

## *Pronominal deficiency: A view from Malagasy*

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### *Abstract*

Various proposals have been made in the literature, arguing that bound pronouns are, in some sense, deficient. This article tests this hypothesis with Malagasy pronouns, specifically in the context of Zribi-Hertz and Mbolatianavalona's (1999) claim that Malagasy pronouns may be bound only when they are missing the NumP layer of DP. Zribi-Hertz and Mbolatianavalona show further that other syntactic properties are also attached to the lack of NumP. The variety of Malagasy investigated here (Malagasy2), behaves differently from the one described by Zribi-Hertz and Mbolatianavalona (Malagasy1), and these differences lead to two conclusions. First, there are no syntactically deficient pronouns in Malagasy2, yet these syntactically complete pronouns may, in fact, be bound. Second, Zribi-Hertz and Mbolatianavalona are nevertheless correct that the lack of NumP accounts for a cluster of properties, since none of these distinctions between pronouns that they describe are found in Malagasy2. More broadly, we conclude that pronominal binding does not require syntactic deficiency.

**Keywords:** Malagasy, pronouns, bound pronouns, number, NumP, DP syntax

### *Résumé*

On retrouve dans la littérature plusieurs propositions voulant que les pronoms liés sont, dans un sens, déficients. Cet article met à l'épreuve cette hypothèse à l'aide des pronoms malgaches, en particulier dans le contexte de l'affirmation de Zribi-Hertz et Mbolatianavalona (1999) que les

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pronoms malgaches ne peuvent être liés que quand la projection NumP est absente. Zribi-Hertz et Mbolatianavalona montrent également que d'autres propriétés syntaxiques sont liées à l'absence de NumP. La variété de malgache étudiée ici (malgache2) se comporte différemment de celle décrite par Zribi-Hertz et Mbolatianavalona (malgache1) et ces différences mènent à deux conclusions. Premièrement, il n'y a pas de pronoms déficients en malgache2, mais en même temps ces pronoms, complets au niveau de la structure, peuvent être liés. Deuxièmement, Zribi-Hertz et Mbolatianavalona ont néanmoins raison de dire que l'absence de NumP rend compte d'un ensemble de propriétés, car aucune des distinctions qu'elles signalent entre les pronoms n'existe en malgache2. De façon plus générale, nous concluons que le liage des pronoms n'exige pas la déficience syntaxique.

**Mots-clés:** malgache, pronoms, pronoms liés, nombre, NumP, la syntaxe du DP

## 1. INTRODUCTION

Various proposals have been made in the literature, arguing that bound pronouns are, in some sense, deficient.<sup>1</sup> Kratzer (1998) argues that bound pronouns are semantically deficient, lacking an index, and points out that this semantic deficiency may be reflected in morphological and syntactic deficiency, as outlined by Cardinaletti and Starke (1999). Déchaine and Wiltschko (2002), focusing on evidence from morphological subparts of pronouns, argue that syntactic deficiency is relevant for binding. DP pronominals, for example, may not be bound. When stripped of the morphology encoding the DP layer, however, the remaining *pro-ϕ*Ps may be bound. Zribi-Hertz and Mbolatianavalona (1999) argue that Malagasy pronouns also must be syntactically deficient in order to be bound, but that in Malagasy, the syntactically deficient pronouns lack not the outer DP layer but the inner NumP layer. Further, they show that the syntactically deficient pronouns behave differently from syntactically complete pronouns even in ways that have nothing to do with binding.

We examine the claims just mentioned in the context of the morphological and syntactic properties of pronouns in a variety of Malagasy that we call Malagasy2. This variety behaves differently from the one described by Zribi-Hertz and Mbolatianavalona, which we call Malagasy1. We reach two conclusions: the first is that there are no syntactically deficient pronouns in Malagasy2 and that syntactically complete pronouns may be bound. If this is true, then the correlation between bound pronouns and syntactic deficiency cannot be a universal prerequisite for binding. Our second conclusion is that these authors are nevertheless correct that the lack of NumP accounts for a cluster of properties. We found that in Malagasy2, where all pronouns share the same non-deficient syntax, none of the distinctions between pronouns that Zribi-Hertz and Mbolatianavalona catalogue appear.

This article is organized as follows. In section 2 we give the theoretical setting of our investigation and a view of the internal structure of Malagasy pronouns. In

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<sup>1</sup>Abbreviations that fall outside of the Leipzig conventions: AT: Actor Topic; CL: clitic; STR: strong; TT: Theme Topic. In some cases, abbreviations have been changed from the original sources so as to be consistent with the Leipzig conventions and uniform throughout the article.

section 3 we present three tests outlined by Zribi-Hertz and Mbolatianavalona that demonstrate that the presence of NumP blocks binding, and then we show how their results differ from the data we have collected from Malagasy2. In section 4 we examine Malagasy1 and Malagasy2 in the context of two other tests for syntactic deficiency from Zribi-Hertz and Mbolatianavalona (1999). Our conclusions, summarized in section 5, are that (i) syntactically complete pronouns may be bound, as evidenced in Malagasy2, and (ii) since the distinctions that are present in Malagasy1 do not exist in Malagasy2, Zribi-Hertz and Mbolatianavalona's tests do detect differences in syntactic structure. In section 6 we conclude and lay out directions for future research.<sup>2</sup>

## 2. BACKGROUND

We begin with a brief introduction to the notion of deficient pronouns, starting with Kratzer's semantic analysis. We then show how the semantic notion of deficiency is deployed by Déchaine and Wiltschko (2002) and correlated with the absence of syntactic structure. These discussions prepare the ground for an overview of Malagasy pronouns and their morphological complexity.

### 2.1 Kratzer 1998

Kratzer (1998) proposes that there are 'zero pronouns', which are pronouns that "start their syntactic life without  $\phi$  features" (Kratzer 1998: 94).<sup>3</sup> These zero pronouns, lacking  $\phi$  features, must receive their index from an antecedent, and hence may only appear in bound environments. In (1), the sloppy reading is possible: apart from the speaker, no individual (or group of individuals) had the property of being an  $x$  such that  $x$  got a question  $x$  thought  $x$  could answer. We therefore have zero pronouns. In other words, under the sloppy reading, the second and third instances of the first person pronoun are interpreted as bound by a local subject.<sup>4</sup> This binding is only possible if the pronouns are in fact zero pronouns, as represented in (1b), and there is a local antecedent.

(1) Sloppy reading possible

- a. Only I got a question that I thought I could answer.
- b. Only I got a question that  $\emptyset$  thought  $\emptyset$  could answer.

<sup>2</sup>We have no information about the speaker(s) of Malagasy1, but the two Malagasy2 speakers that we consulted are both from the central highland region of Madagascar. One lives in Canada and the other in France. Both are between 55 and 65 years old.

<sup>3</sup>Kratzer (2009) presents a different view due to the inclusion of a wider range of data. In this newer model there are defective pronouns as well as pronouns that can undergo context shifting allowing them to be bound non-locally. We present the simpler, though not as accurate, view here for expository reasons. We return to the relevance of Kratzer (2009) in section 6.

<sup>4</sup>In Kratzer's work, 'local' means that the zero pronoun is bound by the subject in the superjacent clause. Later, in the discussion of Zribi-Hertz and Mbolatianavalona (1999), we will encounter a different sort of 'local' binding: binding within the same clause.



## (5) Slovak

(Cardinaletti and Starke 1996: 45)

- a. Vidím (je)ho.  
see.1SG 3SG  
'I see him/it.'
- b. \*Vidím ho a tých druhých  
see.1SG 3SG and these others.  
'I see him/it and these others.'
- c. Vidím jeho a tých druhých  
see.1SG 3SG and these others.  
'I see him/it and these others.'

What is important to note is that *ho* is a subpart of *jeho*, suggesting that the extra morphology in the strong form points to extra syntactic structure. Cardinaletti and Starke argue that the weaker form is missing the top layer of the pronominal projection, which, for them, is the nominal counterpart of the complementizer layer. This tight link between syntactic complexity and morphological complexity will be a recurrent theme as we continue.

## 2.2 Déchaine and Wiltschko (2002)

Déchaine and Wiltschko (2002) propose that there are three types of pronouns: pro-DPs, pro- $\phi$ Ps and pro-NPs. Their properties are summed up in Table 1.

