Null Subjects are Reflexives, Not Pronouns

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Abstract. It has been a prevalent assumption in the literature that phonetically null Subjects of finite clauses are pronouns. This paper examines in detail this empirical generalization and argues that null Subjects are reflexives rather than pronouns.

The critical point at stake here, which has obscured appropriate classification, is that null Subjects are reflexives in top-command positions, i.e. reflexives that have no immediate local commanders. The key issue is thus the observation that, for at least some languages, a top-command reflexive obeys Principle A but with respect to a reshuffled local domain, which is the local domain of the upstairs predicator immediately subcategorizing the predicational domain where the top-command reflexive occurs. Given that the anaphoric binding discipline of reflexives in such positions partially overlaps the binding discipline of pronouns, this gave rise to the mistaken classification.

1 Introduction

In large enough contexts, an anaphoric expression has more than one admissible antecedent. And when occurring in a given syntactic position, different anaphoric expressions may have different sets of admissible antecedents. This is illustrated in the examples below, with three anaphors — *herself*, *her*, and *the little girl* — occurring in the same position, each with different sets of admissible antecedents.

(1)   Mary's brother told Paula's sister that the nurse described Joan to herself/her/the little girl.

For *the little girl*, its set of admissible antecedents contains *Mary* and *Paula*. For *her*, in turn, its set of admissible antecedents also includes *Paula's sister*, while *herself* only has *the nurse* and *Joan* as admissible antecedents.

Such differences in terms of sets of admissible antecedents is the basis for the partition of anaphoric expressions into different groups according to their anaphoric capacity. It has therefore been crucial for anaphor resolution to determine how many such types or groups of anaphoric expressions there are, what expressions belong to which type, and what exactly are the sets of admissible

antecedents for each type. The results of this inquiry have been collected in what is known, in some linguistic frameworks, as the binding theory.[1]

For the purposes of the research reported in the present paper, it is sufficient to focus our attention in two types of anaphors, viz. reflexives and pronouns, such as *herself* and *her* above, respectively.

Like for other types of anaphors, their sets of admissible antecedents have been characterized intensionally. These definitions have been termed, respectively, Principle A and Principle B, and rely on a few auxiliary notions, such as the notions of command and locality, to be presented below.

1.1   Command

A first difference between the anaphoric capacity of reflexives and of pronouns, and *a fortiori* between their admissible sets of antecedents, is that reflexives cannot have, as antecedents, expressions that occur in "recesses" of the grammatical structure.

(2)   [The doctor who called the nurse$_i$]$_j$ described [Joan's$_k$ sister]$_l$ to herself$_{*i/j/*k/l}$.

As represented by the starred indexes, the expressions *the nurse* and *Joan* are not admissible antecedents of the reflexive *herself*. This is in contrast with the larger expressions where they are included, respectively, *the doctor who called the nurse* and *Joan's sister*, which turn out to be admissible antecedents of *herself*.

This contrast results from the circumstance that, in terms of grammatical structure, the latter hold a certain relative position with respect to the reflexive that the former do not. Such relation has been termed in the binding theory literature as a *command relation* and its definition has evolved toward successive versions of enhanced empirical adequacy. We assume here the definition of command according to which A commands B iff A has a grammatical function that is less oblique than the grammatical function of B, if they are selected by the same predicator, or A commands some X that subcategorizes for B or is a projection of B — where, for instance, Subject is less oblique than Object or Indirect Object, Object is less oblique than Indirect Object, etc.[2]

It is worth noting that the notion of command integrates two distinct constraints that are relevant for the correct definition of the set of admissible antecedents of reflexives. By requiring that an antecedent of a reflexive be a commander of it, on the one hand, the antecedent cannot be in a grammatical "recess" with respect to the reflexive; on the other hand, the antecedent cannot be preceded by the reflexive in the obliqueness hierarchy of grammatical functions. The first constraint is exemplified in the data above, the second is illustrated in the contrast below:

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[1] For a recent overview, see (Büring, 2005).

