A Parallelism Between vP and DP in Partial pro-drop Languages: The Case of Number in Brazilian Portuguese*

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Abstract

Bare singular nouns and null impersonals are two phenomena that exist alongside each other in a number of partial *pro*-drop languages. Prominent analyses of the co-existence of these properties argue for a null NP anaphora operation in this type of language. In this paper, I intend to show that this appproach is problematic when applied to Brazilian Portuguese (BP) and instead I offer an alternative analysis by claiming that a specific feature, which is in the process of disappearing from BP grammar, is responsible for these two properties. The absence of this feature results in nouns with cumulative reference and the disappearance of the clitic *se*, which is precisely the lexicalization of this feature. Thus, bare singular nouns and null impersonals are analyzed as a byproduct of this change and not as a reflection of a particular mechanism of anaphora present in some languages.

Keywords: *Brazilian Portuguese, partial* pro-*drop languages, number feature*

1. Introduction

It is well known that languages can be classified as either *pro*-drop or non-*pro*-drop. In general, the first group of languages presents a system of verbal morphology rich enough to make distinctions concerning person and number. For this reason, the use of pronouns can generally be dispensed with.[1]

Consider, for instance, the Italian paradigm illustrated below. Table 1 demonstrates that there is a distinct form for each pronominal person in the verbal morphology, which thus renders pronouns unnecessary.[2]

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[1] The use of full pronouns in *pro*-drop languages is restricted to emphasis, a shift of reference and stress. In neutral assertions, therefore, pronouns are not necessary.

[2] The following abbreviations are used in this paper: 3SG=third singular agreement; 3PL=third plural agreement; ACC=acusative; FEM=feminine; GEN=genitive; MASC=masculine; PAST=past; PERF=perfective; PL=plural; SG=singular; TOP=topic.

Table 1. *Italian verb paradigm*

Italian conjugation of dicer in the present tense	
Dico	I say
Dici	You (SG) say
Dice	He/She says
Diciamo	We say
Dite	You (PL) say
Dicono	They say

In contrast, in non-*pro*-drop languages, the verb morphology does not present distinctions for every person and number combination. Therefore, it is impossible to establish person reference without pronouns. English is a member of this group of languages. Table 1 shows that, unlike Italian, English has only one form with distinctive morphology in the present tense, the 3rd person singular. Hence, the use of pronouns is mandatory.

However, various research on the *pro*-drop parameter has attested that the classification in respect to this parameter can increase in complexity. Several languages do not easily fit into the aforementioned groups. For instance, there exists a group of languages in which *pro*-drop is licensed even in the absence of morphology that can distinguish person and number. Chinese is one example. The paradigm for the verb *say* in this language is represented below.

Table 2. *Chinese verbal paradigm*

Chinese conjugation of shuo in the present tense[3]	
Shuo	I say
Shuo	You say
Shuo	He/she/it says
Shuo	We say
Shuo	You say
Shuo	They say

In addition, other languages, exemplified here by Brazilian Portuguese (BP), display *pro*-drop properties to a lesser degree, as well as properties of their own. Table 3 shows that verbal morphology in BP is more elaborate than in English but less elaborate than in Italian. The 2nd and the 3rd person plural, for instance, show the same verbal morphology.[4]

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3   Adapted from Wratil and Gallmann (2011: 6).

4   I am aware of the fact that there are other possibilities relating to BP verb morphology besides the one represented in Table 3. Also, the 2nd person singular (*Tu/você*) and the 1st person plural (*Nós/a gente*) can surface in two forms, and this is reflected in the morphology of the verb. *Você* was originally a treatment pronoun, then it started to be used as the 3rd person singular and now as the 2nd person singular. *A gente* literally means *the people*, but it has also been generalized as a 1st person plural pronoun in almost all contexts nowadays.

Crucially, however, in all the possible paradigms, there is a syncretism between at least two verb forms. The most extreme possibility is a syncretism among all the morphological endings, excluding the first person singular. In this case, 5 out of 6 forms would be morphologically identical to the 3rd person singular inflection. See the example below for the verb *dizer* 'to say':

(i)   Eu dig*o*   Nós/A gente *diz*
      Tu/Você *diz*   Vocês *diz*
      Ele *diz*   Eles *diz*

Table 3. *BP verbal paradigm*

Brazilian Portuguese conjugation of *dizer* in the present tense	
Eu digo	I say
Tu diz(es)	You say
Ele diz	He says
Nós dizemos	We say
Vocês dizem	You say
Eles dizem	They say

More particularly, partial *pro*-drop languages license null subjects, similarly to *pro*-drop languages, but only in restricted environments. A comparison between BP and European Portuguese (EP), a consistent *pro*-drop language, illustrates this, as shown below.

(i)　In partial *pro*-drop languages, null subjects are optional in contexts in which they are unacceptable in a consistent *pro*-drop language.

(1)　*O　João$_i$　disse　que　ele$_i$　comprou　um　computador.*　　　　*EP, BP
　　the　John　said　that　he　bought　a　computer

(2)　*O　João　disse　que　comprou　um　computador.*　　　　EP, BP
　　the　John　said　that　bought　a　computer
　　'John said he bought a computer.'

(Barbosa 2011: 2)

(ii)　In partial *pro*-drop languages, null subjects are excluded in many contexts in which they are possible in a consistent *pro*-drop language.

(3)　*O　João$_i$　disse　que　os　moleques　acham　que　Ø$_i$　é　esperto.*　　EP,*BP
　　the　John　said　that　the　boys　think　that　(he)　is　clever
　　'John said the boys think he is clever.'

(Barbosa 2011: 2)

From the brief exploration of verbal morphology carried out in this section, it can be seen that the *pro*-drop parameter encompasses many different – but, apparently, gradient – types of language. These gradient types have to be studied by virtue of their special properties. Additionally, the description and explanation of these types can shed light on the broad distinction between *pro*-drop and non-*pro*-drop languages.