	Pro-DP	Pro- $\phi$ P	Pro-NP
Internal syntax	D syntax; morphologically complex	neither D nor N syntax	N syntax
Distribution	argument	argument or predicate	predicate
Semantics	definite	—	constant
Binding-theoretic status	R-expression	variable	—

**Table 1:** Nominal proform typology (Déchaine and Wiltschko 2002: 410)

The part of this table that will be important to us is the distinction between Pro-DPs and Pro- $\phi$ Ps in terms of their status with respect to binding. Pro-DPs are assumed to be R-expressions and therefore unable to be bound, while Pro- $\phi$ Ps may act as variables. These differences parallel Kratzer's distinction between pronouns with an index and those without. Déchaine and Wiltschko also link this semantic distinction to a difference in morphological structure – which for them correlates to a difference in syntactic structure – similar to that proposed by Cardinaletti and Starke (1999).<sup>6</sup>

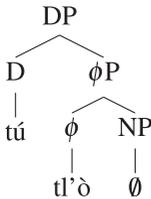
<sup>6</sup>Déchaine and Wiltschko's analysis departs from Cardinaletti and Starke's in ways that are outlined in their article. Other differences may be found in Wiltschko (2002).

	SINGULAR	PLURAL
1	<i>te-’élthe</i> (DET-1SG) <i>te-á’elthe</i> (DET-1SG.EMPH)	<i>te-lhlímelh</i> (DET-1PL)
2	<i>te-léwe</i> (DET-2SG)	<i>te-lhwélep</i> (DET-2PL)
3	<i>tú-tl’ò</i> (DET-3SG) <i>thú-tl’ò</i> (DET.F-3SG)	<i>tu-tl’ó:lem</i> (DET-3PL) <i>thu-tl’ó:lem</i> (DET.F-3PL) <i>yu-tl’ó:lem</i> (DET.PL-3PL)

**Table 2:** Halkomelem independent pronouns Déchaine and Wiltschko (2002: 412)

Déchaine and Wiltschko illustrate the morphological, and hence syntactic, complexity of a DP pronominal with data from Halkomelem independent pronouns. We see in Table 2 the Halkomelem pronominal paradigm, with the D part of the pronoun in italics. Wiltschko (1998, 2002) proposes the structure in (6) to capture this morphological complexity.

(6) Pro-DP structure (DET-3SG)



To support this analysis, Déchaine and Wiltschko present the data in (7), showing that the same D and φ morphology may be used with an overt N in Halkomelem.

(7) *Tl’ò-cha-l-su*      *qwemciwe-t*      [*thú-tl’ò*      *q’ami*]<sub>ARG</sub>  
 then-FUT-1SG-so      hug-TR      DET.F-3SG      girl  
 ‘Then I’m going to hug that girl.’ (Galloway 1993: 174)

Further, using the data in (8), they argue that the use of *tl’ò* alone in a cleft construction shows that a pro-φP, without an overt N, can be used on its own as a predicate.

(8) [*Tl’ò*]<sub>PREP</sub> -cha te Bill kw’e may-th-óme.  
 3SG -FUT DET Bill COMP help-TR-2SG.OBJ  
 ‘It will be Bill that helps you.’ (Galloway 1993: 172)

Having seen that the subparts of these Halkomelem pronouns may be used separately, we turn to their data involving pronominal binding constructions. Déchaine and Wiltschko’s system predicts that the full DP pronouns in Halkomelem should not be able to be bound. They show that this is indeed the case, using the data given in (9) and (10), from Déchaine and Wiltschko (2002: 414).<sup>7</sup>

<sup>7</sup>Because only DPs can appear in argument positions in Halkomelem, it is not possible to show binding effects with pro-φPs. See Wiltschko (2002) for further discussion of Halkomelem pronouns.

- (9) \* Súq'-t-es [ te swíyeqe ]<sub>i</sub> te kopú-s [ tú-tl'ò ]<sub>i</sub>.  
 search-TR-3.SBJ DET man DET coat-3.POSS DET-3SG  
 ≠'The man<sub>i</sub> was looking for his<sub>i</sub> coat.'
- (10) \* [ Mékw ye swíyeqe ]<sub>i</sub> kwákwets-et-es te stóles-s [   
 every DET.PL man looking-TR-3.SBJ DET wife-3.POSS   
 tú-tlòlem ]<sub>i</sub>.  
 DET-3.PL  
 ≠'All men<sub>i</sub> are looking at their<sub>i</sub> wives.'

We turn now to the pronominal system in Malagasy. As in Halkomelem, pronouns are built from bits of morphology that we argue, following the work of others, indicate the existence of specific syntactic heads.

### 2.3 Malagasy pronouns

Malagasy is an Austronesian language spoken in Madagascar by over 25 million people. The unmarked word order is VOS, as seen in (11). The example in (11a) illustrates ActorTopic (AT) voice, where the agent *ianao* 'you (sg)' is the subject, while (11b) illustrates ThemeTopic (TT) voice, where the theme *ny alika* 'the dog' is the subject. The pronominal agent in (11b) appears as a suffix on the verb.<sup>8</sup>

- (11) a. [ Mahita ny alika ] ianao.  
 PRS.AT.see DET dog 2SG.NOM  
 'You (sg) see the dog.'
- b. [ Hitanao ] ny alika.  
 see.2SG.GEN DET dog  
 'You (sg) see the dog / The dog is seen by you (sg).'

There is much debate about the nature of the clause-final 'subject' position and the voice system, but we set this aside here (see Pearson 2005 for a discussion), instead focusing on the pronominal system.<sup>9</sup> The variety of Malagasy discussed in this article, which we are calling Malagasy2, is Merina, spoken in the highlands of Madagascar.

Malagasy is typically described as having two types of pronouns: free-standing and affixal (see Table 3).<sup>10</sup> The free-standing pronouns are further divided into the 'nominative' and 'accusative' series. We will call the affixal pronouns 'genitive',

<sup>8</sup>Malagasy data come from our own fieldwork unless otherwise noted and are presented using the standard Malagasy orthography. Word final *y* is pronounced [i] and *o* is pronounced [u]. We have chosen not to gloss tense or voice marking on root forms of the verb, such as *hita* in (11b). These root forms typically have a theme subject and their default tense is non-future, but there is no morphology indicating either voice or tense.

<sup>9</sup>A detailed description of Malagasy pronouns can be found in Zribi-Hertz and Mbolatianavalona (1999); we discuss their analysis in section 3.

<sup>10</sup>We follow Zribi-Hertz and Mbolatianavalona in referring to the genitive series of pronouns as affixal. The exact syntactic and/or morphological account of their status is not crucial to our discussion. Some discussion of possible accounts can be found in Levin (2015), Paul and Travis (2019), and Travis (2006).

	FREE-STANDING		AFFIXAL
PERSON/NUMBER	NOM	ACC	GEN
1SG	izaho/aho	ahy	-(k)o
2SG	ianao	anao	-(n)ao
3	izy	azy	-ny
1PL.EXCL	izahay	anay	(n)ay
1PL.INCL	isika	antsika	(n)tsika
2PL	ianareo	anareo	(n)areo
3PL	izy (ireo)	azy (ireo)	izy (ireo)

**Table 3:** Malagasy pronominal system

as this form of the pronoun is also used for possessors (see Keenan and Polinsky 2001: 577 for more details about the genitive pronominal forms). We note in passing that these labels (nominative, accusative, genitive) are also subject to debate, but we set that debate aside as it is not relevant for the purposes of this article.

One of the issues that we will be discussing is the realization of number on third person pronouns. For present purposes, we adopt the standard description in the literature, which states that the third person pronoun is unmarked for number (number-neutral) but can optionally be explicitly marked as plural via the addition of the plural demonstrative *ireo* (Keenan and Polinsky 2001).<sup>11</sup> There is yet another third person plural variant, *ry zareo*, which we set aside here. We return to a more in-depth discussion of number in section 3.

Our first goal is to show that Malagasy pronouns are morphologically complex and contain a Determiner morpheme (as we have seen in Table 2 for Halkomelem), as well as a Number morpheme. The discussion will start with locatives, however, since the internal structure of pronouns is built on the internal structure of demonstratives, which in turn is built on the internal structure of locatives.

