

# Null subjects in Brazilian Portuguese: a unified model

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# Abstract

Null subjects in Brazilian Portuguese display a puzzling distribution that has not been fully accounted in current literature. In short, null subjects are seen in different patterns in matrix and embedded clauses. Furthermore, declaratives and questions also show a different distribution of null subjects, and WH movement seems to play a part in blocking null subject licensing in questions. This work aims to propose a solution to this puzzle by presenting a model centered around  $\phi$ -feature and discursive ( $\delta$ ) feature interaction at the Left Periphery. The main historical assumption being that BP displays properties of a discursive-oriented language, an hypothesis based on the extended contact the language had with Bantu throughout its history.

**Keywords:** null subjects, romance, Brazilian Portuguese, syntax

# List of abbreviations

1 = 1ST PERSON

2 = 2ND PERSON

3 = 3RD PERSON

S = SINGULAR

P = PLURAL

PST = PAST

M = MALE

F = FEMALE

DET = DETERMINER

GER = GERUND

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# Chapter 1

## Introduction

### 1.1 Null subjects: brief introduction

Null Subject Languages (NSLs) allow clauses to have subjects not overtly realized (so called *null subjects*). Examples below illustrate the contrast between a NSL and a non-NSL, where  $\emptyset$  = a null subject, that is, a subject that is not overtly realized.

(1) English is not a NSL

- a. John arrived
- b.  $\emptyset$  \*Arrived

(2) Spanish is a NSL

- a. John ha llegado  
John has arrived
- b.  $\emptyset$  Ha llegado  
Someone has arrived

Brazilian Portuguese (henceforth, BP) allows subjects not to be overtly realized. However, the distribution of null subjects in BP is more restricted than in canonical NSLs (e.g., European Portuguese (Barbosa, 2009), Italian Rizzi (1986)). Examples below illustrate briefly null subjects in BP. In (2) we see that BP allows subjects to be dropped,



while in (3) we see that BP does not allow subjects to be dropped like a NSL would. This is the initial empirical observation this thesis is about: BP has properties of a NSL, but it does not pattern with canonical NSLs.

(3) BP allows null subjects

- a.  $\emptyset$  Cheguei.  
 $\emptyset$  arrived-1S  
 'I arrived.'

(4) BP does not allow null subjects like a true NSL

- a. John chegou.  
 John arrived-3S  
 'John arrived.'
- b. \*Chegou.  
 $\emptyset$  arrived-3S  
 Intended: 'Someone arrived'

## 1.2 The distribution of null subjects in BP

Two types of null subjects exist in BP: definite and what I'll call *indefinite* null subjects. Definite null subjects have a specific referent, while indefinite null subjects refer to a non-specific entity, group or individual. These two types have different distributions, and this thesis is only concerned with the distribution of definite null subjects. For explanatory purposes, whenever I mention that a subject can be dropped in BP, I'll be concerned with definite null subjects.<sup>1</sup>

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<sup>1</sup>For illustrative purposes, an example of indefinite null subjects is given below:

- (i) Assassinaram o presidente ontem em Brasília!  
 Killed-3P-PST det-M president yesterday at Brasilia

### 1.2.1 Matrix declarative clauses

The starting point for the distribution of null subjects in BP are matrix declarative clauses. In matrix declarative clauses, only 1st person subjects can be dropped (Rodrigues, 2002; Kato and Negrão, 2000). This is shown in examples (5) to (7).<sup>2</sup>

(5) 3rd person subjects can not be dropped

- a. \*Vai no mercado amanhã  
\*Go-3S to-the market tomorrow  
'He/She will go to the marker tomorrow.'

- b. Ele/Ela vai no mercado amanhã  
He/She go-3S to-the market tomorrow  
'He/She will go to the market tomorrow.'

(6) 2nd person subjects can not be dropped

- a. \*Vai no mercado amanhã  
\*Go-2S to-the market tomorrow  
'You will go to the marker tomorrow.'

- b. Você vai no mercado amanhã  
You go-2S to-the market tomorrow  
'You will go to the market tomorrow.'

(7) 1st person subjects can be dropped

- a. Vou no mercado amanhã  
Go-1S to-the market tomorrow  
'I will go to the market tomorrow.'

---

Some non-specific person or group murdered the president yesterday in Brasilia

<sup>2</sup>A note regarding BP's inflectional and pronominal system: European Portuguese makes a morphological distinction between 2nd and 3rd person verbal inflection but in BP 2nd is syncretic with 3rd person.

- b. Eu vou no mercado amanhã  
I Go-1S to-the market tomorrow  
'I will go to the market tomorrow.'

## 1.2.2 Question environments

We've looked at matrix *declarative* clauses. Let us now turn to the distribution of null subjects in matrix *questions*. The crucial observation for question environments is that both 1st and 2nd person subjects can be dropped. Examples from (8) to (10) show this pattern for WH-questions. The same pattern can be observed in yes-no questions, as shown in (10) and (11)

(8) WH-question, 3rd person subject can not be dropped

- a. \*Tá fazendo o que?  
\*Be.3S doing DET-M what  
Intended: 'What is he/she doing?'
- b. Ele/ela tá fazendo o que?  
He/she be.3S doing DET-M what  
'What is he/she doing?'

(9) WH-question, 1st person subject can be dropped

- a. Tô fazendo o que?  
Be.1S doing DET-M what  
'What am I doing?'
- b. Eu tô fazendo o que?  
I be.1S doing DET-M what  
'What am I doing?'

(10) WH-question, 2nd person subject can be dropped

- a. Tá fazendo o que?  
Be.2S doing DET-M what  
'What are you doing?'
- b. Você tá fazendo o que?  
You be.2S doing DET-M what  
'What are you doing?'

(11) Yes-no question, 2nd person subject can be dropped

- a. Fez a lição-de-casa?  
Made-2S the homework?  
'Did you do the homework?'
- b. Você fez a lição-de-casa?  
You made-2S the homework?  
'Did you do the homework?'

(12) Yes-no question, 1st person subject can be dropped

- a. Fiz a lição-de-casa?  
Made-1S the homework?  
'Did I do the homework?'
- b. Eu fiz a lição-de-casa?  
I made-1S the homework?  
'Did I do the homework?'

### 1.2.3 The WH-patterns

Overt WH-movement to CP is not obligatory in BP, thus WH phrases stay *in situ* in (9) and (10). A puzzling pattern emerges when WH-movement takes place in these sentences:

subjects can no longer be dropped (Rodrigues, 2004, 2002; Modesto, 2010).

(13) WH-movement to Spec,CP<sup>3</sup>, subject cannot be dropped.

- a. \*O            que    tá            fazendo?  
DET-M what be.2S/3S doing  
Intended: 'What are you doing?' or 'What is he/she doing?'<sup>4</sup>
  
- b. O            que    você/ele/ela tá            fazendo?  
DET-M what you/he/she be.2S/3S doing  
'What is/are he/she/you doing?'

(14) WH-movement to Spec,CP, subject cannot be dropped.

- a. \*Onde    foram            ontem?  
\*Where go.3P-PST yesterday?  
'Where did you go yesterday?' or 'Where did they go yesterday?'
  
- b. Onde    vocês/eles    foram            ontem?  
Where you.P/they go.3P/3S-PST yesterday?  
'Where did you.P/they go yesterday?'

To summarize the basic pattern we have seen so far: only 1st person subjects can be dropped in declarative matrix clauses. In matrix yes/no and WH questions, 2nd person *and* 1st person subjects can be dropped (if the WH-phrase stays in situ). Subjects cannot be dropped in questions with WH-movement. On the next section I will go over the data in embedded clauses.

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<sup>3</sup>WH-movement in BP targets a WH-phrase headed by a Determiner. I assume the landing site for WH-movement is Spec,CP in BP.

<sup>4</sup>Recall that BP has a single morphological form for 2nd and 3rd person verbal inflection

### 1.2.4 Embedded environments

Having looked at matrix clauses, I will now go over the distribution of null subjects in BP in embedded environments. The distribution of null subjects in embedded clauses in BP plays out differently (Holmberg (2005); Ferreira (2009); Modesto (2010), among others). Notably, in embedded clauses 3rd person subjects can be dropped together with 1st and 2nd.

(15) 3rd, 1st and 2nd person embedded null subjects

- a. O João acha que vai comprar uma casa  
DET-M John thinks-3S that go-3S-FUT buy one house  
'John thinks that he will buy a house'
- b. Eu acho que vou comprar uma casa  
I think-1S that go-1S-FUT buy one house  
'I think that I will buy a house'
- c. Você acha que vai comprar uma casa  
You think-2S that go-2S-FUT buy one house  
'You think that you will buy a house'

An important observation at this point: unlike in canonical Null Subject Languages, embedded null subjects in BP are not free, i.e, they have to be bound by a structurally higher antecedent. Moreover, the only possible binder in BP is always the higher subject. The example in (15) illustrates these properties. Even though two possible binders are present in (15), only the matrix subject, 'Peter', may bind the embedded null subject. Example (16) displays the same pattern.

- (16) O João disse para o Pedro que vai comprar uma casa  
DET-M John said-3S to the Peter that will-3S buy a house  
'John<sub>i</sub> said to Peter<sub>j</sub> that he<sub>i/\*j</sub> will buy a house'

- (17) A mãe perguntou pro pai se chegou tarde em casa  
 DET-F mother ask-3S-PST to-the dad if arrived-3S-PST late at home  
 ontem  
 yesterday  
 'Mom asked dad if she/\*he arrived home late yesterday'

Obligatory co-reference with the matrix, i.e, the higher overt subject, occurs with multiple embedding as well.

- (18) Gender mismatch of the lower adjective "rich" is not allowed if the null subject doesn't refer to the matrix subject

- a. Minha mãe falou para meu pai que acha que  
**My-F mother-F** said-3S to my father that think-3S that became-3S  
 ficou rica  
**rich-F**  
 'My mother told my father that she thinks she became rich.'