In this paper, I will be concerned with one language from the partial *pro*-drop language group, namely BP. In this language, as (possibly) in all partial *pro*-drop languages, bare singular nouns and null impersonals are abundant. I investigate the source of these properties and evaluate previous approaches to the striking co-existence of these properties in several languages. This paper is structured as follows. In section 2, I present the phenomena to be examined here, their properties, the previous approaches to them, and the problems these approaches face when BP data is analyzed. In section 3, I put forward my proposal. In section 4, I offer a brief discussion about why a number feature could be responsible for this change. Finally, in section 5, I summarize the discussion and the findings of this paper.

2. The question

With regard to the study of partial *pro*-drop languages, more specifically, one should ask: why does this group of languages have null impersonals and bare singular nouns? These two properties are exemplified below with BP data.

(4)   *Aqui   faz   doce.*
      here   make-3SG   sweeties
      'Sweeties are made here.'

(5)   *Criança   gosta   de   gente.*
      child-SG   like-3SG   of   people
      'Children like people.'

Let us clarify what is special about these sentences. Sentences such as (4) are called null impersonals in the literature since no dedicated morphology is present in spite of the fact that the arbitrary human reading, characteristic of impersonal sentences, arises. In BP, as in the majority of Romance languages, this morphology would be the clitic *se*. In the absence of this clitic, the presence of a locative (either overt or implied) is mandatory in order for the arbitrary human reading to be generated. The subject of (5) is *criança* 'child.SG', a bare singular noun, a nominal expression with neither overt D nor number.[5] Again, this differs from the way Romance languages build nominal expressions. In general, a D-layer is overtly present in generic sentences in Romance languages.

The co-existence of these two properties is present in a number of genetically unrelated partial *pro*-drop languages. We can observe this below:[6]

Table 4. *Co-existence of bare singular and null impersonals in some languages*

Language	Bare singular	Null impersonal
Finnish	✓	✓
Brazilian Portuguese	✓	✓
Russian	✓	✓
Marathi	✓	✓
Hebrew	✓	✓

More striking is the fact that these phenomena also coexist in radical *pro*-drop languages such as Chinese. These facts have led researchers to pursue a unified explanation for the co-existence of these phenomena in partial *pro*-drop languages and to look for similarities between partial *pro*-drop and discourse-oriented languages. In the next subsection, I present and evaluate two such approaches.

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[5]   Note that this nomenclature can be misleading. Bare singular nouns are not specified either for singular or plural readings.

[6]   The reader is directed to Barbosa (2011) if he/she wishes to see examples of these two phenomena in the languages listed in Table 4.

2.1. Previous approaches

Tomioka (2003) was the first to notice that in some languages the two properties we are interested in co-exist: null pronouns and bare NP arguments. By comparing the anaphora strategies in English with Japanese, the author reached the conclusion that, in languages where DPs are projected, there will always be a leftover D in anaphoric environments. In languages where D is not projected, in other words D-less languages, the whole NP is elided when used anaphorically.

Sentences (6) and (7) exemplify the different ways English and Japanese encode anaphors. In (6), there is a referential use of *pro* in Japanese, whereas the translation points to the requirement of an overt pronoun in English. In (7), *pro* stands for a bound variable, which has an overt counterpart in English. Japanese represents languages with bare NP arguments that will employ null anaphora and English represents languages where DPs are projected and a remnant D will consequently be present in anaphoric environments.

(6) *Ken-wa   Erika-o   saso-tta.   Dan-mo   **pro**   saso-tta.*
     Ken-TOP   Erika-ACC   invite-PERF   Dan-also   invite-PERF
     'Ken invited Erika. Dan invited (her = Erika), too.'

(7) *Dono   gakusei-mo   [[$_{CP}$ Dan-ga   **pro**   buzyokushi-ta]   to]   it-ta.*
     which   student-even   Dan-NOM   insulted-PERF   comp   say-PERF
     'Every student$_1$ said that Dan insulted him$_1$.'

(Tomioka 2003: 322)

Tomioka's study is mainly based on Japanese, but the author extends the generalization to other languages in which anaphora can be null. Languages with this property are allegedly constrained by a Discourse *pro*-drop generalization.[7]

(8) *Discourse pro-drop generalization*
     All languages which allow discourse *pro*-drop also allow (robust) bare NP arguments.

BP has been described as a discourse *pro*-drop language (see, for instance, Negrão 1999). Hence, the generalization in (8) holds in this language given the fact that the language allows bare NPs (usually in generic sentences) and null non-referential pronouns. The examples in (4) and (5) demonstrate this.

Given the fact that Tomioka's generalization holds for (at least, some) partial *pro*-drop languages, Barbosa (2011) extends this explanation to this group of languages. In the latter author's account, what would characterize partial *pro*-drop languages and would put them on a par with discourse-oriented languages is a null-anaphora mechanism that would give rise to different interpretations depending on the antecedent.

The examples in (9) and (10) illustrate this mechanism in Japanese and those in (11) and (12) in BP. In (9), *paper*, a bare singular noun, is interpreted according to what was said in the previous discourse; in (10), the topic *in bed* in the embedded clause is the element responsible

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[7] Radical *pro*-drop languages are also called discourse *pro*-drop languages in some approaches. These two labels are employed here somewhat interchangeably.

for giving *pro* the interpretation of a generic pronoun. Thus, the reference of both *pro* in (10) and of the bare noun *paper* in (9) will be specified on the basis of the anaphoric relation they bear with an antecedent. Importantly, this mechanism is necessary in languages without a D since D is the locus of definiteness. In languages in which this element is absent, the definiteness status will have to be retrieved in a special way.

(9) *Ken-wa   rounbun-o   yun-da*[8]
     Ken-TOP   paper-ACC   read-PAST
     'Ken read a paper/papers/the paper/the papers.'

