
 - b. (Ha’e) *o-johéi nde po* (ky’a)
((s)he) 3SG-wash 2POSS hand (dirty)
‘(S)he washes your (dirty) hands.’
 - c. (Che) *a-johéi i-po* (ky’a)
(I) 1SG.wash 3POSS.hand (dirty)
‘I wash his/her (dirty) hands.’
 - d. (Che) *a-johéi María po* (ky’a)
(I) 1SG.wash María hand (dirty)
‘I wash María’s (dirty) hands.’

We turn next to the case of inalienable incorporation (analyzed by Velázquez-Castillo 1996 as Noun incorporation and Poss-to-Obj raising), illustrated below. For the Possessor to be in the domain of *v*, incorporation of the inalienable phrase is required. This generalization is illustrated in the contrast between (23a) and (23b) and between (24a) and (24b). As noted earlier, this is an important fact because *it*

constitute the unmarked option. Whatever the account may be for the perceived markedness of the non-incorporated form (but see fn. 29 for a suggestion), they were judged to be acceptable forms by our consultants, and in some cases, they were judged to be the preferred form, namely in the presence of a modifying adjective (see fn. 31). See also Velázquez-Castillo (1996:134–135), where both forms (incorporated and non-incorporated) are recognized.

²⁸For Velázquez-Castillo, the *r*-forms are part of what the author calls the inactive inflectional system. See fn. 9 and 35.

demonstrates that the domain where the *P*-constraint applies must be syntactically defined; it cannot be defined in terms of co-arguments. Note furthermore that in the cases of incorporation, the verbal stem *johéi* may be shortened to *héi*. This type of morpheme shortening is common in Paraguayan Guaraní in cases of compounding. (See the Appendix for other competing forms with the same meaning). It appears furthermore that in the incorporated structures, the Possessor argument is interpreted as an “affected” argument, but not so in their non-incorporated counterparts. The affected nature of the Possessor in the incorporated structure was already recognized by Velázquez-Castillo (1996:130–131). This suggests that in the incorporated structures, an Applicative layer is present in the representation.²⁹

- (23) a. Nde *che=rova* (jo)héi (inverse order with incorporation)
 you 1POSS=face wash
 ‘You wash my face.’
 b. *Nde *che=johéi rova* (inverse order with no incorporation)
- (24) a. Ha’e *nde=rova* (jo)héi (inverse order with incorporation)
 (s)he 2POSS=face wash
 ‘(S)he washes your face.’
 b. *Ha’e *nde=johéi rova* (inverse order with no incorporation)
- (25) a. Nde *re-hova* (jo)héi (direct order with incorporation)
 you 2SG-3POSS.face wash
 ichupe / María-pe
 her / María-PE
 ‘You wash her/María’s face.’
 b. Nde *re-johéi hova* (direct order with no incorporation)
- (26) a. Che *ro-hova*-(jo)héi (direct order with incorporation)
 I PORT-face-wash
 ‘I wash your face.’
 b. Che *a-johéi nde rova* (direct order with no incorporation)

We propose here that the cases of incorporation of possessed inalienables are cases of *nP*-incorporation, rather than *N*-incorporation. See Massam (2001), who referred to this process in Niuean as “pseudo-incorporation,” and also Bliss (2013) on Blackfoot.³⁰ We suggest furthermore that verb stem-shortening reflects a process of *m*(orphological)-compounding, whereby the noun and the adjacent verbal stem are

²⁹It is possible that an Applicative *v* (which introduces the affected theta role) combines more readily with the incorporated structure than with the non-incorporated counterpart, and it is the presence vs. absence of this affectedness layer of meaning that accounts for the perceived difference between the incorporated vs. non-incorporated forms; see fn. 27. We note though that one of our consultants readily accepted the presence of an optional dative argument in the non-incorporated version of the structure, see (i).

(i) (Che) *a-johéi* (ichupe) *hova* (ky’a)
 (I) 1SG-wash (3SG.DAT) 3POSS.face (dirty)
 ‘I wash his dirty face.’

³⁰Massam (2001) provides extensive arguments that pseudo-incorporation involves small nominal phrases (to the exclusion of Ds). While such nominal phrases appear in the canonical direct object position of the

analyzed as a compound word post-syntactically.³¹ *n*P incorporation puts the Possessor argument in the domain of *v*. The Possessor argument in the incorporated structures is thus defined as the formal object of *v*. This contrasts with the non-incorporated structures, where the Possessor argument is not in the domain of *v*, presumably because in the canonical object position, the possessed nominal is a full DP.

In the next section, we outline the formal analysis of inalienable nouns and the incorporated inalienable construction. We argue that the incorporated inalienable construction has both an inverse order and a direct order paradigm. In the inverse case, the Possessor moves out of the *n*P to the edge of *v*, while in the direct cases, the pronominal Possessor remains inside the Spec of *n*P bound by an overt or covert (Applicative) verbal argument. Importantly, the analysis that we propose below partially dissociates the *r/h* alternation from the inverse order. The *r/h* alternation is, we submit, a morpho-phonological signature of argument promotion to the edge of a phase-domain that contains the triforme root, the inverse order being one such case.

4.2 The analysis

As we have seen above, Paraguayan Guaraní has a productive class of triforme inalienable nominal roots, with an alternation between *r*-roots in the case of 1P and 2P Possessors and lexical DP possessors, on the one hand, and *h*-roots in the case of 3P (null) pronominal possessors. The question then arises whether we can provide a unified formal analysis for the *r/h* alternation in triforme inalienable nouns in both non-incorporated and incorporated contexts and in triforme verbs discussed earlier.

It has been argued that inalienable possessors, unlike alienable possessors, are arguments of the noun (e.g., Vergnaud and Zubizarreta 1992; Barker 2011; Bliss 2013). Vergnaud and Zubizarreta argue that alienable possessors are arguments of token-denoting DPs, while inalienable possessors are arguments of type-denoting NPs. We will assume this analysis with a further refinement. Alienable Possessors are introduced by D (i.e., the D associated with ‘*s* in English; call it D_{POS}) and inalienable Possessors are introduced by *n*. All Possessors are assumed to be Case licensed by

verb, they have predicative status. Here Paraguayan Guaraní differs from Niuean in that in the canonical direct object position the possessed nominal is a full DP; incorporated *n*Ps have to appear pre-verbally.