- b. \*Minha mãe falou para meu pai que acha  
**My-F mother-F** said-3S to my father-M that think-3S that  
 que ficou rico  
 became-3S **rich-M**  
 Intended: 'My mother told my father that she thinks he became rich.'

There is one exception to the obligatory co-reference with the matrix for embedded null subjects. Embedded null subjects may refer to another referent that is not the overt matrix subject if the dropped subject is a first person subject:

- (19) Minha mãe acha que estou fumando  
 My mother think-3S that be-1S smoking  
 'My mother thinks that I'm smoking.'

If first person null subjects are allowed in embedded clauses freely, an immediate question

is whether the matrix null subject pattern can be replicated in embedded clauses, i.e, if we can see 2nd person null subjects in embedded questions. This is not the case:

- (20) \*Minha amiga perguntou se vai na festa?  
 My friend asked if go-2S to-the party  
 Inteded: 'My friend asked if you are going to the party?

### 1.2.5 The problem

To summarize: BP displays a non-uniform distribution of null subjects. The enviroments are summarized in Table 1.1:

Person	Matrix Declaratives	yes-no/WH in-situ Questions	Embedded Clauses	Questions + WH-movement
1st	✓	✓	✓	x
2nd	x	✓	✓	x
3rd	x	x	✓	x

Table 1.1: Possible enviroments for null subjects in BP

BP is not the only language displaying a non-uniform distribution of null subjects. Similar patterns have been observed in Hebrew (Shlonsky 2009, 1987) and Finnish (Holmberg and Nikanne 2002; Vainikka and Levy 1999; Gutman 2004). Much like BP, these two languages display structural restrictions on their null subject distribution. These restrictions are centered around tense, embedding and negation. What makes BP fundamentally different to Finnish and Hebrew is the fact WH-movement has an effect on the possibility of dropping subjects. This fact in itself makes it so that the accounts proposed for Finnish and Hebrew can not explain the BP facts. Thus, even though a non-uniform distribution of null subjects it not unique in itself, it is clear the BP facts require a new analysis.

The goal of this thesis is to propose a model for this puzzling distribution of null subjects in BP. Specifically, I propose an account for both matrix and embedded null



subjects in a unified model while also explaining the WH contrasts described. To to so, I will attempt to answer the following questions:

(21) Research questions

- 1.What governs the distribution of null subjects in BP?
- 2.Why do we see a different distribution in i) matrix versus embedded environments and ii) question versus declarative clauses?
- 3.Why must embedded null subjects be controlled by the matrix subject? ?
- 4.Which kind of object is the null element in BP?

This thesis is organized as follows: in chapter 2 I review the existing literature on null subjects in BP and I show the shortcomings of the existing analyses in light of the data patterns presented. In chapter 3 I summarize the theoretical framework I will be working with. Chapter 4 develops my analysis of BP within this theoretical framework, and chapter 5 offers concluding remarks and open questions for further investigation.

# Chapter 2

## Existing literature

### 2.1 Introduction

Throughout this chapter I will divide the works dealing with null subjects in BP in two groups. My motivation for that is purely expository. Group I is centered around works such as Barbosa et al. (2005) and falls in line with the analysis proposed by Alexiadou and Anagnostopoulou (1998) for NSLs. Group II is represented in works such as Rodrigues (2004, 2002), Modesto (2010) and Ferreira (2009), and it assumes what is called in the literature the Movement Theory of Control, initially formulated by Hornstein (1999). In the next sections I will introduce a summary of these two groups' theories. Afterwards, I will present my arguments for why these theories can not account for the data presented in chapter 1.

### 2.2 Group I

#### 2.2.1 Alexiadou and Anagnostopoulou (1998)

The theory of null subjects can be traced back to Rizzi (1986), Chomsky (1981) and Belletti and Rizzi (1981). At the time, the problem to be dealt with was as follows: assuming the Extended Projection Principle (henceforth, the EPP), it was not trivial

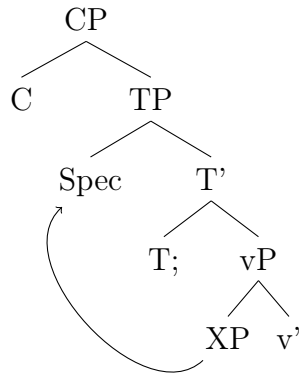
to account for the differences between languages such as English (where subjects are necessarily overt elements) and Italian (where subjects may be dropped). In other words, the challenge was to explain why in English the EPP must be satisfied by overt elements, while this was not the case in a given set of languages.

Briefly, null subjects were initially accounted for by proposing the existence of a null element that would behave much like a pronoun. This element was at the time named *pro*. Null subject languages, such as Italian, would have *pro* available to satisfy the EPP, while non-null subject languages like English wouldn't.

Within the investigation of null subject phenomena, the seminal work of Alexiadou and Anagnostopoulou (1998) brought in a system to further fine tune the crosslinguistic descriptions. Their insight being that the EPP may be satisfied by different mechanisms, not only *pro*.

A significant part of the work on null subjects in European Portuguese (EP) and BP owns much to Alexiadou and Anagnostopoulou (1998). The authors' proposal for null subjects was based upon a categorization of two language-groups that differed in respect to how the EPP was satisfied. The authors postulated the existence of at least two language groups, A and B. In Group A, to which Germanic is taken to belong, the EPP is checked via movement/merge of a full XP (a Phrase). For our purposes, let us assume this XP is generally the subject merged in spec,*v*P. The general structure for EPP checking in this first group is given below:

(22) Group I, EPP is checked via XP moving to Spec,TP



An example of such a group would be the English example below, with the corresponding structure:

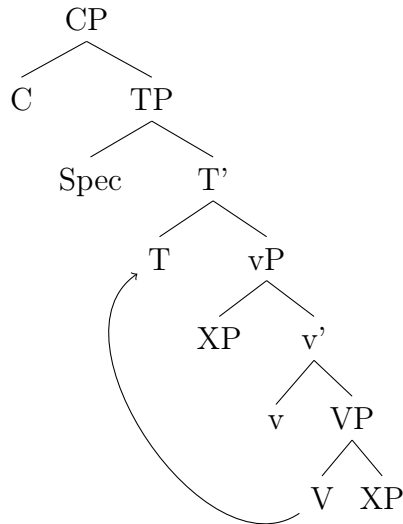
(23)  $_{TP}$  [ The council<sub>i</sub>  $_{T'}$  [  $t_i$   $_{vP}$  [ gathered yesterday.]]]

As for Group B, to which Romance, Greek and Celtic are taken to be part of, the EPP is checked by raising of an Xo (a Head). In the case of Romance, for example, Alexiadou and Anagnostopoulou (1998) proposes that V is the raising head. In order for V to check the EPP, the authors suggest that V carries a

+D

feature in this group of languages. In other words, V is capable of acting like the nominal XP in (16). The authors name this mechanism *strong agreement*. Once V checks the EPP (presumably, by raising to T), the structure is freed from needing an overt nominal subject, which accounts for the distribution of null subjects in this language group. The structure for group B is given below:

(24) Group B, EPP is checked via Xo moving to T



An example of sentence from a Group B language is given in the European Portuguese example below. In (25), V sits at T, and the subject merged at Spec,vP is assumed to be an empty category, i.e *pro*. Notice however that *pro* does not check the EPP, it does not raise to Spec,TP.

- (25) Trabalhas muito toda semana.  
 Work-2S much every week  
 ‘You work a lot every week’

Two consequences arise for languages of group II: i) subjects must be merged in a VP internal position, otherwise they would be moved to Spec,TP instead of V and ii) preverbal overt subjects in these languages must have raised through movement other than EPP movement, since they are not assumed to be in Spec,TP. Both i) and ii) are central to the works dealing with European Portuguese null subjects, mainly Barbosa (2009) and Barbosa et al. (2005), which I go over in the next subsections.

### 2.2.2 Barbosa (2009) and Barbosa et al. (2005)

Barbosa (2009) provides further evidence that preverbal overt subjects in EP are not

raised through EPP-driven movement. The theory pursued by the author has at its core the separation of true NSLs, to which EP belongs to, and partial NSLs, such as BP. The author argues that in true NSLs there is no subject raising to Spec,TP, following Alexiadou and Anagnostopoulou (1998). The subject position for NSLs is then argued to be VP internal, and pre-verbal overt subjects are taken to be cases of A'-movement to the left periphery. The basic structure for a sentence in an NSL such as EP is given below:

(26) Subjects and EPP checking in NSLs (Barbosa (2009))

Subject<sub>j</sub> [<sub>TP</sub> V<sub>i</sub> T ... [<sub>VP</sub> t<sub>i</sub> t<sub>j</sub>]]

When it comes to BP, the author argues the structure in (26) is not available, and EPP is checked by movement of the subject XP to Spec,TP. Thus, it is predicted that overt-preverbal subjects in BP are not the result of A'-movement and consequently sit in Spec,TP.

Barbosa et al. (2005), a second work on the BP versus EP distinction, brings a corpus analysis aiming to demonstrate that contemporary BP, unlike EP, is losing the *avoid pronoun principle* (Chomsky (1993)). This principle requires that whenever a choice between *pro* and an overt subject is available, *pro* will be chosen in the derivation. The apparent preference for overt subjects in BP, despite the availability of null subjects, seems to violate the avoid pronoun principle.

The authors hypothesize that BP does not have the structural licensing conditions for null subjects that EP does. The problem is then how to explain null subjects when they *do occur* in BP. The proposal offered by the authors is to suggest null subjects in EP and BP are inherently distinct, i.e they enter the derivation as different elements: pronouns in the case of EP and pronominal anaphors in the case of BP. This analysis predicts that null subjects in BP will never be free, i.e, they will never show up in environments without a higher binding element/structure. The question is which kind of structure(s)

are needed for subjects to be dropped in BP. This question is the main focus of the works in Group II, which I go over in the next section.

## 2.3 Group II

### 2.3.1 Hornstein (1999) and the Movement Theory of Control

While the previous group of works concentrates on the differences between EP and BP, this line of work focuses on the question of why embedded null subjects in BP look much like control. Authors in this line propose that null subjects in BP are traces resultant of movement by assuming the Movement Theory of Control, which I describe in the next paragraph.