(10) *John-wa   kono beddo-de-wa yoku pro nemu-reru-to   iu*
     John-TOP   this bed-in-TOP well   sleep-can-COMP say
     'John said one sleeps very well in this bed.'

(Barbosa 2011: 6)

(9) and (10) have very similar translations to BP, as shown below.

(11) *João   leu   artigo   à   tarde   inteira.*
     John   read   paper   to.the afternoon whole
     'John read a paper/papers/the paper/the papers the whole afternoon.'

(12) *João   disse   que   naquele restaurante vende comida caseira.*
     John   said   that in.that   restaurant   sells   food   homemade
     'John said that one sells homemade food in that restaurant.'

The similarity between (9) and (10) in Japanese and (11) and (12) in BP suggests that we are probably observing the same phenomena. More precisely, the possible translations of the nominal expressions in (9) and (11) indicate that bare singular nouns in BP and Japanese correspond to a series of different interpretations in English, as in (9). The sentence in (12) receives an arbitrary human reading in spite of the fact that a dedicated morphology is absent just as in (10).

In sum, Tomioka and Barbosa argue that the zero morphology found in certain groups of languages is the result of null NP anaphora. This special mechanism of anaphora is found in languages in which the projection of D is not mandatory. If BP is a D-less language, the interpretation of (11) and (12) would be similar to the interpretation of *pro* in (9) and (10). Either the bare singular noun in (11) is in a relation with a previous constituent or has its denotation contextually retrieved. In sentence (12), there would be a *pro* entering in a relation with the locative.

In contrast, in languages where D is projected, impersonals will have an overt morphology, since pronouns are considered D expressions. Moreover, the reference of nominal expressions will be established on the basis of a mandatory overt D in these expressions. No mechanism of null anaphora is expected to take place in D languages, since D establishes the reference by itself. This difference between D and D-less languages is sketched below.

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[8] The NP representation provided by Tomioka and Barbosa never has *pro* in it, although it is the defended mechanism for null anaphora.
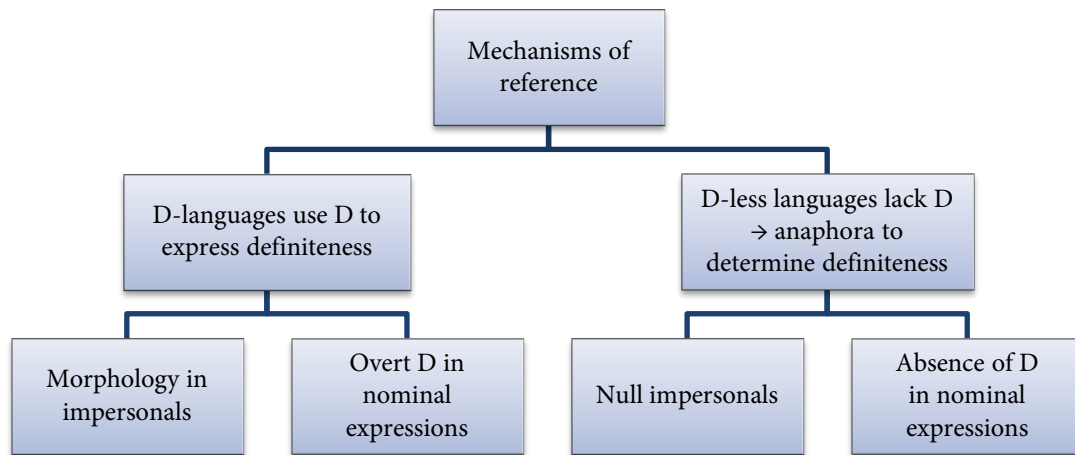
Figure 1. *Mechanisms of reference in D and D-less languages*

2.2. Problems with these approaches

In this section, we will point to problems with the aforementioned analysis, namely that BP is a D-less language. It will be shown that BP nominal expressions do not lack D in spite of the fact that this element is sometimes non-overt. Moreover, null impersonals will be shown to be licensed in specific environments and locatives (not a *pro*) have a crucial role in the generation of these sentences, which again indicates that the null anaphora approach is not an appropriate one for this language.

2.2.1. BP bare singular nouns

As mentioned above, in order for BP to fit in the null anaphora account, this language must be a D-less language. Both Tomioka and Barbosa assume this. However, BP nominal expressions, even bare singular nouns, do have a D layer. There are syntactic and semantic ways of demonstrating this. As for syntactic evidence, BP passes the tests that characterize a D-language in Bošković's (2008) terms. For example, adjectives in BP are not subject to left-branch extraction (13). Furthermore, adjunct extraction is also generally banned (15).

No left-branch extraction:

(13)   *$Caros_i$,   ele   viu   [carros t_i]
       expensive$_i$ he   saw   [t_i cars]

Adjunct extraction:

(14)   Pedro conheceu [garotas de qual cidade].

(15)   *De qual   cidade   Pedro   conheceu   garotas?[9]   (in the relevant reading)
       of   which   city   Pedro   knew   girls

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[9]   This sentence is grammatical if the reading is compatible with 'Where did Pedro know the girls', but it is not grammatical in a reading that involves extraction.

Bošković states that these facts can be interpreted straightforwardly if D is a phase. This being the case, languages with a D layer will not permit movements that cross this element. That is why the extraction of adjuncts is impossible in these languages, whereas in D-less languages there is no intervening node prohibiting this movement. In D-less languages, since D is absent, NP is a phase and adjectives, possessors and adjuncts that are first merged to the left of this phase are free to move. Therefore, the examples in (16) and (17) would correspond to the structure of a nominal expression in languages with and without a D-layer respectively. More precisely, (16) corresponds to a BP structure, and (17) to languages that are claimed to be D-less, such as Serbo-Croatian.