³¹It is possible that there is speaker variability with regards to preference for long vs. short verb stem forms in the incorporated structures. The variability in judgements regarding forms like (i) and (ii) below possibly speak to this point. While Velázquez-Castillo (1996:144) considers incorporated forms with modification completely impossible, our consultants did not reject (i), *provided that the long verbal stem form is used*, although (ii) is the preferred form. This suggests that for m-compounding to apply, there must be adjacency between N and V, and m-compounding is a pre-requisite for V-stem shortening to take place. It is expected that speakers with a strong preference for the m-compounded forms will find (i) unacceptable. Dialects with optional application of m-compounding might be a reflection of language change, an issue that merits further investigation. (The morphological m-compounding rule may be assumed to apply in parallel to the syntactic computation, with the phase as its domain of application.)

- (i) (Ha'e) nde rova ky'a johéi / *héi
 ((s)he) 2SG.POSS face dirty wash
 '(S)he will wash your dirty face.'
- (ii) (Ha'e) o-johéi nde rova ky'a

D_{POS} . Crucially, D_{POS} carries an interpretable p -feature and defines a phase-domain. It probes for a DP within its domain to agree with: this can be an inalienable Possessor DP introduced by n (agreement via c -command) or an alienable Possessor DP introduced by D_{POS} itself (agreement via Spec/head). We discuss below, in more detail, the licensing of inalienable Possessor DPs in Paraguayan Guaraní.

4.2.1 Licensing of the Possessor by D_{pos}

Let us first consider the inalienable forms with no incorporation in (21) and (22), where the inalienable Poss originates in Spec of nP and enters into an agreement relation with D_{POS} via c -command; see (27). If D_{POS} carries an interpretable [+Participant] feature, it would trigger the application of the P-constraint, which requires a [+Participant]-specified D (1P or 2P) at the edge of the D_{POS} phase. Therefore, 1P and 2P inalienable Possessors (which originate in Spec of n) must move to the edge of D_{POS} in order to comply with the P-constraint, as shown in (27). On the other hand, 3P Possessor pronouns, which have [−Participant] features, agree with D_{POS} . In the absence of an interpretable p -feature on the phase head the P-constraint is not triggered, consequently, no Possessor promotion applies; see (28).

(27) [**D** [D_{POS} [(**DP**) nP]]]

(28) [D_{POS} [**DP** [nP]]]

Recall that alienable and inalienable 3P possessors appear with the prefix i - with regular nouns, as in (22c). We take this prefix to be the morphological expression of the agreement between the possessor and D_{POS} just like the 3P prefix o - is the morphological expression of the agreement relation between Infl and the DP external argument in the verbal domain in the direct inflectional paradigm. Note that in the case of nP incorporation, i - does not appear, as expected, since here there is no D for the possessor to agree with.

- (29) a. (Che) a -po-johéi
 (I) 1SG-(3POSS) hand-wash
 ‘I wash her/his hands.’
 b. (Ha’e) o -po-johéi
 ((s)he) 3SG-(3POSS) hand-wash
 ‘(S)he washes her/his hands.’

The above syntactic analysis, in conjunction with the r -rule in (20), accounts for the r -root vs. h -root alternation in triforme nominals in the case of pronominal Possessor pronouns: the r -root appears in the case of a 1P and 2P Possessor pronoun (21a, b) and the h -root appears in the case of a 3P Possessor pronoun (21c). The r -root emerges once more as the morpho-syntactic signature of D-promotion to the edge of the phase, in this case to the edge of the D_{POS} phase. Yet, we still need to account for why lexical DP Possessors, unlike the null 3P Possessor, must also raise

to the edge of DP, giving rise to the application of the *r*-rule (21d).³² Based on the verbal inflectional domain, we know that prosodically independent elements cannot appear between Infl and *v*, namely there can be no prosodically independent elements between the prefix or clitic and the root. It is warranted to extend this generalization from the verbal to the nominal domain. We state this morpho-phonological constraint on Paraguayan Guaraní's inflectional domain (namely, the domain between Infl and *v* and between D and *n*) in (30), which presumably is universal. We propose furthermore that this rule applies cyclically at the phase-level (the syntactic domain that feeds morpho-phonology).

- (30) An overt grammatical formative in the inflectional domain must be an affix or clitic that can be morpho-phonologically integrated with the lexical stem to form a morpho-phonological word.

Assuming the conjecture in (30), it follows that a lexical DP Possessor in Spec of *nP* embedded under D, as in (21d), must choose the movement option in order for the output structure to comply with the morpho-phonological constraint in (30). The movement gives rise to the output structure in (27), which both complies with (30) and provides the right structural context for the application of the *r*-rule. On the other hand, the null Possessor pronoun in (21c) remains in-situ, given that no principle forces it to move out of the *nP*.³³

4.2.2 Licensing of the Possessor by *v*

We turn next to the cases with incorporated inalienable *nPs*. Here we will abstract away from the question of whether such an *nP* originates in the ordinary object position of the verb and is then left-adjoined to the verbal domain or whether it is base-generated in that position. (For visual ease, we mark the predicate that contains the incorporated *nP* as VP*). The important point is that when the inalienable *nP* is incorporated, its Possessor argument is in the domain of *v* and it enters into an

³²Paraguayan Guaraní has borrowed *alguno* 'someone' and *ninguno* 'no one' from Spanish and these also trigger the *r*-rule (*alguno roga* 'someone's house,' *ninguno roga* 'no one's house').

³³In Zubizarreta and Pancheva (2017), we extend the analysis of individual-denoting triforme nominals like the one in (i). The light verb (*oi*)*ko* takes a locative complement, which contains a nominal phrase headed by a trifome noun (*reka*). The argument of *reka* is *vaka*: it originates within the *nP*. The same analysis given for inalienable Possessors extends to these cases as well.