[2] This definition is proposed by Pollard and Sag (1994: Chap.6), who term it as o-command in order to differentiate it from earlier, empirically less accurate versions, such as c-command or theta-command.

(3)   a. The nurse$_i$ didn't describe Joan$_j$ to herself$_{i/j}$.

   b. The nurse$_i$ didn't describe herself$_{i/*j}$ to Joan$_j$.

As in b. the grammatical function of *Joan* — Indirect Object — is not less oblique than the grammatical function of the reflexive — Direct Object —, *Joan* cannot act as its antecedent.

The absence of contrast to topicalized constructions, as in (4)a., confirms that precedence in the grammatical obliqueness hierarchy rather than mere linear precedence or constituency-based precedence is actually at stake here. And the possibility of a reflexive in *by*-phrases, as in (4)b., — with the less oblique possible semantic role of *Agent* – confirms that the hierarchy of semantic roles is not at stake here either:

(4)   a. To herself$_{i/j}$, the nurse$_i$ didn't describe Joan$_j$.

   b. John$_i$ was shaved by himself$_i$.

The requirement that their antecedents can only be their commanders is a key difference of reflexives with regards to pronouns, for which such requirement does not hold:

(5)   [The doctor who called the nurse$_i$]$_j$ told [Joan's$_k$ sister]$_l$ that Mary needs her$_{i/j/k/m}$.

This is illustrated in the example above, with the possibility that *the nurse* or *Joan*, which are in grammatical "recesses" and therefore do not command *her*, be antecedents for this pronoun.

1.2   Locality

A second key difference between pronouns and reflexives is that the antecedents for the first cannot be "too close" to them.

(6)   The doctor$_i$ said the nurse$_j$ thinks [Mary$_k$ talked to her$_{i/j/*k}$].

As represented by the starred index, the expression *Mary* is not an admissible antecedent for the pronoun *her*. This is in contrast with the expressions more far apart, namely *the doctor* and *the nurse*, which turn out to be admissible antecedents.

Contrasts like these result from the circumstance that the admissible antecedents of a pronoun occur outside the predicational domain of the predicator selecting it as argument. Such relevant span of a sentence has been termed in the literature as the *local domain* and includes the arguments of the predicator directly selecting the anaphoric expression at stake.

The requirement that their antecedents cannot be in its local domain is a key difference of pronouns with regards to (short-distance) reflexives, for which such requirement is reversed:

(7)   The doctor$_i$ said that the nurse$_j$ thinks [Mary$_k$ talked to herself$_{*i/*j/k}$].

Also for long-distance reflexives, such as the Portuguese *ele próprio*, their antecedents can occur in their local domain (as marked by index k in the example below). The difference from short-distance reflexives to long-distance ones is that the latter, but not the former, can also have antecedents outside the local domain (as marked by indexes i and j):

(8) A médica$_i$ disse que a   enfermeira$_j$ acha [que a   Maria$_k$
     the doctor   said that the nurse   thinks that the Maria
     conversou com ela própria$_{i/j/k}$].
     talked   with ELA PRÓPRIA.

But note that also for the long-distance ones, the requirement that their antecedents be their commanders is in force, as illustrated below:[3]

(9) [A doente que chamou a   enfermeira$_i$]$_j$ acha   que [a irmã da
     the patient who called   the nurse   thinks that [the sister of-the
     Maria$_k$]$_l$ conversou com ela própria$_{*i/j/*k/l}$.
     Maria   talked   with ELA PRÓPRIA.
     '[The patient who called the nurse]$_j$ thinks [Maria's sister]$_l$ talked with her$_j$/herself$_l$.'

1.3   Top-Command Reflexives

On a par with the notions of command and locality, a key difference between pronouns and reflexives has to do with a different behavior with respect to extra-sentential antecedents. Given that the set of admissible antecedents of pronouns includes all the expressions that are not their local commanders, extra-sentential expressions can always be included in such set, as captured in its intensional definition:[4]

Principle B: A pronoun must be locally o-free.