(16)   DP [D' D [$_{nP}$ ADJUNCTS [$_{nP}$ n …]]]] → BP structure

(17)   [$_{nP}$ ADJUNCTS [$_{nP}$ n …]]]] → Serbo-Croatian structure

In addition, if there were no D in BP bare singular nouns, reference in the subsequent discourse with the pronoun *elas*, a D category, would not be possible, given the fact that an anaphor must employ projections subsumed in the structure of its antecedent. In other words, as anaphors refer to a previous constituent, they will never have more projections than the expression to which they are referring.

(18)   *Criança   lê   revistinha.*
        child-SG-FEM   read   comic-book
        Elas   gostam   dos   desenhos.
        they-FEM   like   of.the-PL-MASC   drawings
        'Children read comic books. They like its drawings.'

(Cyrino and Espinal, *to appear*)

Another factor to take into account is that D must be present in episodic sentences, (compare (19) and (20)). More importantly, with the loss of morphology in BP, the distinction between singular and plural is overtly expressed by D. The D-layer is covert in generic sentences, probably due to the fact that overt morphology in nominal expressions is not referential in this type of sentence. BP clearly realizes a D layer when nominal expressions refer to a specific entity, as (19) indicates.

(19)   *Os   menino(s)   bebeu/   beberam   conhaque.*
        the   boy-PL   drink-3SG/   drink-3PL   brandy

(20)   **Menino(s)   bebeu/   beberam   conhaque.*
        boy(s)   drink-PAST-3SG/ drink-PAST-3PL   brandy
        'The boys drank brandy.'

In short, (13) and (15) show that BP is a D-language, therefore there are reasons for one to think that D is covert in bare singular nouns. In addition, (18) shows that a bare singular noun can be recovered by a full pronoun. Moreover, (19) and (20) indicate that D is obligatorily overt when a distinction is made between the singular and the plural. From this, I conclude that BP bare singular nouns have a D layer (additional evidence can be found in Munn and Schmitt (2002, 2005) and Cyrino and Espinal (*to appear*)).

The null anaphora mechanism for nominal expressions is based on the assumption that, in languages with this operation, the nominal expressions are D-less. As shown above, BP is a D-language and this posits problems for the assumption that there is an operative mechanism of null anaphora in this language to retrieve the content of nominal expressions.

2.2.2. The structure of null impersonals

Having discussed bare singular nouns, we should now move on to examine impersonals in BP as the assumption of null anaphora is principally based on bare singular nouns and null impersonals. Remember that the arbitrary human readings in (4) and (12) are argued to be the result of a *pro* entering in an anaphoric relation with a locative expression. I have shown that the hypothesis of null anaphora is problematic for nominal expressions, yet nothing prohibits the hypothesis that the null anaphora is operative in null impersonals.

Upon closer scrutiny, however, the stipulation of a *pro* entering in an anaphoric relation does not seem fitting. First, in some contexts, other elements besides locatives can give rise to an impersonal reading, as (21) and (22) show. In (21), this reading arises in the presence of a quantifier phrase; in (22), in the presence of a temporal adjunct.

(21) *Qualquer coisa invade a reitoria.*
      any   reason invade the administrative building
      'For any reason, people invade the administrative building.'

(22) *Hoje em dia não usa mais as saias de antigamente.*
      today in day not wear more the skirt of formerly
      'One does not wear the same kind of skirts formerly worn.'

Unless some common element is found in quantifier phrases, locatives, and temporal adjuncts, it seems odd that these diverse elements give rise to the same reading when they antecede *pro.*

Yet, locatives cannot give rise to an impersonal reading with any verb and this fact seems to have gone unnoticed in the literature. Carvalho (*in prep.)* shows that only stage-level verbs that select for an agent as an external argument allow for locative impersonals.[10] In (23),

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[10] A reviewer points out that the distinction between stage-level verbs and individual-level verbs in impersonals does not seem to hold universally. The reviewer claims that, in Polish, for example, individual-level verbs are licensed in impersonal sentences.

Similarly, in BP, when *se* is used as impersonal morphology, individual-level verbs can also be used in impersonals. As the literature on impersonals with the clitic *se* makes clear (Cinque 1988; Chierchia 1995; D'Alessandro 2007), if some verb selection takes place in impersonals with *se*, the distinction is not in terms of stage and individual-level verbs. However, the point I wish to make is that, in those constructions dubbed null impersonals, there is indeed a restriction in terms of stage and individual-level verbs. I do not expect this distinction to hold in languages where a dedicated impersonal morphology exists (*se* in Romance Languages; *się* in Polish), therefore I agree with the reviewer.

adorar 'to adore' is an individual-level verb and, consequently, the external argument is not an agent (data from Avelar and Cyrino 2008: 65).[11]

(23) *Na casa da Maria adora os livros do Harry Potter.*   (individual-level verb)
      in   house of.the Maria adores the books of.the Harry Potter
      Intended: 'One adores the Harry Potter books in Maria's house.'

(24) *Naquela escola ensina matemática muito bem.*   (stage-level verb)
      in.the   school teach math   very well
      Intended: 'One teaches math very well at that school.'

Paying close attention to the restriction of this construction, it would be difficult to explain why the *pro* element would enter in an anaphoric relation with some verbs, but not with others.

The group of verbs that are licensed in this construction is not idiosyncratic, though. Stage-level verbs are argued to have a Davidsonian argument (Kratzer 1995), which accounts for the fact that they are licit with manner and locative adjuncts whereas individual-level verbs are not.[12] Null impersonals, where locatives play an important role, are only licit with the former class of verbs – this cannot be a random fact.[13] The selection of a specific kind of verb and the obtaining of the same reading with temporal adjuncts and quantifiers in some contexts pose problems for a *pro* account. This empty element should be present whenever it is necessary to establish reference and the constraints to generate a null impersonal reading indicate that there is clearly a structural factor (a specific type of verb having its event variable bound by a restricted class of elements) generating the reading of an arbitrary human. The stipulation of a *pro* obscures the interesting constraints for this reading to arise.