- (i) (Ha'e) oi-ko vaka reká-pe. (example form Guasch and Ortiz 2008)
 (s)he 3SG.COP cow.POSS search-PE
 Lit. '(S)he is in the activity of cow-searching.'

The example in (ii) provided by a reviewer would be analyzed in the same way as (i). The optional *-vo* suffix functions here as a *sufijo de finalidad* (or 'purpose suffix').

- (ii) Juan o-ho jepe'a reká-(vo)
 Juan 3SG-go wood search-(VO)
 'Juan went in search of wood.'

agreement relation with it. The Possessor argument therefore functions as the formal object of v .³⁴

$$(31) \quad [v \text{ [VP* [nP (DP) } n \text{] [VP V...]}]]$$

As usual, an external argument is introduced by v . At this point in the derivation, there are two possibilities, depending on the P-relation between the Possessor and the external argument. If the external argument is higher than the Possessor on the P-hierarchy, then the direct order is obtained; if the external argument is lower on the P-hierarchy, the inverse order is obtained. Consider the incorporation cases with inverse orders, such as (23a) and (24a), repeated in (32).

- (32) a. Nde che=rova (jo)híi
 you 1POSS=face wash
 'You wash my face.'
 b. Ha'e nde=rova (jo)híi
 (s)he 2POSS=face wash
 '(S)he washes your face.'

These examples have the structure in (33) below. In this structure, the inalienable nP and the Possessor argument in its Spec are in the domain of v ; the Possessor enters into an agreement relation with v and raises first to the edge of vP and then to the edge of Infl, thus cyclically fulfilling the P-constraint requirement. Note furthermore that, given that the triforme inalienable noun is in the domain of the vP phase, the r -rule applies at the vP level, giving rise to the r -form of the inalienable triforme noun.

$$(33) \quad [D [I [(DP) [DP [vP v [VP* [nP (DP) } n \text{] [VP V...]}]]]]$$

4.2.3 Incorporation with direct order

Consider next the direct order cases in (25a) and (26a), repeated in (34).

- (34) a. Nde *re-hova-* (jo)híi ichupe/María-pe
 you 2SG-(POSS)-face- wash her/María-pe
 'You wash her/María's face.'
 b. Che *ro-hova-* (jo)híi
 I PORT-face- wash
 'I wash your face.'

The above examples have the structure in (35). In this case the Possessor argument is also in the domain of v and enters into an agreement relation with it (a case of Agree), but given that the external argument is higher in the P-hierarchy than the

³⁴We may think of the configuration in (31) as formally similar to the ECM construction: just like an embedded Spec of Infl is visible to the matrix v in an ECM structure, a Possessor is visible to v in case the inalienable nP is incorporated into the V-domain. The Possessor thus becomes an object of v , to the extent that the latter is defined as the DP that enters into an agreement relation with v .

5 Extending the system to reflexives and causatives

We recall the generalization in (10) regarding the absence of morphology in Paraguayan Guaraní for cases in which there is referential overlap between [+Participant] arguments within the same phase-domain, i.e., cases where the subject is a first person singular and the object is a first person plural and vice-versa, as well as cases in which the subject is a second person singular and the object is a second person plural, and vice-versa. This generalization has also been observed in the literature on Algonquian, where it is attributed to Principle B effects (e.g., Déchaine 1999; Harley and Ritter 2002). We do not think that the gap is due to Binding Theory considerations because their counterparts in English and other languages (e.g., Spanish), while awkward, are not impossible (e.g., *I admire us for our courage.* / ‘Nos admiramos por nuestro coraje.’; *I listened to us singing* / ‘Nos escuché cantar.’). An explanation in terms of P-uniqueness is immediately available. Given that the P-constraint requires a unique [+Participant]-specified DP to be eligible within the phase to fulfill the edge-of-phase requirement, it follows that overlap in reference among DPs in the same phase is excluded. This requirement has implications as to how reflexivity is constructed in P-languages. Indeed, if a P-uniqueness requirement is imposed by the P-constraint in P-languages, then we don’t expect to find lexical anaphora (of the type we find in English) in such languages: i.e., the same phase domain cannot contain more than one DP with the same *p*-feature. P-languages must therefore construct reflexivity via some other grammatical strategy, namely the Voice-strategy. This strategy is indeed used in Paraguayan Guaraní, as well as in Algonquian languages (e.g., Frantz 2009, cited in Bliss 2013:295 on Blackfoot).³⁶ We turn to this and related issues in the following sub-sections.

form of the triforme noun in (ii d) (which has a verbal structure) with (iii) (which has a nominal structure): the former has an *h*-root while the latter has an *r*-root, as predicted.

- (ii) a. Che che rasy ‘I am sick.’
 b. Nde nde rasy ‘You are sick.’
 c. Ha’e hasy ‘(S)he is sick.’
 d. Maria hasy ‘Maria is sick.’
- (iii) Maria rasy ‘Maria’s illness’

For an analysis of stative predicates like (ii) and (iii) within a functionalist framework that appeals to notions of “inactive event sites” (which are analyzed as taking Set B prefixes), see Velázquez-Castillo (1996, 2007) (and fn. 9). It is not clear how that framework would deal with cases like (i), given the agentive nature of the verb, not unlike that of the verb *a-puka* ‘laugh,’ which takes Set A prefixes, or in Velázquez-Castillo’s terminology, it belongs to the active paradigm.

³⁶A reviewer suggests that the lack of lexical anaphors in Paraguayan Guaraní can be due to the presence of agreement, as argued in Woolford (1999). Woolford’s proposal is an extension of Rizzi’s (1982) ‘anaphor agreement effect,’ generalized to both subject and object agreement. These authors argue that the presence of lexical anaphors correlates with lack of agreement. Extending their ideas to the Paraguayan Guaraní and the Algonquian languages would amount to the claim that lexical reflexives are missing from both subject and object position because these languages have both subject and object agreement. But this crucially is not the case. In local ($1 > 2, 2 > 1$) and mixed ($1/2 > 3, 3 > 1/2$) configurations, the Algonquian languages have prefixes that mark 1P/2P arguments (with preference for 2P over 1P), *irrespective* of grammatical role. The following paradigm from Ojibwe, in (i), would leave room for a lexical anaphor to encode “You.sg saw you.pl” since *only one* argument is referenced by the prefix, i.e., if there were a lexical anaphor here, it would be non-agreeing.