As for reflexives, it is only in specific circumstances that this can happen. The admissible antecedents of short-distance reflexives are their local commanders; and for long-distance ones, their admissible antecedents are their (local and non local) commanders. Naturally, these restrictions cannot apply when reflexives have no relevant commanders, that is when they occur as the top-commanders in their relevant grammatical obliqueness hierarchies.

In such cases, two types of anaphoric behavior have been observed. As discussed in the subsections below, in some languages, the locally top-commanding short-distance reflexive follows no anaphoric discipline, in which case it is said to be a reflexive *exempt* from its binding Principle. In some other languages, the top-commanding reflexive keeps following its usual binding discipline but in the scope of a reshuffled local domain.

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[3] For further details on long-distance reflexives, see (Branco and Marrafa, 2000).

[4] The notion of *o-binding of A by B* is an abbreviation for the conjunction of the requirements that B commands A and is its antecedent. It has a dual in the notion of *o-freeness*.

Exemption from locality or command. The following example provides an illustration of the behavior of short-distance reflexives in a top-command position and the associated exemption effect:[5]

(10)   Whom he$_i$ was supposed to be fooling, he$_i$ couldn't imagine. Not the twins, surely, because Désirée, in the terrifying way of progressive American parents, believed in treating children like adults and had undoubtedly explained to them the precise nature of her relationship with himself$_i$.

Here, *himself* is the only argument of *relationship*, the (nominal) predicator selecting it, and therefore in a top-command position. The reflexive does not display its typical anaphoric binding discipline: Instead, it takes an antecedent from a previous sentence, that clearly is not in its local domain neither a commander of it.

A rationale for this can be found in the fact that besides the specific anaphoric binding discipline a reflexive complies with when it is not a top-commanding item, an overarching interpretability condition is admittedly in force in natural languages requiring the "meaningful" anchoring of anaphoric expressions, and *a fortiori* of reflexives, to antecedents. When a reflexive is in a top-command position, no local commander is available to function as its antecedent and anchor its interpretation. Hence, in such cases, reflexives appear to escape their specific binding regime to comply simply with such general interpretability condition and their interpretability be rescued.

Command in a reshuffled locality. For other languages, in turn, data involving reflexives in top-command positions indicate that the reshuffling of the domain may be induced. In these cases, what counts as the local domain for the reflexive is the local domain delimited by the predicator immediately selecting the predication domain where the reflexive is in the top command position.

The German *sich* seems to provide an example of a reflexive which induces local domain reshuffling when in top-command positions. First, when in such a position, admissible antecedents for the reflexive can be found only in the immediately upstairs local domain:[6]

(11)   Gernot$_i$ dachte,   [dass Hans$_j$ dem Ulrich [ein Bild   von sich$_{*i/j}$]
       Gernot thought, that Hans the Ulrich a   picture of   himself
       überreichte].
       gave.
       'Gernot thought that Hans$_j$ gave Ulrich a picture of him$_j$.'

Second, also in a reshuffled local domain, directionality of anaphoric binding for reflexives is complied with, as a non commander in the domain immediately upstairs is not an admissible antecedent (Kiss, 2001:(8)a):

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[5] From (Zribi-Hertz, 1989). Pollard and Sag (1994:Ch.4,ftn.18) note that this example, and similar ones, taken from quotes of various writers, "are uniformly judged ungrammatical by American speakers".

[6] Tibor Kiss, p.c.

(12)   Ich überreichte dem Ulrich$_i$ ein Buch über   sich$_{*i}$.
       I   gave   the Ulrich a   book about himself.

       'I gave Ulrich$_i$ a book about himself$_{*i}$.'

Third, even in a reshuffled local domain, recesses in grammatical geometry are opaque to the anaphoric capacity of *sich*, as illustrated by a nominal inside of a commanding nominal that cannot be an antecedent for it:[7]

(13)   Jan dachte,   dass [die Mutter von Hans$_i$] dem Carl ein Bild   von
       Jan thought, that the mother of   Hans   the Carl a   picture of

       sich$_{*i}$ überreichte.
       himself gave.