The locative system has sometimes been described as encoding six or seven degrees of distance (Anderson and Keenan 1985), but as argued by Rajaona (1972) and Imai (2003), there are only three relevant distances: proximal, medial, distal, as well as a set of neutral locatives, which can be used for a wide range of distances for the most part overlapping with the other locatives. Other variables that are morphologically marked involve visibility and boundedness (see Table 4 and

<sup>11</sup>References that we have checked vary in how the appearance of the plural demonstrative is dealt with. For example, the pronominal paradigm in Keenan and Polinsky (2001: 577) lists *izy/azy* as being both the third person singular and plural, but later shows that the pronoun may be disambiguated through various sorts of augmentation including the addition of the plural demonstrative *ireo*. In the standard dictionary by Abinal and Malzac (1899: 288), the definition of *izy* is: *il, elle, lui, le, la, ils, elles, les, leur, eux*, therefore including both the singular and plural uses of the bare form. On the other hand, Rajemisa-Raolison (1971: 59) provides *izy ireo, azy ireo* for third person plural independent forms but only *-ny* for the genitive form.

	proximal		medial	distal		neutral	
	–bounded	+bounded		–bounded	+bounded	–bounded	+bounded
vis	ety	eto	etsy	ery	eroa	eny	eo
	e-t-y	e-t-o	e-ts-y	e-r-y	e-r-oa	e-n-y	e-∅-o
invis	aty	ato	atsy	ary	aroa	any	ao
	a-t-y	a-t-o	a-ts-y	a-r-y	a-r-oa	a-n-y	a-∅-o

**Table 4:** Locatives

Imai 2003 for details). Below we give a minimal pair from Imai (2003: 108). Where the proximal visible location being referred to is in a confined specific area, the visible proximal bounded demonstrative *eto* is used, as in (12a). Where the proximal visible location being referred to is in a vague unconfined area, the visible proximal unbounded demonstrative *ety* is used, as in (12b).

- (12) a. Apetraho      *eto*/\**ety*.  
 IMP.TT.put      DEM.VIS-PROX-BOUNDED/LOC,VIS-PROX-UNBOUNDED  
 ‘Put (it) here (in the circle).’
- b. Apetraho      *ety*/\**eto*.  
 IMP.TT.put      DEM.VIS-PROX-UNBOUNDED/LOC.VIS-PROX-BOUNDED  
 ‘Put (it) here (in this area).’

Rajaona (1972) proposes the following morphological decomposition: the initial vowel encodes visibility (*e* vs. *a*), the medial consonant encodes distance (*t* vs. *ts* vs. *r* vs.  $\emptyset/n$ ) and the final vowel encodes boundedness (*y* vs. *o*).<sup>12</sup> For the purposes of this article we simply adopt Rajaona’s analysis.

Rajaona compares the locative paradigm to the demonstrative paradigm and proposes that demonstratives are derived by adding the *i-* morpheme (which he calls a definite marker) to locatives (see Table 5). We can see in (13) how such demonstratives are used.<sup>13</sup>

- (13) Omeo            *ahy*            *itsy*                                    *boky*  
 IMP.TT.give      1SG.ACC      DEM.MED.UNBOUNDED      book  
*itsy*.  
 DEM.MED.UNBOUNDED  
 ‘Give me that book over there.’

As can be seen in the bottom rows of Table 5, there is a /z/ that appears between the *i-* prefix and the visibility marker *a*.<sup>14</sup> In what follows, we build on Rajaona’s analogy between locatives and demonstratives.

The correlation between the locative and the demonstrative paradigms is very clear, and we propose to extend this parallelism to the pronominal paradigm. We will see, however, that the match is not as clear, because the pronominal paradigm is much less regular. Our first step is to argue that the *i-* prefix found on demonstratives is also found in the pronominal paradigm, and to offer additional support for the Det status of the prefix *i-*.

<sup>12</sup>The neutral distance marker appears as *n* in the unbounded form and as  $\emptyset$  in the bounded form. We have found no explanation for this.

<sup>13</sup>Note that demonstratives appear on both sides of the NP. This will be discussed more below. For space reasons, later examples of demonstratives will be glossed simply as DEM. SG or DEM.PL.

<sup>14</sup>Rajaona (1972: 632) analyzes *z* as a transitional consonant (*consonne de liaison*). Further, he assumes that *ity* is actually *i+e+t+y* but that the /e/ is deleted. We simplify the analysis here, but leave open the question of which analysis has more support.

	proximal		medial	distal		neutral	
	–bounded	+bounded		–bounded	–bounded	+bounded	–bounded
vis	ity	ito	itsy	iry	iroa	iny	io
	i-t-y	i-t-o	i-ts-y	i-r-y	i-r-oa	i-n-y	i-∅-o
nonvis	izaty	izato	izatsy	izary	izaroa	izany	izao
	i-za-t-y	i-za-t-o	i-za-ts-y	i-za-r-y	i-za-r-oa	i-za-n-y	i-za-∅-o

**Table 5:** Demonstratives

	SINGULAR	PLURAL
1	<i>i-zaho</i>	<i>i-zahay</i> (EXCL) <i>i-sika</i> (INCL)
2	<i>i-anao</i>	<i>i-anareo</i>
3	<i>i-zy</i>	<i>i-zy</i> (ireo)

**Table 6:** Complexity of Malagasy pronouns (first approximation)

Nominative pronouns can be distinguished from the accusative and genitive (affixal) pronouns by the prefix *i-*, as shown in Table 3. In Table 6 we replicate the nominative part of the paradigm.<sup>15</sup>

We follow Rajaona in assuming that *i-* represents the definite marker, which we place in D. This makes the analysis of Malagasy pronouns similar to Déchaine and Wiltschko's (2002) analysis of Halkomelem pronouns. Another argument for treating *i-* as a determiner comes from its use with certain proper names (there are other proper name determiners, such as *Ra*; see Rajemisa-Raolison (1971: 24) for a description and Paul (2018) for discussion). Some examples are given below that show that *i-* (i) appears with proper names, as in (14a), (ii) is used to form place names as in (14b), and (iii) is used to name animal characters, as in (14c) (from Paul 2018: 326).

- (14) a. Tonga i Koto.  
arrive DET Koto  
'Koto arrived.'
- b. Ivato  
DET.stone  
'Ivato (city name)'
- c. iPiso  
DET.cat  
'Cat'

Having made the connection between the initial prefix *i-* in nominative pronouns and demonstratives, and then having related this to the D head, we now turn to the existence of NumP, which will be crucial to our discussion of Zribi-Hertz and Mbolatianavalona (1999) in section 3.<sup>16</sup> To do this, we include a look at plural demonstratives.

<sup>15</sup>We have given only one of the nominative forms for the 1st person singular. We assume that the other form, *aho*, is a suppletive version found in certain circumstances. Pearson (2018: 828), for example, suggests that *aho* is restricted to the subject position and that *izaho* is found elsewhere. We leave the details of this distribution for future investigation.

<sup>16</sup>Zribi-Hertz and Mbolatianavalona (1999: note 27) opt not to connect the word initial *i* in pronouns with the proper name determiner because the 2SG form used to be *hianao*. We remain unconvinced by this argument because in Maanyan, a language spoken in Borneo and Malagasy's closest relative, the proper name determiner is *hi* (see Gudai 1988: 62). Most likely all forms of *i-* at some point were *hi*.

proximal		medial	distal		neutral	
–bounded	+bounded	–bounded	–bounded	+bounded	–bounded	+bounded
—	ireto	iretsy	irery	ireroa	ireny	ireo
	i-re-t-o	i-re-ts-y	i-re-r-y	i-re-r-oa	i-re-n-y	i-re-∅-o
izarety	izareto	izaretsy	izarery	izareroa	izareny	izareo
i-za-re-t-y	i-za-re-t-o	i-za-re-ts-y	i-za-re-r-y	i-za-re-r-oa	i-za-re-n-y	i-za-re-∅-o

**Table 7:** Plural demonstratives

Malagasy rarely shows number distinctions, but there are two clear areas where number is marked – in the demonstrative system and the pronominal system. The plural demonstratives are shown in Table 7.<sup>17</sup> What is important to note is where the plural morpheme *re-* appears – after the marker of visibility and before the marker of distance (e.g., *i-za-re-t-o*).