In sum, considering that nominal expressions in BP do have D and that a *pro* in null impersonals are problematic assumptions, I present a new account in the next section.

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[11] Avelar and Cyrino (2008) treat sentences like (23) as instances of locative inversion. Note, however, that (21) would be left without an explanation if the grammatical phenomenon responsible for the arbitrary human reading in these sentences were locative inversion. Any other order of the constituents in (21) is ungrammatical. Moreover, the arbitrary human reading is absent if an external argument is not projected out of the verb, as with unaccusative verbs of the type *arrive*. This fact is overlooked in Avelar and Cyrino's account.

[12] The reviewer also points out that it would be better to talk about stage-level and individual-level predications rather than stage-level and individual-level verbs. In fact, some works make use of the former nomenclature, because the differentiation between the two types of verbs is difficult to distinguish depending on the construction one is dealing with. However, in this approach I follow Kratzer (1995), who argues that verbs have a basic behavior as either stage-level verbs or individual-level verbs.

[13] Carvalho (*in prep.*) defends the claim that locatives bind the event variable (the Davidsonian argument) of stage-level predicates and that is why the arbitrary human reading arises. Due to limitations of space, I cannot show in detail the arguments in favor of this approach. The interested reader is referred to Carvalho (*in prep.*) and to other works where locatives are claimed to bind the event variable and apply existential closure in the absence of a better candidate for this task (Borer 2005; Zimmermann 2007).

3. Proposal

3.1. What is really missing?

If the proposal that there is something missing in partial-*pro*-drop languages truly holds, we now know that this feature, at least in the case of BP, is not D.

Furthermore, there is now a consensus that the DP has a very articulated structure (see the initial discussions in Ritter 1991, 1993). Hence, if something is missing in bare singular nouns, it should be possible to locate the missing feature inside one of the projections of the DP. While there is much debate about whether there is a gender projection inside the DP (Kramer 2014, for a recent discussion), it seems indisputable that there is a projection for number.

Number has been shown to be a multifaceted entity, serving different purposes. One of the functions of what has been called number is individuation. In several languages, plural morphology acts as "a semantic counter over realizations of a kind" (Deprez 2005). More specifically, this affix is taken to act as a divisor revealing the internal atoms of nouns. This makes the noun eligible for operations such as counting.

An interesting aspect that supports this well established notion is that, in languages where the plural morphology is absent, any noun can be treated as a mass noun. In order for something to be counted, a classifier must be employed. Classifiers would therefore be another way to make the internal structure of nouns visible. Indeed, languages that employ classifiers usually do not display plural morphology, for example, Chinese.[14] Therefore, a hypothesis worth exploring is that bare nouns lack the individuation number. As expected, data such as (11) show that these nouns can correspond to a series of different denotations. This strongly suggests that these nouns are not individuated – they behave as mass nouns.

As for the impersonal morphology, the task is a little bit more complicated, since the idea that a clitic is a number feature does not seem natural at first. Recall that impersonal morphology is realized by the clitic *se* in BP.

Traditionally, clitics are taken to be D entities but with less material inside DPs than full pronouns (see Abney 1987). However, this view has been challenged in more recent publications. Cardinalletti and Starke (1999), for example, show that clitics, weak and full pronouns cannot all be Ds, since these three categories exhibit different syntactic behaviors. Decháine and Wiltschko (2002) also claim that DPs and clitics have distinct distributions, therefore an account in which they are taken to be DP constituents is unappealing. Instead, these authors show in detail that clitics in general, including the clitic *se* in Romance, are projections of phi-features, corresponding to a functional layer inside the DP domain. This issue will be addressed in section 3.3.

Using these assumptions from the literature, it becomes clear that what is missing in BP grammar is a specific kind of phi-feature. The absence of this feature is responsible both for nouns with cumulative reference (nouns that have an ambiguous denotation, corresponding to both singular and plural) and the absence of the clitic *se*, which is built on the basis of this sole

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[14] Apparent exceptions exist, though. Massam (2009) argues that Niuean is a mixed system.

feature. In the next two subsections, this will be discussed. Section 3.2 is devoted to demonstrating that bare singular nouns in BP do not have a NumP layer and section 3.3 argues for a decomposition of pronouns, which points to the conclusion that *se* is a number feature.

3.2. DP domain

Discarding the D-less analyses that were proved to be problematic, there are two main syntactic analyses for bare singular nouns in BP, both discussing the role of number in these expressions. More importantly, the number projection in the nominal domain is taken as the locus of the morphology that distinguishes between singular/plural and the locus of distinction between massive and count nouns (cf. Ritter 1991; Chierchia 1998, among many others). As mass nouns do not pluralize, the expectation is that, if a given language does not have this projection, the difference between count and mass nouns is blurry or lost altogether.

(i)   *there is no number projection (NumP)* – Munn and Schmitt (2002, 2005)
(ii)   *there is a number projection, but number just appears on D in BP* – Cyrino and Espinal (to appear)

It will be shown that the second view cannot provide an account for the evidence that bare singular nouns behave like a particular class of mass nouns. For example, Pires de Oliveira and Rothstein (2011) demonstrate that bare singular nouns in BP accept mass noun "classifiers", quantity elements used to classify mass nouns, as in (25). Crucially, this illustrates that the system does not make any differentiation between mass and count nouns.

(25) *João   trouxe   um   pouco   de   cadeira   para   a   festa.*
      John   brought   a   bit   of   chair   to   the   party
      'John brought some chairs to the party.'

In addition, sentences with bare singular nouns and bare plurals do not hold the same truth-values. In (26), the number of magazines is left completely underspecified. The sentence in (27), however, is false if Jorge reads only one magazine per night.