       'Jan thought that Hans$_i$' mother gave a picture of himself$_{*i}$ to Carl.'

In order to take into account the anaphoric behavior of reflexives in top-command positions, the intensional definition of their admissible set of antecedents is such that the locality and command requirements are stated to be in force in case the reflexive is not in a top-command position:

Principle A: A locally commanded short-distance reflexive must be locally o-bound.

Therefore, the difference in terms of anaphoric behavior of different reflexives when in top-command positions is to be captured by the appropriate setting of the parameterized construct of locality. While for reflexives like *sich*, the local domain happens to undergo reshuffling, no such reshuffling is associated with reflexives like *himself*.[8]

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In the present Section, the key grammatical constraints on the admissible antecedents of reflexives and pronouns were introduced. In the remainder of this paper, I will proceed by checking out these constraints with respect to null Subjects. Supported by the data to be discussed, the conclusion that will emerge is that null Subjects are reflexives in top-command positions.

In the next sections, the data taken into account are from Portuguese. In the next Sections 3 and 2, I will discuss data showing that antecedents of null Subjects occur in a reshuffled local domain and command them. In Section 4, the behavior of null Subjects in terms of split antecedents and ellipsis is examined. Finally, in Sections 5 and 6, open issues for further research are discussed and conclusions are presented.

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[7] Manfred Sailer, p.c.

[8] For the purposes of the present paper, it is enough to focus on short-distance reflexives. For the intensional definition of the admissible set of antecedents of long-distance reflexives, the binding Principle Z, see (Branco and Marrafa, 2000). For a recent overview of the binding Principles, their auxiliary notions and corresponding parameterization see (Branco, 2005a). For the parameterization of the notion of locality in terms of reshuffling, see (Branco, 2005b).

2 Null Subjects and Locality

In this section, the anaphoric behavior of null Subjects is examined with respect to the locality requirements impinging on their admissible antecedents.

2.1 Reshuffled Locality

A null Subject occurs in the top-command position of the predicational domain supported by the predicator that immediately selects it. When this immediate predicational domain is subcategorized by another, upstairs predicator, there are conditions for the null Subject to find its antecedent in a reshuffled local domain, as illustrated in the following example:[9]

(14) O   director$_i$ informou o   médico$_j$ de [que $\emptyset_{i/j}$ vai   receber novo
     the director informed the doctor   of that   goes receive new
     equipamento].
     equipment.

     'The director$_i$ informed the doctor$_j$ that he$_{i/j}$ is going to receive new equipment.'

There is robust evidence that the admissible antecedents of null Subjects can be found only in the immediately upstairs domain, as can be observed in different constructions such as completive, adverbial or relative clauses (in the next examples below, null Subjects will be also contrasted with overt pronouns in the same position):[10]

(15) O   médico$_i$ acha [que o   director$_j$ não percebeu [que $\emptyset_{*i/j}$ / ele$_{i/j}$
     the doctor   thinks that the director not noticed   that   / he
     cometeu um erro]].
     made   a   mistake.

     'The doctor thinks the director$_j$ didn't notice that he$_j$ made a mistake.'

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[9] It is worth noting that, given the semantics of some verbs, the null Subject may be restricted to pick as its antecedent only the Indirect Object or the Direct Object of the upstairs clause. That is the case of verbs like *ordenar* (to order) or *impedir* (to hamper):

(i) A   Maria$_i$ ordenou à   Ana$_j$ [que $\emptyset_{*i/j}$ / ela$_{*i/j}$ levasse o   vestido
    the Maria ordered to-the Ana   that   / she   brought the dress
    amarelo].
    yellow.

    'Maria ordered Ana to bring the yellow dress.'

(ii) A   Maria$_i$ impediu   a   Ana$_j$ [de que $\emptyset_{*i/j}$ / ela$_{*i/j}$ levasse o   vestido
    the Maria hampered the Ana of that   / she   brought the yellow
    amarelo].
    dress.

    'Maria hampered Ana from bringing the yellow dress.'