With this information in mind, we now turn to pronouns. Beyond the appearance of the *i-* prefix, the most obvious other similarity between demonstratives and pronouns is the use of *re-* to form the 2PL pronoun from the singular one (2SG: *iana*; 2PL: *ianareo*). This suggests that the breakdown of the 2PL pronoun is *i-ana-re-o*. To push the comparison of pronouns to demonstratives further, this morphological breakdown suggests that the *ana-* in the 2PL pronoun is in a position parallel to the visibility morpheme in a form such as *i-za-re-o*. Further, the *z* that appears before the visibility morpheme *a* in the demonstrative system could be matched with the *z* that appears in the pronominal forms *izaho*: 1SG and *izahay*: 1PL.EXCL (making *izaho* morphologically similar to the demonstrative *izato*). Table 8 outlines a speculative correlation of the morphemes found in the pronominal system as compared to the morphemes in the locative and demonstrative systems. There are areas that need further examination, such as the status of *z*, which we have simply labelled X, and an analysis of *ana/aha*, which occupy a position parallel to the visibility morpheme in the demonstrative system.<sup>18</sup> Here we label this position with the vague term Value, for lack of a better choice. Clearly, the correlation between the locatives and the demonstratives is more solid than that between demonstratives and pronouns, but we hold that, at the very least, the determiner *i-* prefix and

<sup>17</sup>Judgments vary on which of these many forms are actually used. For example, while Rajaona (1972: 633) has no plural nonvisible forms, they appear in the dictionary at malagasy-word.org. <<http://malagasyword.org/bins/teny2/izaretsy>>

<sup>18</sup>We are tempted to correlate the *ana/aha* distinction to one found in the kinship term system. *Raha* is used for a same-sex sibling and *ana* for a different-sex sibling (*rahavavy* ‘sister in relation to a female sibling’, *anabavy* ‘sister in relation to a male sibling’). In the pronominal system, *aha-* is used for 1SG and 1SG.EXCL which could be seen as ‘same as speaker’ (and not hearer), and *ana* is used for 2SG/2PL, ‘different from speaker’. But there are other issues that would have to be addressed before a claim such as this could be made with confidence.

TYPE	Det	X	Val	Num	Distance	Base
Loc	—	—	a/e	—	t/r	o/y
Dem	i	z	a/e	re	t/r	o/y
Pron	i	z	ana/aha	re	—	o/y

**Table 8:** Locatives/Demonstratives/Pronouns

the use of the plural *re-* point to a similarity in the internal morpho-syntactic structure of demonstratives and pronouns.

Another reason to conclude that demonstratives and pronouns are closely related comes from their syntactic distribution. We see similarities between pronouns and demonstratives particularly in terms of their position within the DP. As we saw in (13), demonstratives generally frame the DP in Malagasy, such that the same demonstrative appears on both sides of the DP, as shown in (15).

- (15) *io*            *tranon-dRaso*    *io*  
 DEM.SG    house-Raso    DEM.SG  
 ‘that house of Raso’s’

While certain demonstratives can appear on their own in initial position (*ity*), others cannot (*io*).

- (16) *Lena* [ *ity*/\**io*    *lamba* ]  
 wet    DEM.SG cloth  
 ‘This cloth is wet.’ (Rajaona 1972: 684-685)

What is uniformly excluded is a single post-nominal demonstrative.

- (17) \* *Lena* [ *lamba*    *ity*       ]  
 wet    cloth    DEM.SG  
 Intended: ‘This cloth is wet.’

Strikingly, the initial demonstrative may be replaced by a pronoun, as in (18). In these examples, a pronoun appears in initial position, followed by a noun and then a demonstrative.<sup>19</sup> For example, in (18a) the first-person singular pronoun *izaho* is in initial position, followed by the noun *vehivavy* ‘woman’ and the demonstrative *ity*. In (18b), we see a similar example with the first-person exclusive plural accusative pronoun *anay*. The example in (18c) illustrates that framing is also possible with the genitive series (in this case *-nay* (1st person plural exclusive)), despite their affixal status.

- (18) a. *Mahavita*    *io*            *raharaha*    *io*        [ *izaho*    *vehivavy*    *ity*       ].  
 PRS.AT.do    DEM.SG    work        DEM.SG    1SG    woman    DEM.SG  
 (lit.) ‘I this woman can do that work’
- b. *Nisambotra*    [ *anay*        *vehivavy*    *ireto*       ] *ny*    *polisy*.  
 PRS.AT.stop    1PL.EXCL    woman        DEM.PL    DET    police  
 ‘The police arrested us women.’

<sup>19</sup>See Paul and Travis (2019) for a discussion of this construction.

Pronoun	D	X	Val	Num	Pers
1SG	i	z	ah	∅	o
1PL.EXCL	i	z	ah		ay
1PL.INCL	i			sika	
2SG	i		ana	∅	o
2PL	i		ana	re	o
3	i	z		y	

**Table 9:** Pronominal morphemes

- c. Vita[nay            vehivavy    anankiroa    ireto        ] io        raharaha  
 done.1PL.EXCL    woman        two            DEM.PL     DEM.SG    work  
 io.  
 DEM.SG  
 ‘We two women can do that work.’

The framing construction highlights the connection between pronouns and demonstratives, to the exclusion of determiners. The definite determiner *ny*, for example, does not participate in framing, as shown in (19).

- (19) \* ny    trano    io  
 DET house    DEM.SG

We do not provide an analysis of the framing construction here, but only note the similarity in function between the demonstrative system and the pronominal system.<sup>20</sup> In Table 9, we flesh out how pronominal morphology might fit into the demonstrative template.

Summing up, we have shown that pronouns in Malagasy have internal demonstrative morphology and that they also share their distribution with demonstratives. We leave a development of this comparison for future work and now turn to the work of Zribi-Hertz and Mbolatianavalona and the relationship between pronominal structure and binding.<sup>21</sup>

### 3. MALAGASY AND ZRIBI-HERTZ AND MBOLATIANAVALONA (1999)

Zribi-Hertz and Mbolatianavalona (1999) present an in-depth study of the internal structure and external distribution of Malagasy pronouns. Their goal is to test the ideas of Cardinaletti and Starke (1999) who, like Déchaine and Wiltschko (2002), propose that pronouns come in different sizes. Zribi-Hertz and

<sup>20</sup>Zribi-Hertz and Mbolatianavalona (1999: 188–189) give a syntactic account for the framing behaviour of the demonstratives.

<sup>21</sup>We thank Carol-Rose Little for pointing out to us that Malagasy fits into the generalization that 1PL.EXCL and 1SG often share morphology distinct from 1PL.INCL, as discussed by Moskal (2018).

Mbolatianavalona come to several important conclusions. One is that deficiency can be syntactic, morphological, or phonological. Crucial for our purposes, they provide evidence that morphological deficiency does not entail syntactic deficiency. That is, affixal (genitive) pronouns are not necessarily syntactically deficient. A second conclusion is that syntactic deficiency in Malagasy occurs not when the top-most layer of the nominal projection is missing, but rather when the Number projection is missing. At this point in our discussion we concentrate on this view of syntactic deficiency.

Zribi-Hertz and Mbolatianavalona propose a variety of tests for the absence of NumP. In section 3.2, we introduce three of them, setting up the interaction of syntactic deficiency and pronominal binding. In section 3.3, we will see that the variety of Malagasy spoken by our consultants (Malagasy2) differs from that described by Zribi-Hertz and Mbolatianavalona (Malagasy1) with respect to all three of these tests. In Malagasy1, third person pronouns that are unspecified for number behave differently from first and second person pronouns, as well as from third person pronouns with number marked overtly. In Malagasy2 however, there is no distinction in the behaviour of pronouns, suggesting that they all contain NumP. We show further that syntactically complete pronouns may be bound. In section 4, we return to the remaining two tests with similar results: while the data in Zribi-Hertz and Mbolatianavalona (1999) show a split between those pronouns with overt number and those without, no such split appears in Malagasy2 – an expected result if all pronouns in Malagasy2 are structurally the same. This result confirms that in Malagasy1, this cluster of properties is indeed sensitive to the presence of NumP, as proposed by Zribi-Hertz and Mbolatianavalona.<sup>22</sup>

We begin by showing first that our speakers obligatorily mark number on third person pronouns (*izy/azy/-ny* for 3SG and *izy ireo/azy ireo* for 3PL). We then show that not only can these overtly third person plural pronouns be bound, but all pronominal forms may be bound, including first and second person forms.

### 3.1 Number and Malagasy DPs

The three tests to be discussed are: (i) number interpretation, (ii) pronominal binding by a non-quantified DP, and (iii) pronominal binding by a quantified DP. Before turning to the tests, we introduce more generally the role of number in Malagasy.