(26) *Jorge   sempre   lê   revista   depois   do   jantar.*
      Jorge   always   reads   magazine-SG   after   of.the   dinner
      'Jorge always reads magazines after dinner.'

(27) *Jorge   sempre   lê   revistas   depois   do   jantar.*
      Jorge   always   reads   magazine-PL   after   of.the   dinner
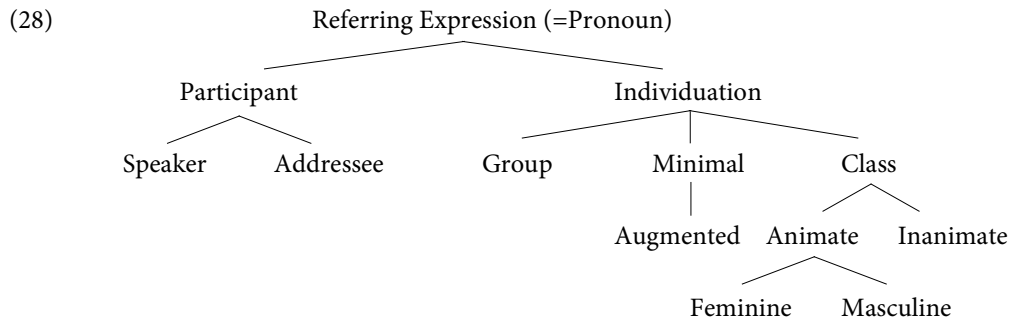   'Jorge always reads magazines after dinner.'

(Müller and Oliveira 2004: 23)

These facts prove that bare singular nouns are DPs without the NumP layer. Therefore, what is lacking in bare singular nouns is the projection that differentiates mass from count nouns. As a result, it is neither surprising that a bare noun accepts a mass quantifier, as in (25), nor that it is unspecified for number, just as mass nouns are.

3.3. vP domain

As for null impersonals, the morphology that is lacking in sentences such as (4), (21), (22) and (24) is the clitic *se*, which is in the process of disappearing from BP grammar in a variety of contexts. The loss of this clitic is correlated to the loss of morphology in several other domains. A way to tackle the question of what the loss of *se* really means is to use approaches that decompose the features of pronouns (Harley and Ritter 2002; Déchaine and Wiltschko 2002).

Based on Harley and Ritter's[15] account, I start from the fact that *se* is an invariable 3rd person pronoun in impersonals, therefore the features that compose this clitic must be compatible with the features in the 3rd person. In Harley and Ritter's approach, the 3rd person has neither a [speaker] nor a [hearer] feature. The 3rd person belongs to the individuation branch, as is graphically shown below.

(28)

```
                    Referring Expression (=Pronoun)
               _____|_____
              |                                       |
        Participant                            Individuation
          __|__                      _____|_____
         |     |                    |              |              |
      Speaker  Addressee          Group        Minimal          Class
                                                  |             __|__
                                                  |            |     |
                                              Augmented     Animate  Inanimate
                                                             __|__
                                                            |     |
                                                        Feminine  Masculine
```

Several pieces of evidence can be provided for the claim that *se* does not have a participant feature. First, the specification of this feature must be so thin that this element serves the purpose of reflexive, middle and anticausative marks in most parts of the Romance languages. If it had a feature from the participant branch, it would not appear in anticausatives and middles, for example, where only one DP is interpreted as referential. In these contexts, *se* has no reference.

Another piece of evidence comes from Bonet (1991), who shows that reflexive elements not specified for person and number are used as default forms and they spread to the other pronominal persons paradigm if the contrast is lost. This is represented in Table 5.

Russian uses the original form of the 3rd person for all pronominal persons. Walpbiri also exhibits a broad use of the original 3rd person morphology. Note that if the 3rd person had a feature corresponding to a person specification, these derivations would be forbidden.

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[15] Harley and Ritter actually offer an account for full pronouns. However, every account of *pro*-drop assumes a relation between pronouns and the verb morphology, usually this relation is one of identity. For example, in Holmberg and Roberts (2013), the verb morphology enters into an agree relation with the full pronoun. From this agree relation, the verb morphology ends up being pronounced because this copy has more features (verbal morphology encodes aspectual/temporal notions, for example). Hence, if full pronouns and verbal morphology have the same feature make-up, Harley and Ritter's account is also suitable for an exploration of clitics and verbal morphology.
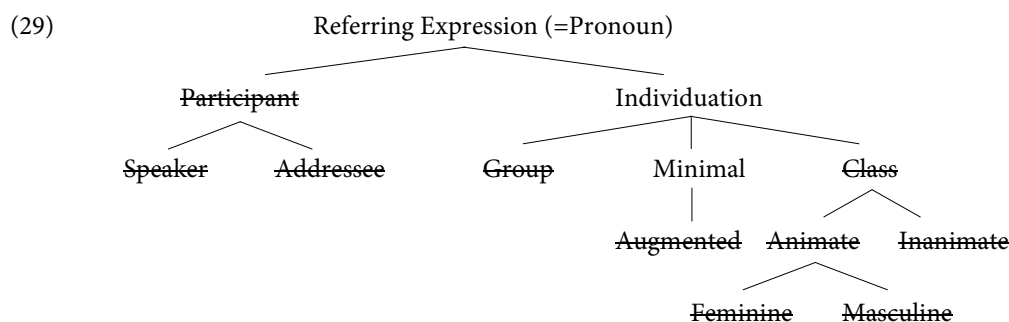
Table 5. *Reflexive forms invariant (IN) vs. specific across languages (SP)*[16]

Language	Russian	Papago	Walpbiri	Standard Catalan	Piedmontese	?	Valencian
1.p.sg	IN	SP	SP	SP	SP	SP	SP
1.p.pl	IN	SP	IN	SP	IN	SP	IN
2.p.sg	IN	IN	IN	SP	SP	SP	SP
2.p.pl	IN	IN	IN	SP	SP	IN	IN
3.p.sg	IN	IN	IN	IN	IN	IN	IN
3.p.pl	IN	IN	IN	IN	IN	IN	IN

Even after discarding the features [speaker] and [addressee], one has to note that the 3rd person can be composed of a great number of features in Harley and Ritter's system.