[10] When applicable, the English translations of the examples will indicate only the admissible anaphoric links for null Subjects.

(16)   O   médico$_i$ nunca atende   o   telefone [quando o   director$_j$ decide
       the doctor   never answers the phone   when   the director   decides
       [que $\emptyset_{*i/j}$ / ele$_{i/j}$ vai   operar   o   próximo doente]].
       that   / he   goes operate the next   patient.

       'The doctor never answers the phone when the director$_j$ decides he$_j$ is
       going to perform an operation on the next patient.'

(17)   O   Pedro$_i$ cumprimentou o   médico [a quem o   director$_j$ disse [que
       the Pedro greeted   the doctor to whom the director   said that
       $\emptyset_{*i/j}$ / ele$_{i/j}$ precisava de ser operado]].
            / he   needed   of be operated.

       'Pedro greeted the doctor to whom the director$_j$ said he$_j$ needed to
       undergo an operation'.

In (16), the null Subject appears in a completive clause selected by the main
verb *decide* ("decides") of the adverbial clause, while in (15) it appears in a
completive clause that is embedded in another completive clause. As expected
from what is observed in (14), *o director*, the NP in the immediately upstairs
domain, can act as antecedent. However, the other NP, *o médico*, which is outside
this reshuffled local domain, cannot serve as an antecedent for the null Subject.

In (17), in turn, the null Subject of the relative clause cannot have *o Pedro* as
antecedent because it lies outside the predicational domain immediately upstairs
with regards to the null Subject, which is structured around the verb *disse*
("said", simple past).

Such an impossibility of reaching beyond the immediately upstairs domain
holds also in constructions where there is no admissible antecedent intervening
between the null Subject and the expressions outside that domain:

(18)   O   médico$_i$ espera [que nenhum aparelho de raios x revele [que $\emptyset_{*i}$ /
       the doctor hopes that no   device   of rays x reveals that   /
       ele$_i$ deixou um bisturi dentro do   doente]].
       he left   a   scalpel inside of$_t$he patient]]

       'The doctor$_i$ hopes that no X-ray machine reveals he$_{*i}$ left a scalpel inside
       the patient.'

This indicates that the anaphoric capacity of null Subjects is not sensitive to
eventual blocking effects by intervenors that are admissible antecedent candi-
dates.[11]

In this vein, it is also worth noting that the anaphoric capacity of a null
Subject is not sensitive to the mood of the predicator selecting it in its origi-
nal, non reshuffled local domain.[12] As the examples above and the one below

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[11] For examples of blocking effects induced by intervenors on the anaphoric capacity
of Chinese long-distance reflexive and on English exempt short-distance reflexive see
(Tang, 1989) and (Pollard and Sag, 1994), respectively, and the references therein.

[12] For examples of sensitivity to mood effects on the anaphoric capacity of Icelandic
reflexives, see (Manzini and Wexler, 1987).

illustrate, null Subjects in both indicative and subjunctive completives can only reach admissible antecedents in the immediately upstairs clause:[13]

(19)　O　médico$_i$ disse-me [que o　director$_j$ ainda não aceitou　[que $\emptyset_{*i/j}$
　　　 the director told-me　that the doctor　yet　 not recognized that
　　　 / ele$_{i/j}$ tenha　　　　　　 cometido um erro]].
　　　 / he　 had-SUBJUNCTIVE made　　a　 mistake.
　　　 'The doctor told me that the director$_j$ didn't acknowledge yet that he$_j$ made a mistake.'

All this evidence that the null Subject is following the anaphoric discipline of top-command reflexives (taking admissible antecedents in a reshuffled domain) is further stressed by the systematic contrast with the different anaphoric behavior of the pronoun that occurs in the same positions. As can been seen in every one of the examples above, none of the restrictions observed for the reflexive null Subject in terms of reshuffled locality is complied with by the pronoun: though the latter can always pick antecedents in such upstairs domain, it can do it also further away.[14]

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[13] Also examples with verbs in subjunctive mood from other semantic classes are uniformly judged possible by Portuguese native speakers:

(i)　A　Maria$_i$ não acha　[que $\emptyset_i$ / ela$_i$ consiga emagrecer　dessa forma].
　　 the Maria　not thinks that　　/ she is-able　lose-weight that　way.
　　 'Maria$_i$ doesn't think she$_i$ is able to lose weight that way.'