As noted earlier, number is generally underspecified in Malagasy DPs. When using the default determiner *ny* as in (20a), the interpretation of the nominal can be either singular or plural. However, determiners that appear with proper names, what Zribi-Hertz and Mbolatianavalona call nominal articles, show a distinction in number, as in (20b) vs. (20c), and we saw in Table 7 that demonstratives have a singular (20d) and a plural (20e) form.

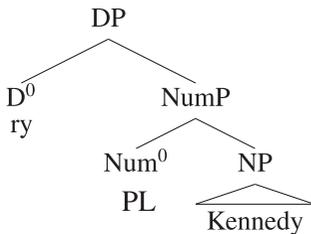
<sup>22</sup>Ghomeshi and Massam (2020) argue that while number is realized as a spinal head for common nouns, it is part of a feature bundle dependent on the Person head in pronominals. We assume that our observations concerning the role of number in these two varieties of Malagasy can easily be translated into their system.

- (20) a. Masiaka ny alika  
 mean DET dog/dogs  
 ‘The dog/dogs is/are mean.’
- b. Matory i Kennedy.  
 PRS.AT.sleep DET.SG Kennedy  
 ‘Kennedy is sleeping.’
- c. Matory ry Kennedy.  
 PRS.AT.sleep DET.PL Kennedy  
 ‘The Kennedys are sleeping.’
- d. Masiaka io alika io  
 mean DEM.SG dog DEM.SG  
 ‘That dog is mean’
- e. Masiaka ireo alika ireo  
 mean DEM.PL dog DEM.PL  
 ‘Those dogs are mean’

Zribi-Hertz and Mbolatianavalona propose that underspecified number indicates the absence of the NumP within the DP.<sup>23</sup> The structure in (21), where Number is encoded in the form of the determiner, represents a non-deficient DP, while (22) represents a syntactically deficient DP, one that is missing NumP. In this case, it is a DP with a default determiner, which is underspecified for number.

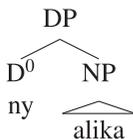
- (21) Syntactically complete DP: the Kennedys

(Zribi-Hertz and Mbolatianavalona 1999: 187)



- (22) Syntactically deficient DP: the dog/dogs

(Zribi-Hertz and Mbolatianavalona 1999: 188)



<sup>23</sup>Note the distinction between a singular zero morpheme for number as in (20d), where *io* has a plural counterpart, *ireo*, and the lack of NumP as in (20a), where there is no plural counterpart to *ny*.

### 3.2 Binding in Malagasy1

We turn now to the distribution of NumP in pronouns.<sup>24</sup> Zribi-Hertz and Mbolatianavalona argue that first and second person pronouns in Malagasy have a NumP, while third person does not. The first test looks at the correlation between the morphological realization of number and the semantic interpretation.

*Test 1: Number interpretation* We have already seen (Table 3) one reason to posit that the head Num is morphologically encoded: first and second person pronouns have distinct forms for singular and plural, while third person only optionally appears with a plural demonstrative form. Zribi-Hertz and Mbolatianavalona show, however, that the appearance of this marking in Malagasy1 depends on the construction. In fact, the third person, when not explicitly marked for plural, must generally be interpreted as singular. We see this in (23) below, where the simple form *izy* in (23a) must be interpreted as singular; it can only receive a plural interpretation if Number is expressed overtly with the plural demonstrative, *ireo*, as in (23b).

- (23) a. Eto ireo naman-dRandria. Faly **izy**.  
 here DEM.PL neighbour-Randria pleased 3.NOM  
 ‘Randria’s neighbours are here. He is/\*They are pleased.’
- b. Eto ireo naman-dRandria. Faly **izy ireo**.  
 here DEM.PL neighbour-Randria pleased 3.NOM DEM.PL  
 ‘Randria’s neighbours are here. \*He is/They are pleased.’

(Zribi-Hertz and Mbolatianavalona 1999: 196)

We do have situations, though, where overt marking is not only unnecessary but is actually prohibited. Zribi-Hertz and Mbolatianavalona (1999: 198) show that, under certain conditions, the third person form that is unspecified for number may be interpreted as either singular, as in (24a), or plural, as in (24b).

- (24) a. Mieritreritra [ io ankizy io ]<sub>1</sub> fa faly **izy**<sub>1</sub>.  
 PRS.AT.think DEM.SG child DEM.SG COMP pleased 3.NOM  
 ‘That child<sub>i</sub> thinks that he/she<sub>i</sub> is pleased.’
- b. Mieritreritra [ ireo ankizy ireo ]<sub>1</sub> fa faly **izy**<sub>1</sub>.  
 PRS.AT.think DEM.PL child DEM.PL COMP pleased 3.NOM  
 ‘Those children<sub>i</sub> think that they<sub>i</sub> are pleased.’

Crucially, these interpretations depend on whether or not the pronoun is semantically bound, where we understand semantic binding to mean c-command and coindexation leading to a variable interpretation, not just simple coreference. In (23) the pronouns are not bound, while in (24) they are. Zribi-Hertz and Mbolatianavalona argue that semantically bound pronouns, as in (24), do not contain a NumP and that their number interpretation is provided by the DP which binds them. When a pronoun is not semantically bound, as in (23), it must contain a NumP. This use of semantic binding to supply number features to a deficient pronoun leads us to the

<sup>24</sup>We focus here on the independent forms (nominative and accusative), but the facts hold for the genitive forms as well, pointing to the independence of syntactic deficiency from morphological deficiency as argued for by Zribi-Hertz and Mbolatianavalona.

issue of semantic binding and syntactic deficiency more generally, and to *Test 2* and *Test 3*.

*Test 2: Binding by a non-quantified DP* The examples below show that pronouns specified for number may not be semantically bound. We start with third person pronouns because these are the only pronouns that may lack NumP. In (25) we see that the accusative third person pronoun *azy* is used. Since the interpretation of this pronoun will be singular, it could be that it is the deficient form, in which case it must be semantically bound by the matrix subject. Alternatively, it could be the complete form, in which case it may simply be coreferential with the matrix subject, that is, the pronoun does not behave like a bound variable. The former case gives rise to the sloppy reading, while the latter case gives rise to the strict reading (Zribi-Hertz and Mbolatianavalona 1999: 198–199).<sup>25</sup>

- (25) Mieritreritra [ io ankizy io ]<sub>1</sub> fa miresaka **azy**<sub>1</sub>  
 PRS.AT.think DEM.SG child DEM.SG COMP PRS.AT.discuss 3.ACC  
 aho, Rasoa koa.  
 1SG.NOM Rasoa too  
 ‘That child<sub>i</sub> thinks that I am discussing him<sub>i</sub>, and Rasoa does too.’  
 = Rasoa thinks I am discussing the child. (strict)  
 = Rasoa thinks I am discussing Rasoa. (sloppy)

In (26), the matrix subject is overtly marked plural through a plural demonstrative. In one case, (26a), the accusative pronoun in the embedded clause is unmarked for number. In order to receive a plural reading, it must be bound by the matrix subject, resulting in an obligatory sloppy identity reading. In (26b), where the number has been specified on the object *azy ireo*, this object may be co-referential with the matrix subject, but as a complete DP, it cannot be a variable. This status is confirmed by the impossibility of a sloppy reading.

- (26) a. Mieritreritra [ ireo ankizy ireo ]<sub>1</sub> fa miresaka **azy**<sub>1</sub>  
 PRS.AT.think DEM.PL child DEM.PL COMP PRS.AT.discuss 3.ACC  
 aho, Rasoa koa  
 1SG.NOM Rasoa too  
 ‘Those children think that I am discussing them, and Rasoa does too.’  
 ≠ Rasoa thinks I am discussing those children. (strict)  
 = Rasoa thinks I am discussing Rasoa. (sloppy)
- b. Mieritreritra [ ireo ankizy ireo ]<sub>1</sub> fa miresaka [ **azy ireo** ]<sub>1</sub> aho, Rasoa koa  
 PRS.AT.think DEM.PL child DEM.PL COMP PRS.AT.discuss  
 3.ACC DEM.PL 1SG.NOM Rasoa too  
 ‘Those children think that I am discussing them, and Rasoa does too.’  
 = Rasoa thinks I am discussing those children. (strict)  
 ≠ Rasoa thinks I am discussing Rasoa. (sloppy)

As expected, since first and second person pronouns are always specified for number, they may not be bound. Zribi-Hertz and Mbolatianavalona give the example below to show that the strict reading but not the sloppy reading is available for the second person singular pronoun, *anao*.