Se is probably best represented with the most underspecified feature in the individuation branch. This is deducible from the fact that *se* is not specified for gender, consequently it does not have a gender feature specified for feminine or masculine. Moreover, *se* only applies to animate entities; therefore it should have this feature in principle. However, in order to have this specification, BP would have to have a set of clitics just for inanimate entities and this class does not exist.[17] Thus, this differentiation between [animate] and [inanimate] features is not part of the grammar. What is left are the individuation features [minimal] or [group].

If *se* bore the feature [group], it could not enter in a co-reference relation with a singular entity, which is obviously not true (see the data in table 5). It is then reasonable to assume that this clitic bears the feature [minimal]. Being an underspecified clitic, *se* can enter in a relation with either singular or plural entities without causing a clash due to the incompatibility of features. Therefore, in representation (28) *se* corresponds to a minimal individuation feature. This line of reasoning is graphically summarized below.

(29)

- Participant branch is out, because the features of this branch are related to the 1st and 2nd person.
- *Se* is not specified for gender. Besides, it cannot bear the feature [class] since the language does not make a distinction between animate and inanimate entities in the clitic system.

[16]   This table is from Bonet (1991: 28).

[17]   It should be noted is that, in Harley and Ritter's proposal, a feature lower in the tree is dependent on upper features. More specifically, if a language does not have pronouns that express an animate/inanimate contrast, it will not have pronouns that distinguish the class of entities in terms of feminine/masculine. Considering this, in the case at hand, *se* must be related to the upper part of the individuation branch, as the exploration endorsed.

The reviewer points out that SE forms in Russian and Polish do not only relate to animate entities, but all kinds of entities. Based on this, I would say that SE forms in these languages are the result of different features arrangements.

- *Se* cannot have a group feature, either. If it had, there would be a mismatch between *se* and singular entities, which is not the case.
- Last but not least, *se* does not show any sign of being designated to a certain quantity of people, i.e. it is not related to an augmentation of any kind.

One can present objections to this analysis by claiming that Harley and Ritter's proposal itself can be put in doubt. However, other ways of decomposing pronouns can add further support to the idea that *se* is the type of phi-feature I have been arguing for.

Déchaine and Wiltschko (2002) decompose the features of reflexives in the languages of the world. The authors show that there are at least three types of pronouns, namely pro-DP, pro-φ and pro-NP. Briefly, pro-DPs behave like true DPs and function like R-expressions. Pro-φs correspond to a functional phi-layer between N and D, encode only phi-features, and occur as either predicates or arguments. Pro-NPs behave as lexical nouns and occur in the predicate position. The properties of each type of pronoun are summarized below.

Table 6. *Typology of reflexives (Déchaine and Wiltschko 2002: 410)*

	Pro-DP	**Pro-φP**	**Pro-NP**
Internal syntax	D syntax; morphologically complex	Neither D syntax nor N syntax	N syntax
Distribution	Argument	Argument or predicate	Predicate
Semantics	Definite	-----	Constant
Binding-theoretic status	R-expression	Variable	------

Following this terminology, the clitic *se* would correspond to a pro-φ. This can be proven by the following contrasts. In contrast to pro-DPs, like *I, you*, etc., the semantics of *se* is not definite. In other words, *se* is a variable and has different readings depending on the construction in which it appears. The examples below are inspired by a discussion on arbitrary 3^{pl} morphology in Romance Languages presented in Hofherr (2003).

(30)　specific existential reading (temporally anchored):
　　　Bate se　à　　porta.
　　　knock-se　to.the　door
　　　'(They) knock at the door. (=someone is knocking…)'

(31)　vague existential reading (not temporally anchored):
　　　Encontrou-se　uma　motocicleta　no　　pátio
　　　found-se　　one　motorbike　in.the　courtyard.
　　　'(They) have found a motorbike in the courtyard.'

(32)　inferred existential reading (inferred from a result):
　　　Comeu-se　mariscos
　　　eat-se　　seafood
　　　'Here, (they) have eaten seafood. (=someone)'

(33)　corporate reading (predicates with a designated subject):
　　　Aumentou-se　de novo　o　　imposto.
　　　raised-se　　again　the　tax
　　　'(They) raised the tax again.'

(34)　universal reading (licensed by a locative):
　　　Na Espanha se fala Espanhol.
　　　in Spain　se speak Spanish
　　　'In Spain, (they) speak Spanish.'

　The well known fact that *se* has a variety of interpretations would be hard to explain if clitics had a D-layer as personal pronouns. If this were the case, they should have fixed semantics as personal pronouns. As Déchaine and Wiltschko show, pro-φs (including *se*) have a restricted distribution. All of their uses are confined to argumental positions. Pro-DPs, on the other hand, are licensed in A' positions as full DPs.

　On the other hand, *se* does not behave like pro-NPs either. The latter category has the syntax of real nouns, and therefore can be preceded by adjectives, possessives or demonstrative pronouns, such as *kare* in Japanese. *Se* obviously differs from this type of pro-NP.

(35)　*Tiisai kare*
　　　small he
　　　'he who is small'

(36)　*Watasi-no kare*
　　　I-GEN　　he
　　　'my boyfriend'

(37)　*Kono kare*
　　　this　he
　　　'this guy here'

3.4. Similarities between *se* and *-s*

In order to compare the similarity between the function of *se* and *-s* , one has to abstract away from the fact that *-s* always surfaces in a full-fledged DP environment, with a noun and sometimes a determiner (e.g. *as maçãs* 'the apples'). *Se*, on the other hand, does not surface in the presence of either a determiner or a noun. In addition, *se* expresses a participant of a verbal event, whereas *-s* just performs an operation on nouns. Although all these factors obscure their similarity, using formal and semantic criteria, it is possible to see that *-s* and *se* do the same job.