Hornstein (1999) is the cornerstone for the analysis developed by works within this group. This paper inaugurated what would be later named the Movement Theory of Control, further contributing to the long discussion on Control and Raising. Hornstein's theory essentially brought up empirical and theoretical arguments for dispensing with the control *versus* raising dichotomy. His analysis suggested that both raising and control are different instances of the same underlying phenomenon, movement. This analysis had to eliminate the  $\theta$ -criterion<sup>1</sup> and to treat  $\theta$ -roles as features in order to assume them as possible enablers for movement. Within the Movement Theory of Control, sentences which were analyzed by the standard PRO-approach to control are considered instances of movement into the matrix clause; as an example, a simple control sentence such as *John hopes to leave* would have the following structure:

$$(27) \quad [_{IP} \text{ John } [_{VP} \text{ hopes } [_{IP} t_i \text{ to } [_{VP} t_i \text{ leave}]]]]$$

In contrast with the theory that does not assume movement to be the underlying struc-

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<sup>1</sup>In Hornstein (1999)  $\theta$  criterion is described as simply the assumption that *expressions (or chains they head) are restricted to a single  $\theta$ -role*

ture:

(28) [IP John [VP hopes [IP to [VP PRO leave]]]]

Works in group B assume the Movement Theory of Control, that is, the structure in (27). Correspondingly the authors assume that null subjects in BP are traces. Most of the work within this line is concerned solely with embedded null subjects.

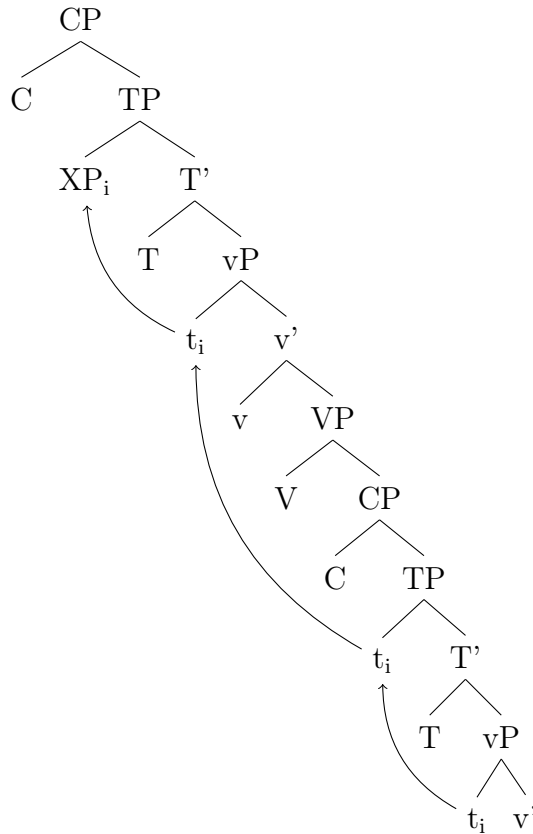
### 2.3.2 Ferreira (2009) and Rodrigues (2004)

Ferreira (2009) gives a detailed analysis of embedded null subjects in BP based on the Movement Theory of Control. In other words, the author assumes null subjects in BP are traces left by movement from a lower merged position. To enable the movement steps necessary to derive the correct higher positions of these subjects, Ferreira argues that BP has two different types of Ts available for syntactic derivation: what he calls *complete* and *incomplete* T, where completeness refers to the availability of Case licensing by T. When the subject is governed by incomplete T, it will have to move to a position governed by complete T. This movement is motivated by both Case licensing and theta-role assignment, in the same line as Hornstein (1999).

The general system described above is followed by similar works by other Brazilian linguists, such as Rodrigues (2004, 2002); Modesto (2010). The general structure for embedded null subjects in BP as argued in these works is given below:

(29) Embedded null subjects derived through movement, arrows indicate movement (Ferreira (2009))





To illustrate the theory at work for BP, example (30) would have the structure in (31):

(30) João disse que vai no mercado amanhã.

John said-3S that go-FUT-3S to-the market tomorrow

'John said he's going to the market tomorrow.'

(31) [<sub>IP</sub> John [<sub>VP</sub> t<sub>i</sub> said [<sub>CP</sub> that [<sub>IP</sub> t<sub>i</sub> will [<sub>VP</sub> t<sub>i</sub> go [<sub>PP</sub> to-the market tomorrow]]]]]]]

As mentioned, within these works, embedded null subjects are often the sole object of study, while matrix null subjects are accounted for by a topic drop analysis (Rodrigues, 2004). In this analysis, matrix null subjects like (31) are all cases of topic deletion, that is, these null subjects are null variables bound by a null topic at the Left Periphery.

(32) 1st person subjects can be dropped

a. Vou no mercado amanhã  
Go-1S to-the market tomorrow

'I will go to the market tomorrow.'

- b. Eu vou no mercado amanhã  
I Go-1S to-the market tomorrow  
'I will go to the market tomorrow.'

These authors' main argument is the fact that movement of other elements into the left periphery in a sentence like (31) would create a Minimality Violation between the Topic and its bound null variable. The topic analysis of matrix null subject is given below:

- (33) Topic deletion analysis of matrix null subjects in BP (Rodrigues, 2004)
- (<sub>TopP</sub>DP<sub>i</sub>) CP[ *t<sub>i</sub>* Vou no mercado amanhã]
- (Deleted topic<sub>i</sub>) *t<sub>i</sub>* Go-1S to-the market tomorrow
- 'I will go to the market tomorrow.'

## 2.4 Problems with the existing analyses

None of the theories reviewed in this chapter provide an adequate account for the data patterns seen in Chapter 1. Namely, these theories leave the following problems about the data answered:

- (34) Unanswered questions

1. Why do we only see 1st person null subjects in declarative matrix clauses?
2. Why do we see 2nd person null subjects in questions?
3. How can we account for the WH-movement effects on null subject availability?

Firstly, there's the issue of empirical adequacy concerning matrix null subjects. The models within Group I all assume BP's null subjects are restricted to embedded environments, which gives much of the motivation to suggest null subjects in BP are bound in contrast to EP, where they are assumed to be free. These proposals have nothing to say about matrix null subjects in BP.

Group II does present an analysis for matrix null subjects in BP, the topic deletion introduced in the previous section. This analysis however lacks the explanatory power to account for the data.

The topic deletion analysis does not account for the patterns shown in Chapter 1. The problem being a number of questions that arise if we assume this analysis to be correct, namely: i) why would topic deletion occur only when we see 1st person inflection? ii) why do question environments allow 2nd person null subjects? iii) is there any correlation between the person features of the null subjects and the availability of topicalization and Topic Deletion? The topic deletion proposal properly describes our facts and predicts the block of movement of other elements to the Left Periphery (i.e, WH-phrases). However, it doesn't explain why these subjects would be topicalized and deleted only in particular environments. Take the examples from Chapter 1 repeated below:

(35) 3rd person singular inflected verbs, subject can not be dropped

- a. \*Vai            no        mercado amanhã  
       \*Go-3S/2S to-the market   tomorrow  
       'You will go to the market tomorrow' OR 'He/she will go to the market  
       tomorrow'.

(36) 1st person singular inflected verbs, subject can be dropped

- a. Vou    no        mercado amanhã  
       Go-1S to-the market   tomorrow  
       'I will go to the market tomorrow.'

Under the Topic Deletion analysis, it is not clear why the subject in (36) may be topicalized and deleted, but not the one in (35). Topic deletion may describe the mechanism, but it does not account for the contrast between these two examples.

A second empirical problem is faced by Group II. Assuming the Movement Theory of Control for BP's embedded null subjects makes accounting for cases of partial control in this language difficult. Take sentence (11) for example:

- (37) O Pedro acha que vamos no mercado amanhã  
 DET-M Peter thinks that go-1PL to-the market tomorrow  
 Peter thinks that we will go the market tomorrow

It is not clear how a movement based analysis can account for the embedded null subject in (37). If this null subject is a trace, it has to be bound, but we see no potential plural binder. A similar problem arises for sentence (38) below, where *ec* stands for the embedded null subject:

- (38) O anfitrião deu boas-vindas aos hóspedes quando *ec*  
 DET-M host<sub>i</sub> gave-1S welcome to-the guests<sub>j</sub> when *ec*<sub>i+j, j</sub>  
 entraram na casa de praia  
 entered-1PL into-the house of-the beach  
 The host<sub>i</sub> welcomed the guests<sub>j</sub> when they<sub>i+j, j</sub> entered the beach house.

In (12) the embedded null subject may refer to either *the guests* or the plural entity containing both the guests and the host. A movement based approach would derive this null subject as a trace left by moving one merged element, which goes directly against the empirical fact that this null subject may refer simultaneously to two elements of the matrix.

A second problem arises. At the base of both Groups' theories is the notion that BP and EP are fundamentally different due to one particular factor: richness of inflection. Both groups of works assume BP's impoverished inflectional paradigm is related to the

language’s unavailability of strong Agr (in the sense of Alexiadou and Anagnostopoulou (1998)) licensing<sup>2</sup> pro-drop. Theoretically, these models assume the correlation between richness of inflection and null subject licensing. The general line of thought being that BP’s impoverished inflectional paradigm is in some way or another the historical cause for the null subject distribution in this language. While it seems reasonable to attribute some correlation between these two facts, it is worth noticing that from the very start, Alexiadou and Anagnostopoulou (1998) denied a strong correlation between morphology and null subject licensing; and pointed out that inflectional richness was a *piece* of the puzzle and not the complete solution. To quote the authors:

Our proposal holds that there is no absolute correlate between richness of morphology and the availability of strong agreement in the sense of pro-drop (...). We simply have to stipulate that in certain languages, agreement affixes have independent entries, thus qualifying as [+D]. (...) The richness of morphology is just an additional piece of evidence pointing to the same conclusion.