<sup>25</sup>With all of these examples, there is another reading, of course, where *azy* is interpreted as being a distinct individual, but this reading is irrelevant for our discussion.

- (27) Mieritreritra    ianao<sub>1</sub>    fa    miresaka    **anao<sub>1</sub>**    aho,    Rasoa  
 PRS.AT.think    2SG.NOM    COMP    PRS.AT.discuss    2SG.ACC    1SG.NOM    Rasoa  
 koa.  
 too  
 ‘You<sub>1</sub> think I am discussing you<sub>1</sub> and Rasoa too.’  
 = Rasoa thinks I am discussing you. (strict)  
 ≠ Rasoa thinks I am discussing Rasoa. (sloppy)

*Test 3: Binding by a quantified DP* Zribi-Hertz and Mbolatianavalona also discuss how binding works when the antecedent is a quantifier. The main differences in these cases are that simple coreference is not allowed, and that a coindexed third person plural pronoun must always be syntactically deficient. This has the effect of making the use of the plural demonstrative ungrammatical, as (28) shows.

- (28) Mieritreritra    [ ny    ankizy    rehetra    ]<sub>1</sub> fa    misy    olona  
 PRS.AT.think    DET    child    all    COMP    PRS.AT.exist    person  
 tia    **azy<sub>1</sub>**    (\*ireo).  
 PRS.AT.love    3.ACC    (DEM.PL)  
 ‘All children<sub>1</sub> think that there exists somebody who loves them<sub>1</sub>.’  
 (Zribi-Hertz and Mbolatianavalona 1999: 200)

Having looked at Zribi-Hertz and Mbolatianavalona’s claims about the syntactic deficiency of third person pronouns in Malagasy and its relation to pronominal binding, we now turn to our own findings. We will see that the data we elicited were quite different from those reported by Zribi-Hertz and Mbolatianavalona. While our data might be seen as simply refuting the need for syntactic deficiency to allow variable binding, we find the overall results to lead to a more interesting conclusion. We argue that there is no syntactic deficiency in Malagasy<sub>2</sub>. Rather than disallowing semantic binding of non-deficient pronouns entirely, however, as we have seen for Halkomelem (see (9) and (10)), pronominal binding is available across the board, in other words, not only for both singular and (overtly) plural third person pronouns but also for first and second person pronouns.

### 3.3 Binding in Malagasy<sub>2</sub>

We start by looking at how number is realized on the third person pronoun for our two consultants. For these speakers, plural interpretation of the pronoun is only possible if the plural demonstrative *ireo* is included. Recall that this was the case for speakers of Malagasy<sub>1</sub> when the pronoun was not semantically bound, as reported by Zribi-Hertz and Mbolatianavalona (see (23)). We see, however, that this remains the case for our consultants even when the pronoun is semantically bound. Compare (24b) above with (29) below. In (24b) the plural demonstrative was prohibited, while in (29) it is obligatory.

- (29) Mieritreritra    [ ireo    ankizy    ireo    ]<sub>1</sub> fa    faly    [ **izy**  
 PRS.AT.think    DEM.PL    child    DEM.PL    COMP    pleased    3.NOM  
 \*(ireo) ]<sub>1</sub>.  
 DEM.PL  
 ‘Those children<sub>1</sub> think that they<sub>1</sub> are pleased.’

This example tells us two things and leaves us with a prediction. One observation is that, in terms of *Test 1*, Malagasy2 differs from Malagasy1. It appears that in Malagasy2, number is always encoded in the third person pronouns; they are never number neutral. The other observation is that pronouns with explicit number may be bound, at least in the case of third person. In other words, *azy* cannot vary its number interpretation when bound, explaining the necessity of including the plural demonstrative in (29). If this is the case, then all pronouns in Malagasy2 are syntactically complete, and further, syntactically complete pronouns are able to be bound. The availability of a sloppy identity reading demonstrates the availability of binding (*Test 2*). If the example in (29) is followed by *Rasoa koa* ‘Rasoa too’, the meaning can either be that Rasoa thinks that the children are pleased (strict reading) or that Rasoa thinks that she herself is pleased (sloppy reading).

Now we turn to the resulting prediction. Given that third person pronouns may be bound when they explicitly contain number, binding in Malagasy2 is not sensitive to the presence/absence of number and we predict that all pronouns in Malagasy2 may be bound. We see that this is the case in the following examples. Taking first the example we saw above in (27) from Zribi-Hertz and Mbolatianavalona (1999), we note that our consultants allowed both strict and sloppy readings of the second person pronoun *anao* – the former deriving from co-reference and the latter deriving from a bound pronoun construction.

- (30) Mieritritra **ianao**<sub>1</sub> fa miresaka **anao**<sub>1</sub> aho, Rasoa  
 PRS.AT.think 2SG.NOM COMP PRS.AT.discuss 2SG.ACC 1SG.NOM Rasoa  
 koa.  
 too  
 ‘You<sub>1</sub> think I am discussing you<sub>1</sub> and Rasoa too.’  
 = Rasoa thinks I am discussing you. (strict)  
 = Rasoa thinks I am discussing Rasoa. (sloppy)

The data above therefore show that Malagasy1 and Malagasy2 differ both in terms of *Test 1*, number interpretation, and *Test 2*, binding by a referential DP. *Test 3* will show that the two varieties also differ in terms of binding by a quantificational DP. Again, we see in (31) two differences from Malagasy1. First, as seen above, the plural demonstrative is obligatory to express number in the pronoun. Second, with the addition of *Rasoa koa* ‘Rasoa too’ we get both strict and sloppy readings. The strict reading shows coreference (Rasoa thinks some teacher is criticizing the students) and the sloppy reading shows binding (Rasoa thinks some teacher is criticizing Rasoa).

- (31) Mieritritra [ ny mpianatra rehetra ]<sub>1</sub> fa misy mpampianatra  
 PRS.AT.think DET student all COMP PRS.AT.exist teacher  
 mitsikera [ **azy**<sub>1</sub> **ireo** ]<sub>1</sub>.  
 PRS.AT.criticize 3SG.ACC DEM.PL  
 ‘All the students<sub>1</sub> think that some teacher is criticizing them<sub>1</sub>.’

To summarize, we have found, in the variety of Malagasy spoken by our consultants, that (i) plural number must be overtly realized (*Test 1*), and (ii) binding of syntactically complete pronouns is possible and therefore all pronouns may be bound, (iii) this is true for binding by both referential DPs (*Test 2*) and quantificational

DPs (*Test 3*). Much of the previous discussion has relied on sloppy vs. strict identity to determine whether a pronoun is bound or simply co-referential. In this context, a reviewer questioned the reliability of the test itself. In the next section we therefore investigate the two other tests for syntactic deficiency used by Zribi-Hertz and Mbolatianavalona – local binding and human interpretation. They argue that all of these tests are sensitive to the presence or lack of NumP.

#### 4. FURTHER TESTS FOR NUMP

Zribi-Hertz and Mbolatianavalona provide two other distinctions that fall out from the deficiency of DPs in Malagasy1. We present them here and then show that the data from Malagasy1 as reported there once again differs from the data we elicited in Malagasy2. This has the nice result of confirming that these two properties can indeed be tied to the lack of NumP in certain pronouns in Malagasy1. In other words, some pronouns in Malagasy1 are deficient, leading to a split in how pronouns pattern in the language. However, in Malagasy2 no pronouns are deficient, and therefore we predict that all pronouns should pattern together.

##### 4.1 Further tests in Malagasy1

Recall the core generalization from Zribi-Hertz and Mbolatianavalona: only deficient pronouns, those that lack NumP, can be bound. Importantly, the only context where we can be certain that a pronoun has no NumP is when it is bound.

*Test 4: Local binding* We first note that a third person pronoun in Malagasy1 with no NumP may be bound locally (within a clause). Zribi-Hertz and Mbolatianavalona (1999: 201) give data showing that the third person pronoun *azy* object may be bound by the subject.