(ii)　A　Maria$_i$ detesta [que $\emptyset_i$ / ela$_i$ seja obrigada a　esperar pelo　médico].
　　 the Maria hates　 that　/ she be　forced　 to wait　by-the doctor.
　　 'Maria hates to be forced to wait for the doctor.'

(ii)　O　director$_i$ ordenou [que $\emptyset_i$ / ele$_i$ fosse operado　de imediato].
　　 the director ordered that　/ he　was　operated of　now.
　　 'The director$_i$ ordered that he$_i$ was subjected to an operation right away.'

For a discussion of the specific behavior of null Subjects with volitive verbs see Section 5 below.

[14] It is likely that this partial similarity, together with a possible lower frequency in the usage of overt pronouns in some contexts (Barbosa *et al.*, 2005), might have been taken as a more disjunctive contrast than it really happens to be, thus leading some authors to suggest that the overt pronoun cannot take the antecedent that is taken by null Subject in the immediately upstairs domain. This appears, however, not to be the case: Irrespective of differences in frequency of usage, such cases are uniformly judged as possible by Portuguese native speakers, and a quick web search offers examples of such anaphoric links even in carefully written style, as the following sentence in a Portuguese newspaper online (Antunes, 2003):

(i)　A culpa vai morrer solteira visto que o ministro$_i$ até já disse que ele$_i$ tinha feito tudo.
　　 guilt will die unmarried since the minister$_i$ had even already said that he$_i$ had done everything.

For the sake of the main claim of the present paper, however, it is worth noting that if overt pronouns could not have the upstairs Subjects as antecedents, this would be a drawback for the empirical adequacy of Principle B, not for the claim that null Subjects are reflexives.

Moreover, while the third person pronoun can always entertain extra-sentential anaphoric links (be they deictic or not), this is not the case with null Subjects. As we are going to check in the subsection just below, only in very specific conditions an extra-sentential anaphoric link can be established for a third person null Subject.

2.2 Exemption from Locality or Command

Notice that though a null Subject in a top-command position induces domain reshuffling, such reshuffling, however, is not an option when the null Subject occurs in an absolute top-command position. As suggested by the discussion in the Section 1.3 above, in that case a null Subject may be exempt from its typical binding discipline. This is illustrated in the following example:

(20)   O médico$_i$ falou com a Maria e $\emptyset_i$ / ele$_i$ vai operá-la de seguida.

'The doctor$_i$ talked with Maria and he$_i$ is going to perform an operation on her right away.'

Here, the null Subject appears in the absolute top-command position, as the Subject of a conjunct clause, and can take an antecedent that is not a local commander of it, i.e. it can entertain an anaphoric link that is exempt from the constraint captured in Principle A.

Besides, given that they turn out to be exempt from anaphoric binding principles, a null Subject in a top-command position accepts admissible antecedents in extra-sentential anaphoric links. This is illustrated in constructions with a null Subject of a matrix clause:

(21)   A: Como é que o médico$_i$ resolveu o problema?

B: $\emptyset_i$ Foi falar com o director.

'A: How did the doctor$_i$ solve the problem?'

'B: He$_i$ went to talk with the director.'

The example below illustrates also the exempt behavior of the long-distance reflexive *ele próprio*: In an absolute top-command position, it can also entertain cross-sentential anaphoric links.[15]

(22)   A: Como é que o médico$_i$ resolveu o problema?

B: Ele próprio$_i$ foi falar com o director.

As underlined by the examples above, there continues to be a parallelism between reflexives and null Subjects, thus indicating that null Subjects display the behavior of reflexives also in absolute top-command positions.