Finally, these theories completely ignore a group of facts about the language, namely what I will call its *discourse-configurational* properties. These properties are correlated with the contact the language had with Bantu through three centuries. I will go over the reasons why these two facts are relevant for this discussion in the next sections.

### 2.4.1 Brazilian Portuguese discourse configurational properties

BP’s discourse-oriented properties have been initially observed by Pontes (1987). Examples below (adapted from Avelar and Galves (2011)) illustrate what these authors call non-thematic subjects in BP. A relevant observation at this point is that these sentences are ungrammatical in EP.

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<sup>2</sup>The word *Licensing* has a specific meaning in my proposal (see Chapter 4). Until licensing is properly defined as a syntactic mechanism, I’ll be using the word *licensing* to refer to either a general enabling mechanism (i.e, conditions allowing a null subject to be borne out) or as specifically Case licensing

- (39) a. As ruas do centro não tão passando carro  
 The streets of-the downtown not are-3PL passing car  
 'Cars are not passing through the streets downtown' (lit *The streets downtown are not passing cars*)
- b. Não está passando carro nas ruas do centro  
 Is-3S not passing car at-the streets of-the downtown  
 'Cars are not passing through the streets downtown'
- (40) a. As crianças já tá nascendo dente  
 DET-F-PL child-3PL already be-3S born-GER tooth-3S  
 'The children's teeth is already growing.' (lit the children already be borning tooth)
- b. Já tá nascendo dente das crianças  
 Already be-3S born-GER tooth-3S of-the-PL child-PL  
 'The children's teeth is already growing.'

A relevant empirical observation: in (39) the stative 'be' displays plural inflection, agreeing with the plural locative element 'the streets' and not with the singular subject 'car'. Examples in (40) are similar insofar as we see a genitive element in topic position in (40), but nothing special about agreement. When it comes to the structural position of these special subjects, I will follow de Andrade and Galves 2014 in calling these structures *non-thematic subjects* and assuming the position of these subjects is Spec,TP. My argument for assuming so and my account for these special subjects differs from the proposal in de Andrade and Galves 2014.

My argument for assuming the position of non-thematic subjects in BP is Spec,TP goes back to the discussion of BP and EP seen in Barbosa (2009) in chapter 2. The crucial fact being that preverbal overt subjects in EP are in an A'-position, but this is not the case for BP. In BP, preverbal overt subjects have to occupy Spec,TP, since presumably the

language lacks the possibility of strong Agr checking the EPP. Considering the examples in (39) and (40), we then have to assume that the preverbal subjects in these sentences sit in Spec,TP. Assuming that i) movement requires an Agree operation and ii) Agree requires probing, the question at this point is: how are these non-thematic subject elements probed to move to this position? My answer to this question is that BP has the option of attracting nominals to Spec,TP not only based on their position in the structure but also based on their information-structure properties, which I assume are represented in narrow syntax as what I will call, following (Miyagawa, 2009, 2017) discursive ( $\delta$ ) features.

I argue that what triggers movement of these non-thematic subjects in (39)-(40) is a probe containing discursive ( $\delta$ ) features, that is inherited from C into T in BP (Miyagawa 2009). My motivation for assuming the existence of this  $\delta$  probing mechanism is historical. Bantu languages are within the class of *discourse or topic-oriented* languages (Baker 2013). As assumed by Miyagawa (2009), Bantu is a group of languages where the  $\delta$  probe is active and triggers movement.

Bantu languages were, crucially, a relevant component in the development of spoken BP. It is well documented that Brazil's workforce from the 17th to the 19th century was vastly based on slavery of Central Africans (mainly from Angola, a former Portuguese colony) brought to the country through a wide slave trade network centered around the Portuguese Crown. Demographically, this Central African population quickly became a significant portion of the Brazilian population. Avelar and Galves (2016) cites data pointing to this group totalling around 30% of the Brazilian population by the 1700s. These Central Africans were predominantly from Bantu speaking countries and were not native speakers of Portuguese. Table 2.1<sup>3</sup> below, adapted from Avelar and Galves (2016), illustrates the demographic distribution of the Brazilian population from the late 16th to the start of the end of the 18th century.

Recent work by Brazilian syntacticians and historical linguists (Avelar and Galves

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<sup>3</sup>The terms used to designate the different population groups are copied *verbatim* from the original historical document containing this data. It is unclear what precisely the original authors of the document meant by designations such as "Euro-descendants" or "Integrated natives".

Group	1583-1600	1601-1700	1701-1800
Africans	20%	30%	20%
Europeans	30%	25%	22%
Mixed-Race	-	10%	19%
Euro-descendants	-	5%	10%
Integrated natives	50%	10%	8%

Table 2.1: Demographic data: Brazilian Population in 3 periods

(2011); Avelar and Cyrino (2018); Avelar and Galves (2014)) concentrates on the relevance of the long contact between BP and Bantu. One argument is that the contact with Bantu has shifted BP from a 'pure' agree-type language into a mixed agree/discourse-oriented language. This shift would explain the presence of syntactic mechanisms such as  $\delta$ -probing, mentioned in the previous paragraph. In this thesis, I will assume this contact hypothesis to be correct, and this will be my motivation for arguing in terms of discursive probes. My arguments for assuming the Bantu contact hypothesis are threefold:

Firstly lexically and phonologically, the presence of the Bantu influence in BP has been extensively observed (Mendonça et al. (2012), among others). If BP displays evidence of the result of contact with Bantu at these levels, it is not unreasonable to assume the syntactic properties of the language would also be affected. Contact induced syntactic change has been previously proposed for different languages, i.e, Oceanic Languages (Ross 2001), Dutch Turkish (Doğruöz and Backus 2009), Pipil (Campbell 1987), Spanish (Silva-Corvalán 1994 and English (Roberts 2018). I assume the historical development of BP went through a similar process.

Secondly, I argue that is acceptable to assume a contact hypothesis when nearly a third of a country's population were speakers of foreign languages. It is also relevant that the social context of this population made it nearly impossible for the actual use of their native languages, thus speaking Portuguese was a matter of survival. In other words, at a given point of Brazilian history, nearly a third of the population were L2 Portuguese speakers. The general conditions for contact induced change pictured in Kroch (2001) fit the BP case perfectly:



Language change is by definition a failure in the transmission across time of linguistic features. Such failures, in principle, could occur within groups of adult native speakers of language, who for some reason substitute one feature for another in their usage, as happens when new words are coined and substituted for old ones; but in the case of syntactic and other grammatical features, such innovation by monolingual adults is largely unattested. Instead, failures of transmission seem to occur in the course of language acquisition; that is, they are failures of learning. Since, in an instance of syntactic change, the feature that learners fail to acquire is learnable in principle, having been part of the grammar of the language in the immediate past, the cause of the failure must lie either in some change, perhaps subtle, in the character of the evidence available to the learner or in some difference in the learner, for example in the learner's age at acquisition, as in the case of change induced through second-language acquisition by adults in situations of language contact.

Kroch (2001), p. 8

## 2.5 Conclusions

In this chapter I offered a brief review of the current proposals for null subjects in BP. I divided these proposals in two groups, one based upon Alexiadou and Anagnostopoulou (1998)'s theory for null subject languages, centered around strong Agreement and one based on Hornstein (1999)'s Movement Theory of Control. Afterwards, I showed how these theories showed empirical shortcomings and issues of explanatory power. I introduced two new facts concerning BP, its discourse-oriented properties and the Bantu contact hypothesis, which are related. I assumed the Bantu hypothesis to be correct and suggested that BP has an active discursive probe ( $\delta$ ) that may probe non-thematic subject elements, a mechanism absent in EP. In the next chapter, I will further elaborate on this mechanism and the theoretical framework behind it.

# Chapter 3

## Discursive features, $\phi$ -features and Agreement

### 3.1 Goals of this chapter

In the previous chapter I briefly introduced the discursive ( $\delta$ ) probe and proposed that this probe is active in BP. Moreover, I showed BP displays properties found in discursive oriented languages, and tied these properties with the historical contact BP had with Bantu languages. In this chapter I will further elaborate on the theoretical assumptions around a system where both the  $\delta$  and the  $\phi$  probe are active to create agreement and explore how the two types of probes interact in the domain of null subjects. The  $\delta$  and  $\phi$  probe together will be at the core of the proposal I will develop to account for the distribution of null subjects in BP.

A considerable part of this chapter will be dedicated to review the system in Miyagawa (2009), which is at the core of my approach. Section 1 introduces the main assumptions and the fundamental elements of the model. Section 2 shows a initial implementation in terms of language typology if we assume Miyagawa (2009)'s model, while section 3 discusses the place of BP in such a typology. Section 4 goes in more depth over the similarities between BP and Bantu mentioned in chapter 1. Section 5 offers concluding

remarks and a brief summary.

## 3.2 Assumptions

### 3.2.1 Feature Inheritance, $\phi$ and $\delta$

I will assume, following Richards (2007), that the set of unvalued  $\phi$ -features, the  $\phi$  probe, typically associated with T is originally merged at C. This set of features may then be inherited from C onto lower projections. In a language such as English, T always inherits the  $\phi$  probe. Languages differ with respect to which head inherits this probe from C.

Secondly, I will assume, following Miyagawa (2009), a second set of features may be inherited from C: discursive ( $\delta$ ) features, constituting the  $\delta$  probe. Two examples of  $\delta$  features in natural languages are topic and focus. For the purpose of this work, I will not be concerned with specific discursive features and will simply refer to them as  $\delta$ .

The  $\phi$  and  $\delta$  probes create agreement relations (Miyagawa (2009, 2017)). In languages where verb-subject  $\phi$  agreement (i.e, Spanish, Catalán, French) is present, the  $\phi$  probe probes for agreement. In languages without verb-subject  $\phi$  agreement (i.e, Japanese, Chinese),  $\delta$  is the probe responsible for creating the equivalent of agreement.

A third assumption concerns the availability of these two probes,  $\phi$  and  $\delta$ . Again, following Miyagawa (2009), I will assume what is called Strong Uniformity, formulated below:

(41) **Strong Uniformity (Miyagawa, 2009)**

Every language shares the same set of grammatical features, and every language overtly manifests these features.