5.1 The Voice construction in Paraguayan Guaraní

In Paraguayan Guaraní, the Voice that gives rise to reflexives (and to impersonal passives) is introduced by the prefix *je-* (also discussed in Velázquez-Castillo 2007). The *je-*predicates appear with direct order inflection throughout the paradigm (as in intransitives) suggesting that there is no P-interaction between the external argument and the object in this construction. Some examples of reflexives are given below. The case of (36) consists of the intransitive base *jahu* (see (4)) transitivized via the prefix *mbo-* (see (6) and (8)), which is then reflexivized via the prefix *je-* (*je* → *ñe* in nasal contexts).³⁷ The case of (37) is constructed by prefixing *je-* to the triforme verbal root *rechalhecha* ‘see’ (see (18)–(19)). Note furthermore that the triforme root in the *je-*construction is uniformly an *h*-root.

- (36) a. (Che) *a-ñe-mbo-jahu*
(I) 1SG-JE-TR-bathe
‘I bathe myself.’
b. (Nde) *re-ñe-mbo-jahu*
(you) 2SG-JE-TR-bathe
‘You bathe yourself.’
c. (Ha’e) *o-ñe-mbo-jahu*
((s)he) 3SG-JE-TR-bathe
‘(S)he bathes himself/herself.’
- (37) a. (Che) *a-je-hecha*
(I) 1SG-JE-see
‘I see myself.’
b. (Nde) *re-je-hecha*
(you) 2SG-JE-see
‘You see yourself.’
c. (Ha’e) *o-je-hecha*
((s)he) 3SG-JE-see
‘(S)he sees himself/herself.’

-
- (i) a. G- waabam -i (no agreement with the object)
2- see.TA DIRECT
‘You see me.’
b. G- waabam -in (no agreement with the subject)
2- see.TA INVERSE
‘I see you.’

Even more clearly, in Paraguayan Guaraní we don’t have overt morphological object agreement, so a lexical anaphor could have been present in “You.sg saw you.pl” cases. In summary, our theory predicts the absence of lexical anaphors in Paraguayan Guaraní and Algonquian languages, a fact that otherwise would be an accident, as it would not follow from the anaphor agreement effect of Rizzi and Woolford.

³⁷Note that here we have two words (one basic and one derived) to express the same reflexive meaning: (*a*)*jahu* (intransitive) and *a.ñe.mbo.jahu* (reflexivized transitive). A reviewer notes that there is a preference to use the simple form to express the reflexive meaning and the *je-*form to express the impersonal passive meaning (discussed further below in the text). We know from work in derivational morphology (dating back to Aronoff 1976) that morphologically distinct but semantically related words are in competition and that one generally wins out. We submit that this is the case here.

Another case of a reflexive predicate is given in (38), which consists of a transitive verb with an incorporated inalienably possessed internal argument. As we saw in Sect. 4, the Possessor of the incorporated argument functions as the object of *v*. As in the examples discussed above, when such predicates are combined with the *je*-prefix, the direct order inflectional paradigm arises. Again, note that while the incorporated inalienable noun *hova* ‘face’ is a triforme root (*tova*, *rova*, *hova*), the root in the *je*-Voice is invariably the *h*-form.³⁸ (Note that *je* + *hova* → *jova*.)

- (38) a. (Che) *a-jova*-(jo)héi
 (I) 1SG-JE.face-wash
 Lit: ‘I face-wash myself.’ ‘I wash my face.’
- b. (Nde) *re-jova*-(jo)héi
 (you) 2SG-JE.face-wash
 Lit: ‘You face-wash yourself.’ ‘You wash your face.’
- c. (Ha’e) *o-jova*-(jo)héi
 ((s)he) 3SG-JE.face-wash
 Lit: ‘He face-washes himself.’ ‘He washes his face.’

The *je*-construction with an impersonal passive interpretation (i.e., with an impersonal implicit subject) is exemplified below. This construction also systematically appears with direct order inflection and an *h*-root in the case of triforme nouns (such as *teka*, *reka*, *heka* ‘search’). While the lexico-semantics of the verb may bias the interpretation towards a reflexive or a passive interpretation in certain cases, such as (39), there are cases of ambiguity, like the one in (40), cited in Velázquez-Castillo (2007:389).

- (39) a. Che *a-je-heka*
 (I) 1SG-JE-search
 ‘I am being searched for/someone is searching for me.’
- b. Nde *re-je-heka*
 (you) 2SG-JE-search
 ‘You are being looked for/someone is looking for you.’
- (40) Toma *o-je-japi*
 Tomás 3SG-JE-shoot
 ‘Tomas was shot.’ / ‘Tomas shot himself.’

With Ahn (2015) and others, we assume the presence of a Voice projection (introduced by *je*- in the case of Paraguayan Guaraní) above the thematic domain, i.e., immediately above the *v* that introduces the external argument. While *v* defines a phase, the *je*-Voice does not, because it does not introduce an external argument (or a *p*-feature). We assume that in such cases, the *v*-phase is extended to include the

³⁸There is of course an alternative way of expressing the same meaning, namely without incorporation of the inalienable noun phrase. These are ordinary direct order SVO transitives, with the Possessor pronoun within the post-verbal object.

(i) Che *a-johéi che rova* ‘I wash my face.’
 (ii) Nde *re-johéi nde rova* ‘You wash your face.’
 (iii) Ha’e *o-johéi hova* ‘(S)he washes her/his face.’

higher Voice v (see den Dikken 2007; also Bošković 2014 on the notion of “relative” phases). More concretely:

- (41) a. If v_1 introduces an external argument or an interpretable p -feature, it defines a phase (as stated in Sect. 1).
 b. If v_2 is merged with the projection of v_1 and v_2 does not introduce an external argument or an interpretable p -feature, the v_1 phase is extended to include v_2 ; the phase is now v_2P (and not v_1P) and the head of the phase is v_2 (and not v_1).