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[15] Note that the Portuguese phonetically overt short-distance reflexive *si próprio* bears a residual non nominative case: Given that it cannot occur in Subject positions, it is not possible to design examples like (21) with it.

3   Null Subjects and Command

Having checked that null Subjects behave like reflexives in top-command positions with respect to the locality requirement, in the present Section, we will examine now the anaphoric behavior of null Subjects with respect to the two dimensions of the command relation, recess and directionality.

3.1   Recess

The two examples below present relevant contrasts concerning the constraint according to which null Subjects cannot entertain anaphoric links to antecedents in grammatical "recesses":

(23)   a.   [O médico do   Pedro$_i$]$_j$ disse-me [que $\emptyset_{*i/j}$ / ele$_{i/j}$ tem de ser
            the doctor of-the Pedro   told-me   that   / he   has to be
            operado].
            operated.
            'Pedro's doctor$_j$ told me that he$_j$ has to undergo an operation.'

       b.   [O exame do   Pedro$_i$] mostra [que $\emptyset_{*i}$ / ele$_i$ tem de ser
            the test   of-the Pedro   shows   that   / he   has to be
            operado].
            operated.
            'Pedro$_i$'s medical test reveals that he$_{*i}$ has to undergo an operation.'

In a., *o Pedro* occurs in the predicational domain of a commander of the null Subject, viz. *o médico do Pedro*, but it is not itself a commander of it, and the anaphoric link between *o Pedro* and the null Subject turns out not to be admissible.

In example b., the anaphoric link is not possible either though *o Pedro* is now the only NP in the sentence that could act as the antecedent of the null Subject. This illustrates that even when there is no alternative antecedent available which may serve as a blocking intervenor, non commanding NPs are not admissible antecedents of null Subjects.

3.2   Directionality

Besides "recess", the other dimension of the command relation is directionality: As a (commanded) reflexive has to be commanded by its antecedent, it has to be more oblique than the latter.

The two examples below present key data to test this constraint with respect to null Subjects:

(24)   a.   O   médico informou a   Ana$_i$ [de que $\emptyset_i$ / ela$_i$ vai   ser
            the doctor informed the Ana   of that   / she goes to-be
            operada].
            operated]
            'The doctor informed Ana$_i$ that she$_i$ will undergo an operation.'

  b. O médico disse à   Ana$_j$ [que $\emptyset_{?i}$ / ela$_i$ vai ser   operada].
     the doctor said to-the Ana that   / she goes to-be operated.
     'The doctor said to Ana$_i$ that she$_{?i}$ will undergo an operation.'

In example a., *a Ana* is a commander of the null Subject — given that *a Ana* is the Direct Object and the null Subject occurs in an embedded clause that is the Oblique Complement clause —, and *a Ana* is an admissible antecedent for the null Subject, as expected.

In example b., in turn, *a Ana* is not a commander of the null Subject — given that it is the Indirect Object and the null Subject occurs in the Direct Object clause. Here appears to be only a slight contrast, if any, with respect to example a. Such contrast is however more sharp in the following example, with the topicalization of the Indirect Object in order to avoid possible garden-path effects shadowing grammaticality judgments:

(25) À   Ana$_i$, o médico disse [que $\emptyset_{??i}$ / ela$_i$ vai ser   operada].
      To-the Ana, the doctor said that   / she goes to-be operated.

      'To Ana$_i$, the doctor said she$_{??i}$ will undergo an operation.'

Nevertheless, contrasts are not so sharp here, specially with respect to (24), as they tend to be in all the other examples above. This may interpreted as indicating that there might be some difference between reflexives in top-command positions in nominal and verbal domains. In example (12), we saw that a top-command reflexive in a nominal domain induces a reshuffled local domain that preserves the command relation of the upstairs domain. The example (24) above, however, seems to indicate that this may not be completely the case for reflexives in the top-command position of a verbal domain, and that all the elements of the upstairs domain can act, at least weakly, as their commanders.[16]