Following Strong Uniformity, all languages should have both the  $\phi$  and the  $\delta$  features available, and manifest these features overtly. The question of *how* these features are

manifested is a complex one that I will not dwell on. The relevant fact here is that both the  $\delta$  and the  $\phi$  probe are *available* to be inherited from C for any given language, even though some languages will never have one of these probes active for creating agreement.

A fourth assumption, again from Miyagawa (2017), concerns the mechanics behind the probe and its goal. I will assume the Probe Goal Union Principle (PGU):

(42) **Probe Goal Union Principle (Miyagawa, 2009)**

A probe must always move to its goal (i.e, its local domain or the head carrying the probe).

Generally, the PGU predicts that whatever is probed by either  $\phi$  or  $\delta$  will move to the local domain of the head that inherited these probes, e.g: in English, thematic subjects are probed by  $\phi$  and moved into Spec,TP; in Japanese, topics are probed by  $\delta$  and moved to either Spec,TP or the Topic Projection.

Summarizing our theoretical assumptions thus far:

1. Feature inheritance from C into the lower projections
2. Two probes for creating agreement: the  $\phi$  probe and the  $\delta$  probe
3. The Probe Goal Union Principle: a probe attracts its goal to its local domain or to the head carrying the probe

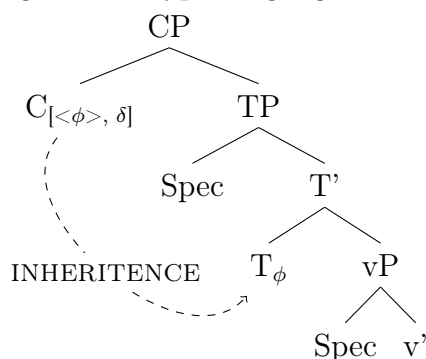
A final assumption concerns the  $\phi$  probe. Again, following Miyagawa (2009) I will assume this probe may not seek a goal *by itself*, it needs what the author calls a *grammatical feature* to activate it. In English, like most  $\phi$  agree based languages, Case on T is assumed to be this grammatical feature.

### 3.3 More on $\phi$ and $\delta$

I assume the existence of two probes in narrow syntax,  $\delta$  and  $\phi$ . Whether one or both of these probes are active varies across languages. In this section I will briefly go over how these probes play out in two language groups. Afterwards I will situate BP within the system.

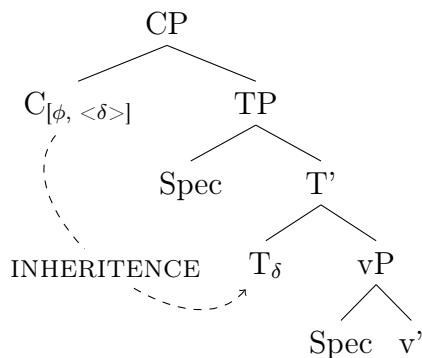
The first language type corresponds to  $\phi$  agreement based languages (henceforth, *agree-type languages*). In these languages the  $\phi$  probe is active. Agree-type languages (Romance, Germanic, Slavic, among others) will generally have T inheriting the  $\phi$  probe from C. This probe will seek a goal in T's domain. If probing is successful, the goal will move to the probe, following the PGU. The general structure for an agree-type language is given below:

- (43) Agreement type language, Case activates the  $\phi$  probe



The second language type are languages that will have T inheriting not the  $\phi$  probe, but  $\delta$ . These I will call *discourse-oriented* languages (Japanese, Chinese, Bantu, among others). Abstracting from intermediary projections at the Left Periphery such as Topic and Focus, the general structure for discourse-oriented languages is given below:

- (44) Discourse configurational language



The language categorization described above is a rough approximation. Following Strong Uniformity, all languages should have both the  $\phi$  and the  $\delta$  probe available. Thus, there should exist languages where T may inherit both probes, languages where T inherits none and languages where other projections below C inherit these probes (for a more detailed typological proposal, see (Miyagawa, 2009, Chapter 1)). Similarly, different types of  $\delta$  features will appear in different sites for each language. In the next section I will argue that BP is a language where both the  $\phi$  and the  $\delta$  probe.

### 3.4 BP, $\delta$ and $\phi$

BP is generally an agree-type language: it displays subject-verb agreement consistently. I thus assume the  $\phi$  probe is active in BP. The  $\delta$  probe however requires some discussion.

Recall that in Chapter 2 I introduced two examples of what is generally called in the literature ‘topic-oriented’ sentences in BP. These examples are repeated below (Avelar and Galves (2011), Avelar and Galves (2014)). In Chapter 2 I offered a brief account for these type of sentence: I claimed these sentences have structures where a non-thematic element is probed and raised to Spec,TP, assuming all preverbal subjects in BP are at Spec,TP (Barbosa (2009)). My motivation for making this claim was based on the Bantu contact hypothesis. I argue the mechanism for raising a non-thematic subject element to Spec,TP is the  $\delta$  probe.

- (45) a. As ruas do centro não tão passando carro  
 The streets of-the downtown not are-3PL passing car  
 'Cars are not passing through the streets downtown' (lit *The streets downtown are not passing cars*)
- b. Não está passando carro nas ruas do centro  
 Is-3S not passing car at-the streets of-the downtown  
 'Cars are not passing through the streets downtown'
- (46) a. As crianças já tão nascendo dente  
 DET-F-PL child-3PL already be-3PL born-GER tooth-3S  
 The children's teeth is already growing (lit the children already be born-GER tooth)
- b. O dente das crianças já está nascendo  
 DET-M tooth of-the child-3PL already be-3S born-GER  
 The children's teeth is already growing

Sentences (45) and (46) are then easily accounted for if we assume the  $\delta$  probe to be active in BP. The non-thematic subjects enter the derivation with a valued  $+\delta$  feature and are probed accordingly. A non-trivial problem arises concerning Case. Recall that I assumed Case to be the grammatical feature responsible for activating the  $\phi$  probe in Agree-type languages. I also assumed BP to display the Agree-type sentence where Case is relevant for the  $\phi$  probe. An immediate question is, then, why is Case not activating the  $\phi$  probe in the sentences where the  $\phi$  probe is inherited together with  $\delta$ . For the purpose of this dissertation, I will not dwell on this problem. My solution is to assume that whenever  $\delta$  is present on T, Case still activates the  $\phi$  probe, but the goal must satisfy what I name the  $\delta$  condition:

(47) **The  $\delta$  condition**

Whenever the  $\delta$  probe and Case are possible grammatical features for activating

the  $\phi$  probe, Case activates the  $\phi$  probe and the goal of  $\phi + \delta$  must carry a  $[+\delta]$  feature.

The  $\delta$  condition prevents the system for overgenerating. If we discard Case on T altogether, the model predicts that *any*  $[+\delta]$  marked element may move to T. Assuming  $[+\delta]$  marked elements are either given or topics, we could then have adjuncts that are given moving to T if we discard Case. This is not true for BP:

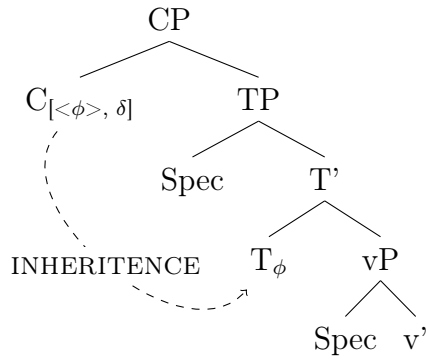
- (48) a. O        Pedro foi        nas    quatro festas   ontem  
           DET-M Peter   went-3S to-the four    parties yesterday  
           Peter went to the four parties yesterday
- b. \*As                quatro festas   foram        o        Pedro ontem  
           DET-F-PL four    parties went-3PL DET-M Peter   yesterday

If the  $\phi$  probe is active and the  $\delta$  probe is active, BP would fall within the group of languages that is neither a pure agree-type or a discourse-oriented language, but a mix of both. This type of language is attested, Bantu languages such as Kinande (Miyagawa (2009), Baker (2013)) being one of them.

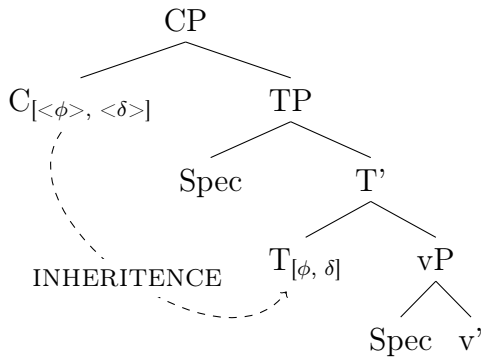
BP then may have two different feature bundles on T: one where the  $\phi$  probe is inherited alone, and Case is the responsible feature for activating this probe, and one where the  $\phi$  probe is inherited together with the  $\delta$  probe, and  $\delta$  then seeks for a goal containing a valued  $[+\delta]$  feature, a discourse marked element. The first type corresponds to the regular thematic-subject verb agreement sentences, the second type to the 'topic-oriented' sentences such as (45) and (46). Both types are illustrated below.

- (49) Type 1, T inherits the  $\phi$  probe, Case seeks the probe goal





- (50) Type 2, T inherits  $\phi$  and  $\delta$ ,  $\delta$  seeks the probe goal



For Type 2 structures, the probed element has to enter the derivation with a valued  $[+\delta]$ . An immediate question is why can't then any element with valued  $\phi$ -features be merged with valued  $\delta$  features. It is clear there is a restriction for what may be merged with valued  $[+\delta]$  in BP. Example (51) repeated below shows that not all locative PPs are eligible to be a goal of the  $\delta$  probe:

- (51) a. O        Pedro foi        nas        quatro festas        ontem  
           DET-M Peter went-3S to-the four        parties yesterday  
           Peter went to the four parties yesterday
- b. \*As                quatro festas        foram        o        Pedro ontem  
           DET-F-PL four        parties went-3PL DET-M Peter yesterday

Accounting for the restrictions of what qualifies as a goal for  $\delta$  is beyond the scope

of this thesis; for an analysis of this problem see de Andrade and Galves (2014). What is crucial for the current proposal is the fact that BP has two possible probes at T, each one associated with a different feature.