As noted earlier, the uniform presence of the direct inflectional paradigm indicates that there is no p -interaction between the external argument and the object in the *je*-Voice construction. We may of course interpret this fact as indicating that the predicate is syntactically intransitive. Alternatively, we may assume, in line with Landau’s (2010) analysis of external arguments in passives (see also Legate 2014), that the *je*-Voice requires that the argument immediately below it (namely the external argument of its sister v) be a “referentially defective” argument, namely an nP pronominal with no D -functional layer, and therefore with no person specification.³⁹ This defective argument functions as a variable that needs to be bound to get an interpretation. There are two binding options. One option is for the nP pronoun to be bound by the DP object that raised to the edge of *je*-Voice. (Importantly, the object in this case is raised to the edge of v due to the presence of an EPP feature on *je*-Voice, as proposed by Ahn (2015), and is not due to the action of the P-constraint.) When the defective external argument is bound by the promoted object, as shown in (42a), the reflexive interpretation is obtained; e.g., (38). The second option is for the nP pronoun to be bound by an existential quantifier (Ex) via the rule of Existential Closure (Heim 1982), as shown in (42b); the impersonal passive interpretation is obtained; e.g., (39).

- (42) a. [_{VP} **DP** [*je*- [_{VP} nP v [_{VP} (**DP**)]]]] (reflexive)
 b. [_{VP} **DP** [*je*- [Ex [_{VP} nP v [_{VP} (**DP**)]]]]] (impersonal passive)

Because the (extended) phase is *je*-VoiceP, the raised object does not transit via the edge of the lower v ; it moves directly to the edge of *je*-Voice. Recall furthermore that this movement is triggered by an EPP-feature on *je*-Voice, and not by p -agreement in conjunction with the need to satisfy the P-constraint (in fact, it is assumed that *je*-Voice does not carry phi-features). Since there is no agreement relation between the head of the phase (*je*-Voice) and the object at its edge, the r -rule does not apply in the case of triforme stems and the otherwise case emerges, i.e., the h -form; see (37) and (39).

It is to be noted that a DP at the edge of an impersonal passive construction is not obligatory, suggesting that the EPP feature on *je*-Voice is optional.

³⁹We part ways with Landau (2010) in this respect, who assumes that defective NPs introduce a person feature. We assume that the p -feature is a property of D. Our nP could be seen as equivalent to phi-P in Déchaine and Wiltschko (2002), as long as the phi-features are restricted to number and gender (they make a 3-way distinction between DP, phi-P, and NP pronouns). See also Legate (2014) for detailed discussion of implicit arguments in passives.

- (43) a. *María o-joka i-ñakã*
 María 3SG-broke 3POSS.head
 ‘María broke her head.’
 b. *O-ñe-akã joka María-pe*
 3SG-JE-head broke María-PE
 ‘María’s head was broken.’ / ‘Someone broke María’s head.’

Given the optionality of the EPP feature on *je*-Voice, it is expected to appear with intransitive verbs as well, and indeed it does, as noted in Velázquez-Castillo (2007); see example below. We note that the optionality of object-promotion that we see in the case of *je*-predicates contrasts with the obligatoriness of object-promotion triggered by the P-constraint. This goes to show that the two movement operations are distinct. (See the Appendix for further evidence that there are two distinct triggers for the operation of object promotion to the edge of the ν -phase: *je*-Voice and the P-constraint.)

- (44) *Kañada-pe o-je-jeroky káda pyhare*
 Kañada-PE 3SG-JE-dance each night
 ‘In Kañada, there is dancing every night.’

As we will see in the next section, the *je*-Voice construction contrasts with the causative construction, where the causee is also a defective (variable) argument, but where there are two ν phases because both ν s introduce an external argument.

5.2 The causative construction in Paraguayan Guaraní

The causative suffix *-(u)ka* combines only with transitive predicates and it introduces a DP causer as its external argument. Interestingly, like *je*-Voice, it requires that the external argument of the predicate it combines with have the status of a variable (i.e., an *n*P denoting an open predicate). If we assume a syntactic analysis, as we did in the *je*-Voice case, this means that the external argument introduced by *-(u)ka*’s sister is a person-less *n*P. This variable may be bound either by a dative PP or by an existential quantifier in the absence of a dative PP (as in the French *faire-par* construction).⁴⁰ The two possibilities, already noticed in Velázquez-Castillo (2002), are illustrated in (45) and (46) below, with the triforme root *techa*, *recha*, *hecha*. There are several noteworthy properties in these examples. First, we note that the Causee (whether bound by a dative PP or by an existential quantifier) does not have any P-effects because it is “defective,” i.e., it lacks *p*-features (see also Legate 2014 for a comparable analysis in Acehnese). The P-interaction is between the Causer and the embedded object, very much like in a simple transitive sentence. The examples in (45) illustrate the direct order; (45b) in particular illustrates the order 1P > 2P, with the PORT prefix *ro-*. The examples in (46) illustrate the inverse order, with Infl associated with an object clitic pronoun.

⁴⁰See also Harley (2013) for a description of causatives in a Mayan language with similar properties, but with a different analysis.

- (45) a. Che a-*hecha*-uka ichupe/che memby (doctor-pe) (direct order)
 I 1SG-see-CAUS him/my child (doctor-PE)
 (i) 'I had the doctor see him/my child.'
 (ii) 'I had someone see him/my child.'
- b. Che ro-*hecha*-uka (doctor-pe) (direct order)
 I PORT-see-CAUS (doctor-PE)
 (i) 'I had the doctor see you.'
 (ii) 'I had someone see you.'
- (46) a. Ha'e *nde-recha*-uka (doctor-pe) (inverse order)
 (s)he 2SG-see-CAUS (doctor-PE)
 (i) '(S)he had the doctor see you.'
 (ii) '(S)he had someone see you.'
- b. Ha'e *che-recha*-uka (ndéve) (inverse order)
 (s)he 1SG-see-CAUS (2SG.PRON.DAT)
 (i) '(S)he had you see me.'
 (ii) '(S)he had someone see me.'
- c. Ha'e *nde-recha*-uka (chéve) (inverse order)
 (s)he 1SG-see-CAUS (1SG.PRON.DAT)
 (i) '(S)he had me see you.'
 (ii) '(S)he had someone see you.'