　From the exposition above, the first similarity that can be seen is a formal one. Pro-φ does not pattern either with D or N syntax. *Se* is not definite as D categories and it does not pattern with an N either, which refers to a constant element in the world. Déchaine and Wiltschko claim that this type of pronoun corresponds to a phi-feature layer that would be located between D and N in a fully-fledged DP. The possible phi-features that D and N could share are, at least, number and gender. As *se* is not specified for gender, a good candidate would then be number.

　The second similarity is semantic. As stated in the previous section, the number in NumP does not play the role of showing the exact amount of quantities. As Sauerland, Anderssen and Yatsushiro (2005) demonstrate, the plural takes place whenever the presupposition of the

singular is not satisfied, therefore uttering '*You are welcome to bring your **children***' is fine in a context where the speaker does not know the number of children that will come. Numerals and the number on D distinguish quantities, the number in NumP just performs an operation.

The same can be said for *se*. This clitic is a 3rd person pronoun that indicates a random participant or several participants, see the data in (25) to (29).[18] This is in line with the decomposition models for pronouns presented above and with other intuitions about the constituency of *se*. Chierchia (1995) explicitly states that this clitic is a variable with a sortal nature, i.e. it allows reference to atoms, but the number of atoms is specified by the context.

The formal and semantic similarity allows us to claim that, when a noun is present, the number feature in NumP makes the atoms of a count noun visible. For instance, in *papers are difficult to read*, the speaker is not referring to a specific number of papers, but to papers in general. It is achieved through the operation that the feature number in NumP performs over a count noun. If a noun is not present, this feature is spelled out as *se*. Therefore, the existence of bare singular nouns and null impersonals is a byproduct of the absence of a single feature.

4. Why a number feature?

A very pertinent question would then be: what makes a grammar erase a number feature? Seen in isolation, this seems to be a very idiosyncratic change, but if we remember what being a *pro*-drop language is about, the absence of this phi-feature in this environment makes perfect sense.

In line with works about the structure of pronouns and clitics, I argued that *se* is not a D category. The projection of this clitic corresponds to an element inside the DP, a phi-layer. Speaking specifically about impersonal morphology, the fact that BP has been losing *se* proves that the categorical status of this language in respect to the *pro*-drop parameter is changing. As the comparison between Italian and English in Table 1 shows, *pro*-drop is usually related to the amount of information a language can encode in verbal morphology and clitics. With the loss of this information in verbal morphology, the verb by itself cannot provide reference anymore. A verbal form such as *break*, in Modern English, cannot be understood unless a full pronoun is placed to its left. BP seems to be following the same path as Old English. Van Gelderen (2011) shows that the development of full pronouns in English came hand-in-hand with a simplification in the verbal paradigm. Table 7 shows that verbs inflected for the 1st and 2nd person singular had different inflections in Old English, but, later, these two forms were leveled.

Table 7. *Changes in Old English verbal Morphology*[19]

	Old English – stage 1	**Old English – stage 2**
1st singular person	-e	-e/Ø
2nd singular person	-(e)s(t)	-e/Ø

---

[18] One can argue that there may be a feature related to person, as this clitic has a reading of person. This can be followed by inclusiveness, since it is the external argument of verbs or the object of reflexive verbs. Note, however, that in contexts sometimes referred to as "aspectual *se*" in Spanish, with consumption verbs, as in *El niño se le comió toda la leche*. ('The little boy drank up all the milk'), there is no person interpretation.

[19] Adapted from Tables 2 and 4 in van Gelderen (2011: 8-10).

The fact that clitics are also affected by this change comes as no surprise, given the fact that clitics and verbal morphology are not full pronouns and encode reference. It is then expected that BP will also develop full pronouns (D forms) to generate an arbitrary reading in further stages of its development, like the English *one* or the French *ils*.

A final observation that supports the idea pursued in this work is the fact that Middle French had bare singular nouns (cf. Mathieu 2009), as BP, and the clitic *se* became unavailable as a source of deriving the arbitrary human reading in impersonal sentences (cf. Wolfsgruber 2014). Therefore, BP, on its way to becoming a non-*pro*-drop grammar, seems to be following in the footsteps of other Romance Languages affected by the same parametrical change.

5. Conclusion

This paper defended the assumption that the mechanism of null anaphora cannot account for bare singular nouns and null impersonals in Brazilian Portuguese.

It was shown that BP has a D layer and bare singular nouns are the result of a lack of the NumP projection and consequently the feature Num that differentiates mass from count nouns. As a result, nominal expressions in BP without an overt D are unspecified for number as are mass nouns. As for impersonals, it was shown that *pro* cannot account for the constraints on this construction. Only transitive stage-level verbs appear in such a construction. Thus, it is hard to accomodate this fact within the view that *pro* is projected out of these verbs and not others. In both verbal and nominal domains, the mechanism of null anaphora was shown to be problematic in relation to BP data.

In order to account for this surprising parallelism, I follow approaches to bare singular nouns in BP that demonstrate the absence of number in these nominal expressions. For null impersonals, I began with the fact that pronouns are not a primitive category and researched the internal structure of the clitic *se* on the basis of recent approaches to clitics and pronouns. The results point to the conclusion that *se* corresponds syntactically to a phi-feature placed between N and D, again a Number feature.

Lastly, this phenomenon correlates to the loss of the capacity to express referential information by using entities smaller than DP. While *pro*-drop languages specify information in this way, non-*pro*-drop languages employ DPs to make reference. The loss of a number feature in BP exemplifies a change in respect to this parameter.

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