At this point, BP diverges significantly from Bantu. Kinande, for example, shows a much more free availability of elements to be  $\delta$  probed, as shown by examples below (examples from Baker (2003)):

- (52)
- a. Omukali mo-aseny-ire                      olukwi (lw'-omo-mbasa).  
     woman.1 AFF-1.S/T-chop-EXT wood.11 (LK11-LOC.18-axe.9)  
     'The women chopped wood (with an axe).'
  - b. Olukwi si-lu-li-seny-a                      bakali (omo-mbasa).  
     wood.11 NEG-11.S-PRES-chop-FV women.2 (LOC.18-axe.9)  
     'Wood, woman do not chop (with an axe).'
  - c. ?Omo-mulongo    mw-a-hik-a                      omukali.  
     LOC.18-village.3 18.S-T-arrive-FV woman  
     'At the village arrived a woman.'

The examples in (52) demonstrates how different elements may be  $\delta$  probed in Kinande. In (a) we see the thematic-subject being probed, in (b) the object and in (c) a locative. BP, as shown, is much less free concerning these possibilities. The problem on how to explain why certain elements may act as subjects but not others is complex and out of the scope of this thesis. For a deeper discussion on this issue and a theoretic proposal for non-thematic subjects in BP, refer to (Avelar and Galves, 2016).

To summarize the model for BP:

1. BP has both the  $\phi$  and  $\delta$  probe available at C for inheritance.
2. Two types of finite Ts exist in BP.
3. Type 1: finite T inherits  $\phi$  and Case seeks the probe goal, thematic-subject-verb

agreement arises.

4. Type 2: finite T inherits  $\phi$  and  $\delta$ ,  $\delta$  seeks the goal with a  $[+\delta]$  feature, topic-oriented subject sits at Spec,TP.

### 3.5 Summary

I introduced the theoretical assumptions and the general framework I will be working with. Following Miyagawa (2009, 2017), I assumed i) Feature Inheritance from C into the lower projections, ii) the existence of a discursive probe, the  $\delta$  probe, which creates structural relations similarly to the  $\phi$  probe, iii) the Strong Uniformity thesis, iv) the Probe Goal Union Principle and v) that the  $\phi$  probe needs a grammatical feature to activate it.

With these assumptions, I proposed the basic architecture of the model. I suggested BP has both the  $\delta$  and the  $\phi$  probe available to create structural relations. I argued for the existence of two different types of finite Ts in BP, one where T inherits only  $\phi$  and one where T inherits both  $\phi$  and  $\delta$ , probing for a  $\delta$  marked element at the lower structure. I showed that BP is restrictive when it comes to elements that may come into the derivation with a  $[+\delta]$  feature. To the best of my knowledge, this restriction is not present in other languages that also have the dual  $\delta+\phi$  probe system, such as Kinande.

In the next chapter, I will formulate my proposal for null subjects in BP.

# Chapter 4

## The analysis

### 4.1 Introduction

This chapter demonstrates how null subjects in BP can be derived through the system built so far. The analysis proposed in this chapter will show that once we take the framework I proposed and apply it to BP, we can derive null subjects in in an unified fashion.

For concreteness I assume null subjects are minimal pronouns, i.e a Determiner head that is merged at  $\text{spec},vP$  with an unvalued bundle of  $\phi$ -features. This assumption is formulated below:

(53) **Null subjects are merged as a bundle of unvalued features**

Every null subject in BP enters the derivation as a Determiner Head containing a bundle of unvalued  $\phi$ -features, this will be represented as  $D_{u\phi}$ .  $D_{u\phi}$  is merged at  $\text{spec},vP$ .

A second assumption concerns  $D_{u\phi}$ . I argue that null subjects in BP are always *given* and topics. My argument supporting this assumption are twofold: i) since null subjects are minimal pronouns, their lexical content must be recoverable from the context, thus,

by definition, they are given; ii) I assume nominals that occupy the structural subject position in BP are sentential topics, thus null subjects are always topics. Structurally, this assumption means these null subjects enter the derivation with a valued  $+\delta$  feature.

(54) **Null subjects in BP are discourse marked**

All instances of null subjects in BP enter the derivation with a valued  $[+\delta]$  feature.

A null subject in BP starts its life as  $D_{[u\phi, +\delta]}$

A third assumption concerns how these null subjects'  $\phi$  features are licensed in narrow syntax. I assume  $D_{u\phi}$  will have its unvalued  $\phi$ -features valued by a higher antecedent with valued  $\phi$ -features.

(55) **Definite null subjects are licensed by valuation**

The bundle of unvalued  $\phi$  features will be *licensed* whenever its  $\phi$  features are valued by an element in the higher syntactic structure with valued  $\phi$  features.

Finally, I assume these null subjects need to be anchored on a content recovery mechanism, i.e., *identification* in the sense of Jaeggli and Safir (1989). For my proposal, identification occurs whenever the valued  $\delta$  feature is checked by another element that carries valued  $\delta$ . This assumption is summarized below:

(56) **Identification is  $\delta$  checking**

A definite null subject needs to have its  $\delta$  feature checked to be identifiable, i.e., to have its semantic content recoverable.

A relevant question is why do we need licensing and identification at all (i.e., why these features can not remain unvalued). My answer goes back to indefinite null subjects, mentioned briefly on Chapter 1. Even though this thesis is concerned mainly with definite null subjects, BP does display indefinite null subjects as well, as seen in example (57):

- (57) Assassinaram o presidente ontem em Brasília!  
 Killed-3P-PST det-M president yesterday at Brasilia  
 Some non-specific person or group murdered the president yesterday in Brasilia

Indefinite null subjects have a different distribution and do not fall within the patterns we observed. For the purpose of this thesis, I will assume indefinite null subjects as the elsewhere case. In other words, I assume that when the  $\phi$  features of  $D_{[u\phi, +\delta]}$  remain unvalued,  $D_{[u\phi, +\delta]}$  defaults into an indefinite null subject. This assumption is summarized below:

- (58) **Indefinite null subjects are the elsewhere case**  
 When the features of  $D_{[u\phi, +\delta]}$  remain unvalued,  $D_{[u\phi, +\delta]}$  defaults into an indefinite null subject. An indefinite null subject is not licensed or identified.

I can now demonstrate the derivation of embedded and matrix null subjects in the next sections. Afterwards, I will show how the system accounts for the WH intervention effects seen in chapter 1. Lastly, I will show some predictions of my model.

## 4.2 Deriving embedded null subjects in BP

Recall that embedded null subjects are i) always bound in BP, ii) licensed for 1st, 2nd and 3rd person. A typical embedded null subject is given below:

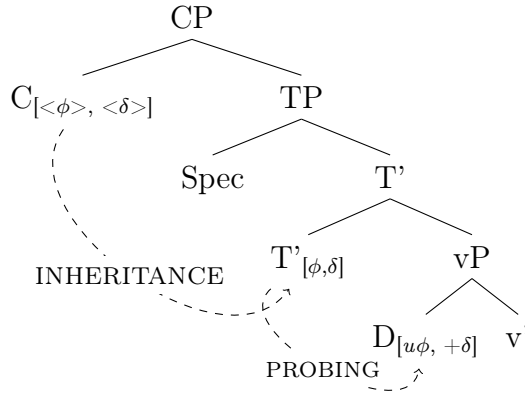
- (59) O João acha que vai comprar uma casa  
 The John thinks-3S that go-3S-FUT buy one house  
 'John thinks that he will buy a house'

The first part of the derivation of example (59) proceeds as follows:

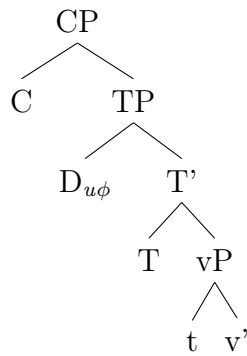
1.  $D_{[u\phi, +\delta]}$  is merged at Spec,vP of the embedded clause
2. Embedded T inherits both the  $\phi$  and the  $\delta$  probe from C.
3. The  $\phi$  probe is activated by Case on T.
4.  $D_{u\phi, +\delta}$  satisfies the *delta* condition and is moved to Spec,TP after being probed by  $\phi + \delta$ .
5. The structure now has  $D_{u\phi, +\delta}$  at Spec,TP

The inheritance and probing mechanisms are illustrated in (60), the final structure is illustrated in (61)

- (60) Example (59), Embedded CP. T inherits both the  $\delta$  and the  $\phi$  probe and probes the null element:



- (61) Example (59), Embedded CP. After probing, the null element sits at Spec,TP:



At this point of the derivation we face a problem. We know that the null element that sits at Spec,TP has to have its  $\phi$  features licensed and its  $\delta$  feature checked (see the assumption in (54) and (55)). Otherwise,  $D_{[u\phi, +\delta]}$  will default into an indefinite null subject (see assumption in (57)). The question is how these features become visible to the higher structure. My solution is based on Phase Theory, as proposed in Chomsky (2008).