As in the case of simple transitives, we can observe the signs of object promotion in the inverse order examples in (46): first, the preposing of the object clitic into the pre-verbal inflectional domain and second, the presence of the *r*-root, in contrast with the *h*-root in the direct order in (45). The fact that we see the action of the *r*-rule in the inverse order indicates that the lower *v* defines a phase and therefore the object moves cyclically through the edge of the lower *v* phase before moving on to the edge of the higher (causative *v*) phase (from where it accesses the Infl-domain). Let us assume furthermore that the *v* that introduces a defective Causee argument lacks a *p*-feature, and that the licensing of the object therefore depends on the higher (causative) *v* (i.e., no *p*-agreement entails no Case licensing). More specifically, we propose that the causative *v* agrees with the lower *v* (transmitting its *p*-feature) and thus indirectly the causative *v* agrees with the lower object. Thus, the object enters into an agreement relation both with the lower *v* and with the higher causative *v*; this triggers object promotion first to the edge of the lower phase (where the *r*-rule applies) and then to the higher phase, where it enters into an agreement relation with Infl. The *spell-out* rules for Infl, including PORT rule (14), apply as in the simple transitive cases.

We summarize the proposed analysis in (47) and illustrate it with structures for (45b) (see (48a)) and for (46b) (see (48b)).

- (47) The Causative analysis:
- a. The causative verbal domain consists of two *v*-phases: lower v_1 and higher v_2 (because both introduce an external argument).
 - b. *Implications of (a)*: object promotion triggered by P-constraint applies cyclically, triggering *r*-rule in lower v_1 -phase.

The analysis that we provided for the Paraguayan Guaraní *r*-initial triforme stems is similar to the analysis put forth by Nevins and Sandalo (2011) for the affix *-d:-* in Kadiwéú; the cross-linguistic similarities strengthen both proposals. We have seen furthermore that the Possessor of an incorporated internal argument of the verb functions as the object of *v* and thus interacts with the external argument introduced by *v*, giving rise to direct/inverse patterns. This shows that P-interactions are not restricted to co-arguments.

To capture the relation between the above two properties—object promotion and *r/h*-alternation—we have proposed a formal analysis of the direct/inverse system in Paraguayan Guaraní that is based on the presence of an interpretable *p*-feature across functional domains: on Infl, *v*, and the Possessed D. This interpretable *p*-feature defines the domains IP, *v*P, and Poss DPs as phases (i.e., as interface domains) for these languages and activates the P-constraint (2), which identifies and requires a unique [+Participant] DP to appear at the edge of the phase. Object-promotion in the inverse order is driven by this P-constraint. This operation puts the object in a position where it can be accessed by Infl. It is noteworthy in this respect that the Possessor of an inalienable internal argument cannot be directly promoted from post-verbal position, but must be located at the left-edge of the verbal domain to be accessible to it. In such cases, the Possessor functions as the object and gives rise to P-interaction with the external argument.

We mentioned in the introduction that the Generalized P-languages can be contrasted with the more restrictive inverse system of the Hungarian variety (Kiss 2013), a language where person is not in competition with Tense in Infl. While we cannot do full justice to this sub-type of direct/inverse system in this paper (we hope to come back to it in future work), we would like to briefly mention the case of Hungarian as an interesting exemplar. Kiss (2013) argues that modern Hungarian (like Proto-Hungarian) has a direct/inverse system. Interestingly, this author argues that Hungarian (and related languages) uses an anti-agreement mechanism for objects in cases where the syntactic alignment of arguments in transitive structures violates the P-hierarchy, namely in the cases that correspond to the inverse order. This is compatible with our assumption that Hungarian (a language with an interpretable Tense-feature on Infl) has an *uninterpretable p*-feature in Infl, but an *interpretable p*-feature on *v*. The latter triggers the P-constraint, but since the anchoring function of Infl is based on Tense and not on Person in this language, then it is unnecessary for Infl to access a [+Participant] object and no object promotion to the edge of the phase is necessary. Instead, in order to avoid a violation of the P-constraint, Hungarian-type languages use anti-agreement in the inverse order. In our system this could be formalized as deletion of the interpretable *p*-feature on *v*.⁴² The case of Kashmiri, discussed by Béjar and Rezac (2009), appears to be similar to Hungarian. In Kashmiri, in the inverse paradigm, the object does not enter into agreement with the verb (and also appears in an oblique case). The inverse system of Kashmiri, like Hungarian, is thus one of anti-agreement, as opposed to object promotion. We relate this to the fact that both languages have tense in Infl, and thus Infl does not host an interpretable *p*-feature, making them Restricted P-languages, with an interpretable *p*-feature only on *v*.

⁴²For discussion of further intricacies in the object agreement system of Hungarian, see Coppock and Wechsler (2012), Coppock (2013), Bárány (2015).

6.2 Bruening (2001, 2005) and Bliss (2005, 2013)

The mechanics of the proposed object promotion analysis is comparable to the one put forth by Bruening (2001, 2005) for Passamaquoddy and Bliss (2005, 2013) for Blackfoot precisely in the cases of the inverse order. Their analysis of object promotion for these languages is empirically motivated on the basis of binding data: a [+Prox(imate)] QP may bind a pronoun within the Subject. In Bruening's analysis, movement of [+Prox] objects (marked with the feature P) applies in the inverse order, first to the edge of ν P and then to the edge of a functional category H (H is equivalent to Infl in our system), which has an uninterpretable [Prox] feature that needs to be valued by a [+Prox] DP. Bliss (2005, 2013) formalizes the movement of objects as the checking of an uninterpretable [Sentient] feature (a "real world animacy" feature) in a functional projection encoding point of view (called H in Bliss 2005, and renamed in Bliss 2013).