- (32) a. Miresaka            **azy**<sub>1</sub> [ ireo        ankizy    ireo        ]<sub>1</sub>.  
 PRS.AT.discuss    3.ACC    DEM.PL    child     DEM.PL  
 ‘Those children<sub>1</sub> are discussing themselves<sub>1</sub>.’
- b. Menatra            **azy**<sub>1</sub> [ ireo        ankizy    ireo        ]<sub>1</sub>.  
 ashamed    3.ACC    DEM.PL    child     DEM.PL  
 ‘Those children<sub>1</sub> are ashamed of themselves<sub>1</sub>.’
- c. Menatra            **azy**<sub>1</sub> [ io            ankizy    io            ]<sub>1</sub>.  
 ashamed    3.ACC    DEM.SG    child     DEM.SG  
 ‘That child<sub>1</sub> is ashamed of himself<sub>1</sub>.’

Interestingly, there is a separate form, *tena*, that may be used to encode reflexivity, as shown in (33). We see, not surprisingly, that this reflexive form triggers sloppy readings. As we can see with the forced sloppy identity reading in (33) and (34), the pronoun *azy* is bound in the same way that the reflexive *tena* is bound.

- (33) Mandoka            **tena**<sub>1</sub> [ io            ankizy    io            ]<sub>1</sub>, Raso<sub>a2</sub>    koa.  
 PRS.AT.praise    REFL    DEM.SG    child     DEM.SG    Raso<sub>a2</sub>    too  
 ‘That child<sub>1</sub> is praising himself<sub>1</sub>, and Raso<sub>a2</sub> too.’  
 (is praising \*him<sub>1</sub>/herself<sub>2</sub>)’

- (34) Miresaka            **azy**<sub>1</sub>    [ io            ankizy    io            ]<sub>1</sub> Rasoa<sub>2</sub>    koa.  
 PRS.AT.discuss    3.ACC    DEM.SG    child    DEM.SG    Rasoa    too  
 ‘That child<sub>1</sub> is discussing himself<sub>1</sub> and Rasoa<sub>2</sub> too.’  
 (is discussing \*him<sub>1</sub>/herself<sub>2</sub>.)’

Note that while Zribi-Hertz and Mbolatianavalona (1999: 201) do give an example of a construction using the form *tena*, as in (33), they suggest that this form is only used with certain verbs – “occurs in other lexical constructions” – suggesting that it is not as productive, and, more importantly, not required for local binding.

*Test 5: Human restriction* This test differs markedly from the previous four in that it addresses the question of whether the third person pronoun may have a non-human referent. It is hard to see why this property would follow from the lack of a number projection, and hence why it would be connected to cases of binding. Zribi-Hertz and Mbolatianavalona investigate this property due to the role it plays in the typology outlined by Cardinaletti and Starke (1999), who show that strong pronouns in French (among other languages) may only refer to humans. In the data given below we see that the clitic *le* in (35b) may have a non-human referent (the film) or a human referent (Pierre). The strong pronoun *lui* in (35c), however, may only refer to Pierre.

- (35) a. Pierre m’a            parlé    de    notre    film.  
 Pierre 1SG.DAT has    spoken    of    our    film  
 ‘Pierre spoke to me about our film.’  
 b. Je    vais    **le**                            revoir    ce    soir.  
 I    go    3SG.M.CL.ACC    see.again    tonight  
 ‘I am going to see him/it again tonight.’  
 c. Je    suis    vraiment    très    fier    de    **lui**.  
 I    am    really    very    proud    of    3SG.M.STR  
 ‘I am really very proud of him/#it.’

(Zribi-Hertz and Mbolatianavalona 1999: 164)

Turning now to the Malagasy data presented by Zribi-Hertz and Mbolatianavalona, we see that the only time a third person pronoun may have a non-human referent is when it is bound. In (36b), where pragmatically the third person pronoun could refer back to the book, the child, or Rasoa as part of the discourse, only the humans referents are possible – the child or Rasoa.

- (36) a. Nanome            boky    ilay            ankizy    Rasoa.  
 PST.AT.give    book    DEM.SG    child    Rasoa  
 ‘Rasoa gave this child a book.’  
 b. Mijery            **azy**                            aho.  
 PRS.AT.watch    3SG.ACC    1SG.NOM  
 ‘I am watching her/\*it/him.’

(Zribi-Hertz and Mbolatianavalona 1999: 206)

In constructions where the third person pronoun is bound, however, it may have a non-human referent, as shown in (37).

- (37) a. Eto [ ireo            boki-n-dRaso<sub>a1</sub> ]<sub>2</sub> mba    hahalala            azy<sub>1/2</sub>  
 here DEM.PL    book-Raso<sub>a</sub>            for    FUT.AT.know    3(SG)ACC  
 aho.  
 1SG.NOM  
 'Raso<sub>a1</sub>'s books<sub>2</sub> are here for me to know her<sub>1</sub>/them<sub>2</sub>.'  
 (Zribi-Hertz and Mbolatianavalona 1999: 207)

Thus, the absence of NumP is also correlated with a lifting of the humanness constraint on pronouns.<sup>26</sup>

#### 4.2 Further tests in Malagasy2

As we have seen with binding, if no pronoun is syntactically deficient, as we claim is the case in Malagasy2, then a property that was once sensitive to deficiency is expected to lose that sensitivity. In the case of cross-clausal binding (Tests 2 and 3) we saw that the property of a few (bare third person pronouns) was extended across the board – all pronouns may be bound. We will see here a different outcome, but what remains the same is that the sensitivity apparent in Malagasy1 is lost. First, the possibility of local binding is lost entirely. Second, the possibility of having a non-human referent is extended to include all third person pronouns, but not to all pronouns for obvious semantic reasons (first and second person pronouns are conversational participants).

We start with *Test 4*, local binding. Both of our consultants found that coindexation of the pronoun with the subject was not possible in (38a) (compare with (32a) above). In order to get the interpretation of local binding, the reflexive *ny tenany* is used, as in (38b) (compare with (32b)) or *tena* as in (38c).<sup>27</sup>

- (38) a. Miresaka            azy<sub>1/\*2</sub> [ io            ankizy    io            ]<sub>2</sub>.  
 PRS.AT.discuss    3.ACC DEM.SG    child    DEM.SG  
 'That child<sub>2</sub> is discussing him<sub>2</sub>.'  
 b. Menatra    ny    tenany<sub>2/\*1</sub> [ io            ankizy    io            ]<sub>2</sub>.  
 ashamed    DET    self            DEM.SG    child    DEM.SG  
 'This child is ashamed of him/herself.'

<sup>26</sup>It is not obvious how the distribution of this restriction is to be accounted for. Zribi-Hertz and Mbolatianavalona point out that it is not simply that Num contains a [+human] feature, since common nouns with number specified by a plural demonstrative do not have to be human. See Zribi-Hertz and Mbolatianavalona (1999: 209) for details.

<sup>27</sup>There is another interesting distinction between Malagasy1 and Malagasy2 that may be relevant for the data we present here. In Malagasy1, objects with the determiner *ny* are generally ruled out (see Zribi-Hertz and Mbolatianavalona 1999: 186), while this is not the case for our speakers. In the examples under discussion, our speakers use *ny tenany*, which has the determiner *ny* and the possessive *-ny* suggesting the translation of 'his body' rather than the bare form *tena*. Zribi-Hertz and Mbolatianavalona do report that *ny* is allowed when the object has a possessor, so perhaps it would be expected that *ny tenany* would be allowed nevertheless. What is important here is that our consultants productively allow *ny tenany* as an anaphor.

- c. Mandoka            tena<sub>\*1/2</sub> [ io            ankizy    io            ]<sub>2</sub>.  
 PRS.AT.praise    self        DEM.SG    child     DEM.SG  
 ‘This child is praising him/herself.’

We note in passing that Paul (2002) argues that *tena* is a true reflexive pronoun (subject to Condition A), while *ny tenany* is not. There does appear to be some lexical and inter-speaker variation as to which verbs are compatible with *tena* and which allow *ny tenany*. We set this variation aside, as what is important for the current discussion is that speakers of Malagasy2 never allow a locally bound reading for the pronoun *azy*, unlike speakers of Malagasy1.

Turning now to the restriction of the use of unbound third person pronouns to human referents (*Test 5*), we see that this is also not the case in Malagasy2. While there is a tendency to assume that a human is being referred to, when the context is clear there is no difficulty in having an inanimate referent as shown in (39b). Further, as we see in (39c), even if the predicate does not impose animacy restrictions, speakers may allow either a human or an inanimate referent.<sup>28</sup>

- (39) a. Nanome            boky    ilay    ankizy    Rasoa.  
 PST.AT.give    book    DET    child     Rasoa  
 ‘Rasoa gave a book to the child.’
- b. Namaky            azy            aho.  
 PST.AT.read    3SG.ACC    1SG.NOM  
 ‘I read it.’
- c. Mijery            azy            aho.  
 PST.AT.look.at    3SG.ACC    1SG.NOM  
 ‘I am looking at it/her.’