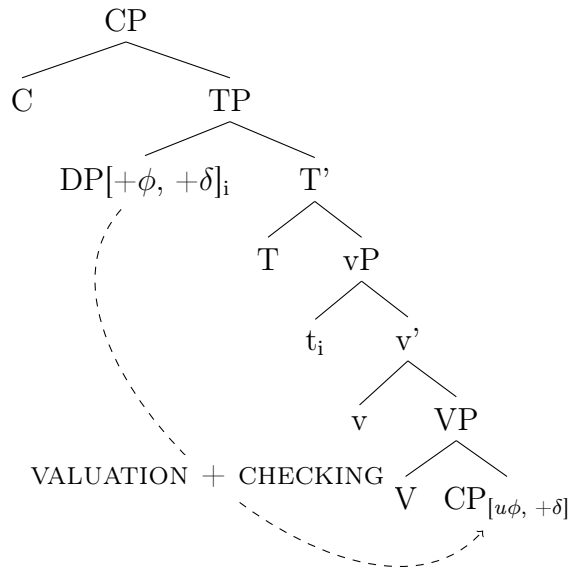
Assuming C to be a Phase head, I stipulate that the features of  $D_{[u\phi, +\delta]}$  project at the Phase Label of the embedded CP. After projecting at this Phase Label, these features become available for further syntactic operation. The precise mechanics of the interaction between T and C that allows this projection is beyond the scope of this thesis. I assume these two heads interact in some form, for a technical implementation refer to Pesetsky and Torrego (2001). Once these features are available to the higher structure, two mechanisms occur through Agree: i) licensing, i.e, the valuation of the bundle of unvalued  $\phi$  features and ii) identification, i.e, the checking of the valued  $\delta$  feature. The element Agreeing with these features at the Phase Label has to carry valued  $\phi$  and  $\delta$  features. I assume the only element satisfying this conditions is the matrix subject. It is not controversial that an overt subject in BP carries valued  $\phi$  features, but it is not trivial to assume it carries a valued  $\delta$  feature. My reason for assuming so is based on the idea that sentential subjects in BP have an inherent topical interpretation (Avelar and Galves, 2011; Modesto, 2010). These assumptions concerning overt subjects also predict the obligatory co-reference between embedded null subjects and matrix subjects. The reason for obligatory co-reference is straightforwardly explained by the fact the overt subject is the only element available carrying both  $\phi$  and  $\delta$  features. Thus, overt sentential subjects are the only elements that may license and identify the features of a null subject through Agree.

The valuation and checking mechanism through Agree is illustrated below:

(62) Sentence (59), the matrix subject values and checks the feature bundle projected



at the Phase Label of the embedded CP:



A prediction from this analysis is that in cases where there is more than one overt subject available, i.e, multiple embedding, the matrix subject (i.e, the sentential subject carrying valued  $\delta$  and  $\phi$ ) should be the the one licensing and identifying the lower null subject(s). This is the case, as seen in the example from chapter 1 repeated below as (62). Notice that even though there are two higher subjects, "mother" and "father", the lower embedded null subject (the subject of the verb "become") can only refer to the sentential matrix subject "mother".

(63) Gender mismatch of the lower adjective "rich" is not allowed if the null subject doesn't refer to the matrix subject

- a. Minha mãe falou para meu pai que acha que  
**My-F mother-F** said-3S to my father that think-3S that became-3S  
 ficou rica  
**rich-F**  
 'My mother told my father that she thinks she became rich.'

- b. \*Minha mãe falou para meu pai que acha  
**My-F mother-F** said-3S to my father-M that think-3S that  
 que ficou rico  
 became-3S **rich-M**  
 Intended: 'My mother told my father that she thinks he became rich.'

To summarize, embedded null subjects are derived by merging the empty element  $D_{[u\phi, +\delta]}$  at embedded Spec,vP. This element is probed by the  $\phi + \delta$  probes at embedded T. Once at Spec,TP, the null element will project its features at its Phase Label, CP. Once projected, these features are available to the higher structure for further operation and are valued and identified by the overt matrix subject through Agree.

### 4.3 Deriving matrix null subjects in BP

Recall that in declarative sentences, matrix null subjects occur only when 1st person verbal inflection is present, an example from chapter 1 is repeated below:

(64) 1st person singular inflected verbs, null subjects are licensed

- a. Vou no mercado amanhã  
 Go-1S to-the market tomorrow  
 'I will go to the market tomorrow.'
- b. Eu vou no mercado amanhã  
 I Go-1S to-the market tomorrow  
 'I will go to the market tomorrow.'

The derivation of (64a) starts exactly as the derivation for embedded null subjects demonstrated in the previous section, except there is no embedded level:

1.  $D_{[u\phi, +\delta]}$  is merged at Spec,vP
2. T inherits both the  $\phi$  and the  $\delta$  probe

3.  $D_{u\phi}$  is moved to Spec,TP after being probed by the  $\delta$  probe at T.

4.  $D_{u\phi, +\delta}$  is now at Spec,TP

The structure that results from these initial steps is a matrix clause where the null element  $D_{u\phi}$  is at Spec,TP. This bundle of features will be projected at the Phase Label of CP. A problem arises at this point of the derivation: since this is a matrix clause, there is no overt antecedent at the higher structure to value and check the features of the null D. To resolve this problem, I suggest a post-syntactic mechanism for feature valuation.

I suggest the valuation of matrix null subjects' features in BP are a result of an interface operation, where  $D_{[u\phi, +\delta]}$  at T may be licensed and identified by a referent in discourse.

Recall that I assume that the features of the null element  $D_{[u\phi, +\delta]}$  will project at the label of CP. Following Chomsky (2015)'s proposal, I assume the information at the Phase Label is visible to the interfaces, namely, the Syntax-Semantics interface.

Thus, I suggest  $D_{[u\phi, +\delta]}$  may have its features valued by the Syntax-Semantics interface. This licensing may be tentatively described as a function that maps the pair into a definite referent in context. I tentatively assume mapping occurs through Feature Transmission (Heim (2008), Kratzer (2009)), and that discursive referents carry their respective 1st and 2nd person features plus a valued discursive feature.

Let's call this mapping function  $F_D$ , and suppose it has the form:  $F_D: [u\phi, +\delta] \rightarrow [\pm \text{SPEAKER}, \pm \text{HEARER}]$ .

This function output is restricted by Clause type in BP: in declarative clauses, it has a single mapping available, since, presumably, declarative clauses have only the speaker referent available. In questions, I assume both speaker and addressee are possible referents.

Concretely, the function takes the  $[u\phi, +\delta]$  projected at the Phase Label and i) licenses (values) the  $\phi$  feature bundle; ii) identifies (checks) the  $\delta$  feature. Licensing and identification occur through Feature Transmission from the discourse referents (Speaker

and Adresee) into the features at the Phase Label.

This interface mechanisms raises many non-trivial issues. Namely, it is entirely unclear when this mechanism is available and at which point of the derivation it happens, i.e, Transfer, Spell-Out (in the sense of Chomsky (2008)). To precisely define the timing and nature of this function for person features in BP at the interface level is beyond the scope of this thesis, but for the system to work, such a post-syntactic valuation must be possible.

A relevant empirical observation is that the interface mechanism seems to be available in embedded clauses. Recall that embedded null subjects in BP must co-refer to the matrix overt subject. The exception to this are embedded first person null subjects (see the example below). It may be the case that the interface function is available to apply in embedded environments as well, making it so the null subject is fully licensed and identified at the embedded clause.

- (65) Minha mãe acha que estou fumando  
My mother think-3S that be-1S smoking  
'My mother thinks that I'm smoking.'

## 4.4 Intervention by WH movement

I've presented a model to account for the distribution of null subjects in matrix clauses: null subjects are null elements at T that, when unvalued for  $\phi$ -features, will be rescued by an operation at the interface level. This operation takes the feature pair  $[u\phi, +\delta]$  as functional input, and it is restricted to the contextual universe tied to clause type: speaker in declaratives and speaker/addressee in questions.

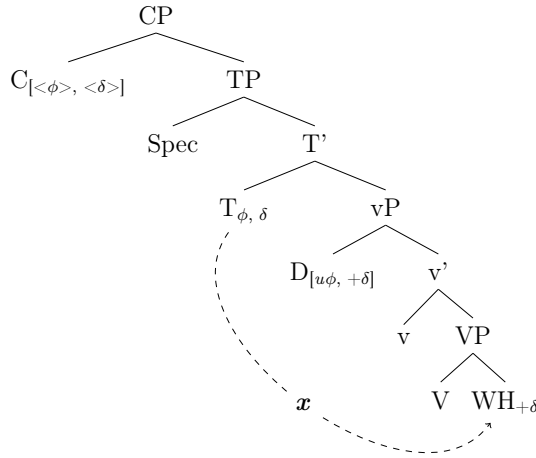
I have not said anything about the ungrammaticality of matrix null subjects in questions with WH movement. At this point, BP again parallels the analysis of Kinande in Miyagawa (2009). In this analysis, agreement on T is blocked whenever there is WH

movement. Similar intervention effects are found in Germanic null topics (Sigurðsson and Maling, 2008, 2010).

I suggest that the WH intervention effects in BP are caused by the fact that the specific  $[\delta]$  feature that probes for the null argument  $D_{u\phi}$  is the exact same feature that probes for WH-phrases. Miyagawa (2009) suggests all WH movement is derived by a  $[+\text{focus}]$  driven movement. For my analysis, I will not specify the particular  $\phi$  feature. I assume BP has a single feature to probe for both WH-phrases and non-thematic subject elements that move to T.

In short, WH movement is blocked because a probe will target its closest lower element matching in features. If  $D_{u\phi}$  antecedes the WH-phrase,  $D_{u\phi}$  will always be probed by the  $\delta$  at T, making it so that the WH-phrase will always sit in situ. This is illustrated at the Tree below.

(66) T inherits  $\phi$  and  $\delta$  and probes the null subject at spec,vP, WH may not be probed



This analysis of WH probing makes the following predictions.

A first prediction of my analysis is that whenever there is non-thematic subject agreement on T in BP, WH movement should be blocked. This prediction is borne out as shown in the examples below (example adapted from Avelar and Galves (2011)):

(67) Non-thematic subject is  $\delta$  probed, WH-intervention

- a. As ruas do centro não tão passando carro  
 The streets of-the downtown not are-3PL passing car  
 'No cars are passing through the streets downtown' (lit *The streets downtown are not passing cars*)
- b. \*De onde<sub>i</sub> as ruas t<sub>i</sub> não tão passando carro?  
 From where the streets t are not passing cars?  
 Intended: 'Which streets cars are not passing through?'
- c. As ruas de onde não tão passando carro?  
 The streets from where not are passing car?  
 'Which streets cars are not passing through?'