While we have also argued here for a movement analysis of [+Participant] arguments, we proposed that what triggers this movement is an *interface edge-requirement on phase domains*, namely the *P-constraint* in (2), whose mechanics are instantiated through *interpretable p-features*. This *P-constraint* has the P-hierarchy built into it (which for Algonquian languages possibly includes [+Prox] 3P). And this is empirically important when it comes to the interaction between 1P external arguments and 2P objects in the direct order: in this case the 2P object does not move into the Infl-domain so it does not agree with Infl (= the H-domain in Bruening's and Bliss's systems). In Bruening's analysis of such cases, ν and H agree simultaneously with the 1P external argument and the 2P object, which is assumed to raise to the edge of ν across the board. This makes the wrong predictions for Paraguayan Guaraní with respect to the *r/h*-alternation. The challenge, of course, is to account for the cross-referencing of the external argument and the object in such cases by the portmanteau prefix. We have suggested that in such cases, the *morphological spell out* of Infl is sensitive not only to the *p*-feature of the external argument with which it agrees, but to the *p*-feature on its ν -sister, which is the *p*-feature of the object, due to agreement between it and ν . In other words, this is a case of *contextual allomorphy*, as proposed by Béjar and Rezac (2009) for other languages but with a different mechanism. We have suggested that such portmanteau morphemes are morphological markers of the primacy relation among [+Participant] arguments (1P > 2P in the case of Paraguayan Guaraní).

6.3 Béjar and Rezac (2009)

Béjar and Rezac (2009) have put forth a theory that aims to account for agreement phenomena in a variety of languages, including those with direct/inverse systems. These authors adopt an implicational view of person features (cf. Harley and Ritter 2002; Adger and Harbour 2007). A proper subset of the features of 1P pronoun makes up the 2P and 3P and a proper subset of the features of 2P makes up the 3P.

- (49) 1P = participant, speaker, π
 2P = participant
 3P = π

Probe enters into an Agree relation with the internal argument (first cycle) and if not all the features of the probe have been specified in the first cycle, then it enters into an Agree relation with the external argument (second cycle). In the case of transitives with 3P object, the Probe enters into an Agree relation first with the object (checks π) and then with the external argument to check the remaining features. These give rise to the direct inflectional paradigm. In the inverse cases, like 3P > 2P/1P and 2P > 1P, the probe is fully specified in the first cycle via agreement with the object. The inverse marker is inserted as an extra probe to agree with and license the external argument.

While there is no overt inverse marker in Paraguayan Guaraní, one could in principle postulate a null one for this language and account for the inflectional paradigm using the mechanics of Béjar and Rezac (2009). Yet such an analysis falls short of explaining *p*-driven object promotion in this subtype of direct/inverse languages, namely the subtype which is associated with the lack of tense in Infl, and which we have dubbed here a Generalized P-system. As we mentioned earlier, this subtype contrasts with languages we have called Restricted P-languages, namely languages that have tense in Infl and in which the direct/inverse system only affects the ν P domain. In such languages there is no object promotion, since there is no need to access Infl (no interpretable *p*-feature on Infl). Instead, such languages use anti-agreement, as is the case for Hungarian and Kashmiri.

7 Conclusions and topics for further research

To conclude, we have proposed the interface P-constraint (2) to account for P-alignment in direct/inverse systems, in particular focusing on what we have called Generalized P-languages. Such languages do not have interpretable tense features in Infl; instead, they express an interpretable person feature in Infl, which triggers the P-constraint. We have furthermore proposed that in such languages there is also an interpretable person feature on ν , i.e., an interpretable person feature is present across phase domains. To satisfy the P-constraint in inverse cases, the object needs to be promoted to Infl, in a cyclical fashion, through promotion to the edge of ν P first. Paraguayan Guaraní and the Algonquian languages belong to this type of direct/inverse system. We also recognize the existence of another subtype of direct/inverse languages, such as Hungarian and Kashmiri, which we have called Restricted P-languages. These are languages that have tense in Infl, and thus an interpretable *p*-feature is present only on ν . We leave the precise characterization of Restricted P-languages and possible variation found in their inverse systems for future work.

We also note that there are parallels between direct/inverse systems and the so-called *Person Case Constraint* (PCC), as noted in Anagnostopoulou (2005), Bianchi (2006), Béjar and Rezac (2009), Nevins and Sandalo (2011), and others. The PCC involves person restrictions in ditransitive constructions with pronominal clitics and it is found in languages such as Greek and Romance (e.g., Perlmutter 1971; Kayne 1975; Bonet 1991, 1994; Anagnostopoulou 2003, 2005; among many others). It is possible to extend the analysis proposed in this paper to PCC effects by noting

that such languages are tensed, and as such are of the Restricted P-languages subtype. Here the P-constraint would be active as well, but rather than being centered on v , it would only apply within a low Appl(icative) phase, which in the system proposed here would be formally instantiated by an interpretable p -feature on the low Appl head. In our formulation of the P-constraint we identified possible points of parametrization such as Domain of applicability, P-prominence, P-uniqueness and P-primacy. We can model the variation that has been observed in the PCC (e.g., Nevins 2007) by a parametrization of the above mentioned components of the P-constraints. We return to this topic in forthcoming work.

Finally, we note that our approach to the direct/inverse phenomenon is fundamentally distinct from prior formal syntactic accounts in one important conceptual respect: we analyze the phenomenon as having interpretative import, i.e., as properly belonging to the interface between syntax and semantics, rather than to narrow syntax alone. Inspired by Ritter and Wiltschko (2014), we attribute to Infl the language-universal abstract role of relating aspects of the speech event and the described event, and the language-particular function of encoding tense or person, which are grammatical features that correspond to the salient aspects of events—the time of events and their participants. Infl performs an anchoring role, locating aspects of the event (its time, or participants) relative to the speech event, and ultimately discourse. We go beyond the main claim in Ritter and Wiltschko (2014), in proposing that person-based distinctions are not encoded in a single projection, but are distributed over a number of functional projections (in fact, this is endorsed in Bliss et al. 2010 and Wiltschko 2014). From the literature on tense and aspect, we know that tense does not directly relate the event time and the speech time (in matrix clauses). Rather, tense is a relation between a reference time (an idea originating with Reichenbach 1947) and the evaluation time (the speech time in the matrix clause). Aspect orders the event time with respect to the reference time. We would expect a similar grammatical distribution of labor between functional projections in the domain of person. In proposing an interpretable person feature on both v and Infl in Generalized P-languages, we thus extend the formal parallels between the tense and person domains further. Within the vP , the P-constraint establishes prominence, and the more prominent argument is then connected to the functional layer above the vP , as a point-of-view holder (i.e., a reference participant, the formal counterpart of reference time). We also recognize that there are languages with interpretable tense features in Infl that have a direct/inverse system; we refer to such languages as Restricted P-languages. In these languages, interpretable person features are limited to the vP domain. We note that similarly interpretable temporal features can be limited to lower domains, in that some languages (that are not P-languages) formally encode only aspect but not tense. We hope to explore these and related conceptual parallels in future work.