It turns out, then, that speakers of Malagasy2 consistently differ from speakers of Malagasy1 on these final two tests as well. All pronouns behave the same in terms of local binding of third person pronouns: it is never allowed. Further, third person pronouns show no restriction in terms of referring to non-human objects, even when not bound.

## 5. SUMMARY AND FURTHER THOUGHTS

To sum up, we have explored pronominal binding in a variety of Malagasy that we have labelled Malagasy2 to distinguish it from Malagasy1, a variety presented by Zribi-Hertz and Mbolatianavalona (1999). Our goal was to determine whether or not pronouns in Malagasy2 showed signs of missing syntactic structure, a possibility suggested by the previous literature. We followed the model provided by Zribi-Hertz

<sup>28</sup>Zribi-Hertz and Mbolatianavalona (1999: 202) mention in a footnote that Ed Keenan provides other examples where a third person pronoun may refer to something inanimate when the discourse referent is clear. They make the point that this indeed happens in some contexts, but that the possibility of a human referent occurs in all contexts. Our consultants, however, appear to allow non-human referents fairly productively.

	Number restricted Test1	DP Bound Test2	QP Bound Test3	Loc Bound Test4	Human only Test5
1ST	✓	*	*	*	✓
2ND	✓	*	*	*	✓
3RD.PL	✓	*	*	*	✓
3RD.UNBND	✓	*	*	*	✓
3RD.BND	*	✓	✓	✓	*

**Table 10:** Deficiency tests: Malagasy1

and Mbolatianavalona, who presented a variety of tests to show that syntactic deficiency in Malagasy1 involves a missing NumP. The results of these tests for Malagasy1 are given in Table 10.

Test 1 sets the stage. It is shown that the bound 3rd person pronoun *azy* is unrestricted with respect to number. According to Zribi-Hertz and Mbolatianavalona, this variability is due to the lack of NumP. Further, this syntactic deficiency is what allows *azy* to be bound both interclausally (Tests 2 and 3) and intraclausally (Test 4). In all tests, this pronoun behaves differently from all of the others.

The same tests, when applied to Malagasy2, produce different results, as shown in Table 11. Starting again with number interpretation (Test 1), we see that third person no longer shows variability even when bound, suggesting that in this variety all pronouns contain NumP. Given that Malagasy2 has no deficient pronouns, we might not be surprised that all pronouns in Malagasy2 behave similarly when it comes to binding. In fact, this is what we see. But what is interesting is that intersentential binding (Tests 2 and 3) generalizes in a different fashion from intrasentential binding (Test 4). In the former case, the behaviour of the other pronouns is different from Malagasy1 and coincides with the behaviour of the third person bound pronoun: binding is possible across the board. In the latter case, it is the behaviour of the third person bound pronoun that differs from Malagasy1, and in Malagasy2

	Number restricted Test1	DP Bound Test2	QP Bound Test3	Loc Bound Test4	Human only Test5
1ST	✓	✓	✓	*	✓
2ND	✓	✓	✓	*	✓
3RD.PL	✓	✓	✓	*	*
3RD.UNBND	✓	✓	✓	*	*
3RD.BND	✓	✓	✓	*	*

**Table 11:** Deficiency tests: Malagasy2

binding is impossible across the board. Finally, Malagasy2 differs from Malagasy1 in that both free and bound third pronouns can refer to non-humans, whereas reference to a non-human was only possible with bound third person pronouns in Malagasy2. One can think of this now, in some sense, applying across the board, restricted only by the fact that first and second person pronouns must refer to humans as conversational participants.

Stepping back, we take a look at the relation between deficiency and pronominal binding. What is the nature of the restriction on the binding of syntactically complete pronouns? As mentioned earlier, Kratzer (1998) points out that “zero pronouns seem to surface as the ‘weakest’ pronouns permissible in the position they find themselves in” (Kratzer 1998: 97). But if there is no weak form available, can the strong form be bound? In the case of Halkomelem, argument positions do not allow  $\phi$ Ps, so the DP form is the only permissible form. Still, this form cannot be bound. In Malagasy1, where there is no deficient form available for first and second person pronouns, no binding is possible. This suggests that the system is unforgiving – if the language has the means to supply a deficient form, either for that pronoun itself (as in Halkomelem) or for some other pronoun in the paradigm (as for Malagasy1), then binding is not possible for the non-deficient form. In Malagasy2, however, where no deficient forms exist anywhere in the paradigm, binding is now available to all forms. While it is tempting to conclude that only languages with no syntactically deficient forms in their pronominal paradigm may allow binding of syntactically complete DPs, we now look more closely at the binding of first and second person pronouns.

This article opened with a discussion of Kratzer’s (1998) zero pronouns, and we now return to her analysis and the revised version published in Kratzer (2009). For Kratzer (1998) and Déchaine and Wiltschko (2002), there is an important distinction between first and second person pronouns on the one hand, and third person pronouns on the other. Only the latter can be bound variables. Rullmann (2004), however, points out contexts where first and second person pronouns can, in fact, be bound variables. We were able to replicate Rullmann’s findings in Malagasy2, as illustrated in (40) and (41).

- (40) Mieritreritra [ ny vehivavy rehetra ]<sub>1</sub> izay nampakari[ko]<sub>2</sub> fa  
 PRS.AT.think DET woman all REL PST.TT.marry.1SG.GEN COMP  
 tokony hisara-panambadiana **izahay**<sub>1+2</sub> mivady afaka roa taona.  
 should FUT.AT.divorce 1PL.EXCL spouse after two year  
 ‘Every woman<sub>1</sub> I<sub>2</sub> married thinks that we<sub>1+2</sub> spouses should get divorced after two years.’
- (41) Izaho<sub>1</sub> ihany no manome voanjo ho an’ny zanako<sub>1</sub>.  
 1SG only FOC PRS.AT.give nut BEN ACC’DET child.1SG.GEN  
 ‘Only I<sub>1</sub> give nuts to my<sub>1</sub> child.’  
 = I give nuts to my child. No one else gives nuts to my child.  
 = I give nuts to my child. No one else gives nuts to their child. (bound reading)

The example in (40) shows ‘split binding’, where the first person plural pronoun *izahay* is bound by the third person quantifier *ny vehivavy rehetra* but also by the first person singular *-ko*. Here, the pronoun acts like a variable that ranges over pairs: the

speaker and one of the women that the speaker married (see Rullmann 2004 for discussion of the English data). Example (41) is modeled after (Partee (1989: note 3).

Rullmann's findings, among others, led to Kratzer's (2009) revised analysis, allowing variable binding of indexical pronouns. What is important for the present article is the shift in the empirical landscape. It is now recognized that while bound readings for first and second person pronouns are rare, careful data work has exposed cases where such binding is possible. We can therefore ask whether the same might hold true in Malagasy. That is, perhaps speakers of Malagasy1, given the right contexts, would accept bound variable readings of first and second pronouns, much as our speakers of Malagasy2 do. If that were the case, then the link between the presence of number and variable binding proposed by Zribi-Hertz and Mbolatianavalona (1999) would no longer hold. Speakers of Malagasy1 would still maintain a distinction between syntactically deficient pronouns (those lacking NumP) and syntactically complete pronouns, but this deficiency would only correlate with the restriction on human referents and the possibility of local (intra-clausal) binding. We leave this question for future research.

## 6. CONCLUSION

Malagasy pronouns are morphologically and syntactically rich, and appear ripe for a syntactic decomposition analysis. At the same time, we have argued that there are no syntactically deficient pronouns in one variety of Malagasy (Malagasy2). We have also shown that all pronouns in this variety can be bound variables, despite being syntactically complete. This raises the question of when syntactically complete pronouns may be bound – are there any universal restrictions? Our data suggest that if a language has deficient pronouns, these pronouns will be the ones used in bound variable contexts, but if a language lacks deficient pronouns, binding is unrestricted. This conclusion then raises the question of how to analyze binding. One helpful suggestion from Kratzer (1998: 190) is that context-shifting lambda-operators bind pronouns by shifting values for first and second person features, but we leave this task to the semanticists.

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