A second prediction of this analysis concerns embedded null subjects, where WH-intervention effects should arise. If we attempt to probe a WH word within the embedded clause, we should see the same intervention effect we see in matrix clauses. Assuming WH-movement to be cyclic, the  $\delta$  probe at T of the embedded clause should not be able to target the WH-phrase lower than the null element  $D_{[u\phi, +\delta]}$ . This prediction is borne out:

(68) No extraction of WH-phrases from embedded clauses with higher null subjects

- a. O João disse para o Pedro que vai comprar uma casa  
 The John said-3S to the Peter that will-3S buy a house  
 'John<sub>i</sub> said to Peter<sub>j</sub> that he<sub>i/\*j</sub> will buy a house'
- b. \*O que<sub>i</sub> o João disse para o Pedro que vai comprar t<sub>i</sub>  
 The what the John said-3S to the Peter that will-3S buy t<sub>i</sub>  
 Intended: 'What did John say to Peter that John was buying?'
- c. O que<sub>i</sub> o João disse para o Pedro que ele vai comprar t<sub>i</sub>?  
 The what the John said-3S to the Peter that he will-3S buy t<sub>i</sub>?  
 'What did John say to Peter that John was buying?'
- d. Pra quem<sub>i</sub> João disse t<sub>i</sub> que vai comprar um carro?  
 To whom John said-3S t that will-3S buy a car?

'To whom did John say (he) will buy a car?'

In (68d) we see that WH-extraction of an element higher than the null subject in clausal domain is fine. This is explained straightforwardly by the fact that there is no null subject at the matrix clause and the  $\delta$  probe is free to reach the lower goal.

## 4.5 A note on Speas and Tenny (2003)

Approaches deriving the kind of discourse relation I'm dealing with within narrow syntax have been proposed in works such as Speas and Tenny (2003). I depart from this type of proposal by assuming a post-syntactic mechanism. In Speas and Tenny (2003) the authors postulate the existence of Speech Participant functional projections corresponding to the roles of Speaker and Addressee. The authors assume a configuration where, in declarative sentences, the Speaker projection is merged above the CP domain, while the Addressee projection is below CP. In questions, the Addressee projection would raise to the Left Periphery. With such a configuration, it is possible to propose a system where the Speaker/Hearer heads would carry features that would then enter in an Agree relation with lower elements (i.e, our null subjects), making it so the derivation happens entirely in narrow syntax.

While a system that does not rely on processes outside of narrow syntax seems more economic than the one I propose, I do not believe Speas and Tenny (2003)'s proposal can accommodate the BP facts for the following reasons:

Firstly, suppose we assume the system seem in Speas and Tenny (2003) for BP. In declarative clauses, a functional head corresponding to Speaker would exist above the CP domain and presumably carry a valued 1st person feature. This head would then be able to value the bundle of unspecified pphi features of the null subject  $D_{[u\phi, +\delta]}$  (let's assume this valuation happens through Agree). The main problem arising at this point is what happens to this valued feature when we have an *overt* subject. If the subject is overt,

the feature has no purpose in the derivation (i.e, it will not enter in an Agree relation with anything, it has no feature bundle to value), it just sits at the Speaker head. Thus it seems the system is actually not particularly better off in terms of economy.

Secondly, in question environments, it is assumed the Hearer head will raise above the CP domain. At this point we can again suppose the Speaker/Hearer heads carry their corresponding 1st and 2nd person features. These features may enter in an Agree relation with the lower feature bundle of the null subject, valuing them. The crucial problem for questions is the fact is far from trivial for explaining when and how the Hearer head will take precedence over the Speaker for valuation purposes. These two heads are necessarily arranged one before the other. The order doesn't matter as much as the fact that one of them will have to be the Agreeing head (i.e: If we assume the Speaker head (carrying a 2nd person feature) sits higher than the Hearer head (carrying a 1st person feature), then it is not clear how we get 1st person null subjects in questions, since the Hearer Head's features would be in the immediate local domain of the null subject).

## 4.6 Conclusions

In this chapter I formulated my model for null subjects in BP. I proposed a system based on two probes inherited from C into T,  $\delta$  and  $\phi$ . I assumed null subjects to be null Determiner Heads merged with a valued  $\delta$  feature and a bundle of unvalued  $\phi$  features. These null subjects would then be probed by the  $\phi$  and  $\delta$  probes at T. I showed the derivation of embedded null subjects and assumed that the bundle of unspecified  $\phi$  features of the null subject would project at the Phase Label of CP. Once projected, these features become available for further syntactic operation, and are valued by a higher element on the higher syntactic structure. For matrix null subjects, I assumed the same initial derivation steps, but suggested the possibility of feature valuation at the Syntax-Semantics interface through a hypothetical function I named  $F_D$ . This function would be available whenever the the feature bundle  $u\phi$  is projected at the Phase Label of CP. The



function would map the feature bundle into referents in the discursive universe through Feature Transmission. The main difference between embedded and matrix null subjects is, then, that the former is derived entirely in narrow syntax, while the latter requires interaction at the interface level.

After demonstrating the derivation of matrix and embedded null subjects, I proposed that the WH intervention effects observed could be easily accounted if we assume there is a single  $\delta$  feature probing for both WH-phrases and marked  $+\delta$  elements that move to T. Afterwards I showed that such an assumption has predictions, which are borne out in BP.

# Chapter 5

## Conclusion

In this thesis I attempted to provide a proposal for null subjects in Brazilian Portuguese. Let us recall the research questions I established on chapter 1:

1. What governs the distribution of null subjects in BP?
2. Why do we see a different distribution in i) matrix versus embedded environments and ii) question versus declarative clauses?
3. Why must embedded null subjects be controlled by the matrix subject?
4. Which kind of object is the null element in BP?

Let us now review each question.

(69) **What governs the distribution of null subjects in BP?**

Generally speaking, null subjects in BP are governed by structure. My proposal is centered around this idea. Specifically, null subjects in BP always enter the derivation as an element that needs to go through a derivational process to be borne out. This derivational process depends on the structural relations around the null element. In narrow syntax, these structural relations are anchored on the  $\text{ddela}$  and  $\phi$  probes and an overt antecedent. The fundamental structural mechanism within narrow syntax for null subjects is Agree.

- (70) **Why do we see a different distribution in i) matrix versus embedded environments and ii) question versus declarative clauses?**

The difference in the distribution of null subjects for matrix and embedded clauses stems from the presence of an overt antecedent in the case of embedded clauses, as seen in Chapter 4. For matrix clauses, I suggested the possibility of valuation at the Syntax-Semantics Interface, a post syntactic mechanism that would save the derivation by valuing the  $\phi$  feature bundle of the null subject through discourse referents. Thus, matrix and embedded null subjects are derived through different routes: embedded null subjects are entirely derived through Agree in narrow syntax, while matrix null subjects need a post-syntactic mechanism. The different distribution of matrix versus embedded stems from this fact. The difference between questions and declarative has to do with the interface valuation itself. Recall that I assumed that different clause types would have different discourse referents available to license null subjects: declaratives would only have Hearer (carrying a 1st person feature) and questions would have both Speaker and Hearer (carrying a 2nd person feature).

- (71) **Why must embedded null subjects be controlled by the matrix subject?** In Chapter 4 I demonstrated that if we assume null subjects have to be both licensed and identified by an element with valued  $\phi$  and  $\delta$  features, we straight-forwardly predict that the only overt antecedent satisfying this condition is the higher subject. This required the assumption that sentential subjects in BP are merged with a valued  $\delta$  feature, an assumption that goes back to the discussion of BP as a language with discourse-oriented properties.

- (72) **Which kind of object is the null element in BP?** A null element enters the derivation as a determiner head with an unvalued bundle of  $\phi$  features and a valued  $\delta$  feature. This element needs to go through a derivational processes where it will be licensed (valuation of the  $\phi$  bundle) and identified (checking of

the  $\delta$  feature).

## 5.1 Open questions

### 5.1.1 Partial control

In chapter 2 I argued that the Movement Theory of Control analysis of BP null subjects could not account for cases of partial control. I repeat the crucial example below:

- (73) O anfitrião deu boas-vindas aos hóspedes quando *ec*  
DET-M host<sub>i</sub> gave-1S welcome to-the guests<sub>j</sub> when *ec*<sub>i+j, j</sub>  
entraram na casa de praia  
entered-1PL into-the house of-the beach  
The host<sub>i</sub> welcomed the guests<sub>j</sub> when they<sub>i+j, j</sub> entered the beach house.

While my proposal accounts for the derivation of (73) by assuming it is *the host* that values the  $\phi$ -feature bundle of the embedded null subject, I can not answer how the plural reference of *the host+the guests* arises.

### 5.1.2 Plurality

Though not mentioned in the data, there seems to be no issue when dropping *both* singular and plural subjects. Take (74): plurality seems to be irrelevant when it comes to the conditions on pro-drop in BP. Throughout my examples I stuck to singular forms and focused my efforts in accounting for the effects of person features in the distribution. The reason for that being that my system could not accommodate number features since I assume the only feature the null subject carries when it enters the derivation is the valued  $\delta$  feature. All other features (namely, person features) of the null subject are valued by Agree. Unless I assume the existence of a plural feature (which is far from trivial), it is not clear how plurality can be derived in my system.

(74) Singular and plural null subjects in BP

- a. Fui        no        mercado ontem  
Went-1S to-the market yesterday  
'(I) went to the market yesterday.'
  
- b. Fomos    no        mercado ontem  
Went-1P to-the market yesterday  
'(We) went to the market yesterday.'

### 5.1.3 Indefinite null subjects

Indefinite null subjects were introduced at Footnote 1 of Chapter 1 and included in my system as the elsewhere case. I assumed that when null subjects were not licensed and identified they would default into an indefinite null subject. I did not however offer any insights into the distribution of indefinite null subjects. Crucially, indefinite null subjects seem deviate from most of the restrictions that exist for definite null subjects, namely: i) indefinite null subjects are exclusively 3rd person plural and ii) the WH-movement intervention effects do not apply to indefinite null subjects. The distribution of indefinite null subjects is out of the scope of this thesis, but relevant for the discussion of empty categories in general. I leave the further investigation of indefinite null subjects in BP for future research.

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