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Appendix: Interactions of *je*-Voice, transitivity *mbo*- and causative *-uka*

We discuss first the interaction of *je*-Voice and the transitivity prefix *mbo*-. We then turn to their interaction with the causative suffix *-(u)ka*. These interactions lend support to a phase-level syntactic computation of these constructions, as proposed in Sect. 5. (The function of *mbo*- and *uka*- are also analyzed in Velázquez-Castillo (2002), within a functionalist perspective.)

A.1 The transitivity *mbo*- and *je*-Voice

Recall that Paraguayan Guaraní has a transitivity prefix *mbo*- that combines with intransitives to form transitive predicates.⁴³ Interestingly, the reflexive forms function as intransitives for the purpose of *mbo*- prefixation. To exemplify, consider the case of transitivity with an incorporated inalienable possessor *nP*, like those in (23a) and (24a), repeated in (50). As shown in (51), the same meaning can be constructed by first reflexivizing the predicate and then transitivity it; in fact, the forms in (51) are the preferred ones, especially if the short verb stem form is used.⁴⁴ (Recall that *je*+*hova* is pronounced as *jova*.)

- (50) a. Nde *che*=rova-(jo)héi
 you 1SG.POSS=face-wash
 'You wash my face.'
- b. Ha'e nde=rova-(jo)héi
 (s)he 2SG.POSS=face-wash
 '(S)he washes your face.'
- (51) a. Nde *che*=*mbo*-*jova*-héi
 You 1SG=TR-JE.face-wash
 'You wash my face.'

⁴³*Mbo*- combines with basic intransitives (i), as well as with nouns (ii), and with modifiers (iii), to make transitive verbs. It is a very productive process. (Examples and description are from Guasch 1956. See also Velázquez-Castillo 2002.)

- | | | |
|-------|-------------------------------|---|
| (i) | <i>a-sē</i> 'to go out' | – <i>a-mo-sē</i> 'to make go out' |
| | <i>a-ke</i> 'sleep' | – <i>a-mo-nge</i> 'to put to sleep' |
| | <i>ai-ke</i> 'to go in' | – <i>a-moi-nge</i> 'to make enter' |
| (ii) | <i>y</i> 'water' | – <i>a-mbo-y</i> 'to make water or liquify' |
| | <i>kuarahy</i> 'sun' | – <i>a-mbo-kuarahy</i> 'to put under the sun' |
| | <i>yvyty</i> 'wind' | – <i>a-mbo-yvyty</i> 'to ventilate' |
| (iii) | <i>hasy</i> 'sick/ difficult' | – <i>a-mbo-hasy</i> 'to make sick/ difficult' |
| | <i>hatā</i> 'hard' | – <i>a-mbo-hatā</i> 'to harden' |

⁴⁴We have here two forms with the same meaning, form (50), which consists of a compound word *N* + *V*-stem (formed by m-compounding post-syntactically) and form (51), where the compound form has undergone further morphological affixation. Our consultants accepted both forms as possible, but when asked whether there is a preferred form, they both reported that the most common one to express the transparent compositional meaning is (51).

Our point here is that both forms are generated by the computational system, and other factors interfere to block one of the forms or assign preference to one over the other (see fn. 37). Alternatively, speakers may develop specialized nuances of meaning for one of the forms.

A.2 Adding the causative suffix *-(u)ka*

The complex output structure in (54b) can furthermore combine with causative *-(u)ka*, which introduces the Causer external argument and triggers further promotion of the Possessor argument (*che*) to the edge of the causative *-(u)ka*, as illustrated below.

- (55) a. Nde *che*=*mbo-jova-héi-ka* (María-pe) (inverse order)
 You 1SG(OBJ)=TR-JE.face-wash-CAUS (María-PE)
 ‘You had María / someone wash my face.’
 b. Ha’e *che*=*mbo-jova-héi-ka* (María-pe) (inverse order)
 (s)he 1SG(OBJ)=TR-JE.face-wash-CAUS (María-PE)
 ‘(S)he had María / someone wash my face.’

A.3 Reflexivizing causative structures

Even more complex forms can be constructed by merging the reflexive *je-* for the second time to the output of the causative structures in (55), generating the forms in (56). (*je* → *ñe* due to the nasality of *mbo-*). As indicated by the gloss, reflexivization has applied twice. The Possessor object promoted to the edge of *je*-Voice is bound by the Causer external argument introduced by *-(u)ka*, while the external argument introduced by the transitivizer *mbo-* (the Causee) is bound by the Dat PP. As we have seen in 5.2., the Causee is a person-less argument bound by the Dative PP (when present); therefore, it does not interfere in the binding of the Possessor by the Causer.

- (56) a. Nde *re-ñe-mbo-jova-héi-ka* chéve / María-pe (direct order)
 you 2SG-JE-TR-JE.face-wash-CAUS 1SG.DAT / María-PE
 ‘You had your face washed by me / by María.’
 b. Ha’e *o-ñe-mbo-jova-héi-ka* chéve / María-pe (direct order)
 (s)he 3SG-JE-TR-JE.face-wash-CAUS 1SG.DAT / María-PE
 ‘(S)he had her/his face washed by me / by María.’

It is quite remarkable how complex these forms are, created via multiple cyclical syntactic processes: *je*-reflexivation, *mbo*-prefixation, causativization, and a second round of *je*-reflexivation. This complexity beautifully illustrates the computational nature of the mechanisms that underlie such forms and confirms the predictions of our analysis.

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