4   Plurals and Ellipsis

In the previous two Sections, the data presented provide key evidence that a null Subject cannot be a pronoun and support the plausibility that it is a reflexive. In this respect, it is worth noticing the systematic contrast between the anaphoric behavior of null Subjects and that of pronouns: Anaphoric links that

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[16] In this connection and in connection with the observations in footnote 9, it is worth noting that given their specific semantic value, some verbs may superimpose the constraint that the null Subject has an antecedent in the upstairs clause that is less oblique than the embedded clause where the null Subject occurs. This is illustrated by example (i) in that footnote 9, with the verb *ordenar* (to order), and by the following example, with the verb *permitir* (to allow):

(i) Esse dinheiro permitiu à   Ana$_i$ [que $\emptyset_i$ / ela$_i$ fosse operada de imediato].
     that money   permited to-the Ana that   / she was operated of now.

     'That amount of money allowed Ana$_i$ to undergo an operation right away.'

are blocked for a null Subject are always admissible for pronouns throughout the constructions illustrated by the examples above.

In this section, the anaphoric behavior of null Subjects is examined in further contexts where they also exhibit an anaphoric behavior that is specific of reflexives.

4.1 Null Subjects with Split Antecedents

Besides command and locality, another dimension along which pronouns differ from reflexives concerns the possibility of accepting so called split antecedents. While plural pronouns may have more than one antecedent, as in (26)c., that is not the case with plural short-distance reflexives, as in (26)a., and long-distance reflexives show an anaphoric behavior whose acceptability somehow lies between those two classes of anaphors, as illustrated in (26)b.:

(26) a. O   médico$_i$ descreveu o   Pedro$_j$ a si próprios$_{*(i+j)}$.
          the doctor$_i$ described the Pedro$_j$ to themselves$_{*(i+j)}$.

  b. O   médico$_i$ descreveu o   Pedro$_j$ a eles próprios$_{??(i+j)}$.
      the doctor$_i$ described the Pedro$_j$ to ELES PRÓPRIOS$_{??(i+j)}$.

  c. O   director$_i$ informou o   médico$_j$ de que a   Maria os$_{i+j}$
      the director$_i$ informed the doctor$_j$ of that the Maria them$_{i+j}$
      ouviu.
      heard.

Interestingly, null Subjects seem to go along more with long-distance than with short-distance reflexives:[17]

(27) A   enfermeira$_i$ informou o   médico$_j$ [de que $\emptyset_{??(i+j)}$ / eles$_{i+j}$ serão
      the nurse   informed the doctor   of that   / they   will-be
      avaliados em breve].
      evaluated in brief.
      'The nurse$_i$ informed the doctor$_j$ that they$_{??(i+j)}$ will be evaluated soon.'

In any case, even with split antecedents, null Subjects keep patterning not like pronouns but like reflexives with respect to locality or command for each of their antecedents.

In the examples below, the null Subjects are tested in contexts of split antecedents. In a., one of the two antecedents does not command the null Subject, and in b., one of the two antecedents is not in the (reshuffled) local domain. In both examples, the anaphoric links to split antecedents are not admissible:[18]

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[17] One should not exclude the possibility that this is a side effect of the top-command position of null Subjects: As there is no overt nominative reflexive in Portuguese to design key contrasts here, the verification of this hypothesis has to be left open.

[18] Data similar to example a. was pinpointed by Figueiredo Silva (2000). Contrary to what is reported in (Barbosa *et al.*, 2005), we do not find any difference from European to Brazilian Portuguese here.

(28)   a. [O   director que chamou a   enfermeira$_i$] informou o   médico$_j$
            the director who called   the nurse   informed the doctor
            [de que $\emptyset_{*(i+j)}$ / eles$_{i+j}$ serão   avaliados em breve].
            of that   / they   will-be evaluated in   brief.

            '[The director who called the nurse$_i$] informed the doctor$_j$ that
            they$_{*(i+j)}$ will be evaluated soon.'

       b. A   enfermeira$_i$ disse que o   médico$_j$ acha   [que $\emptyset_{??(i+j)}$ /
            the nurse   said that the doctor   thinks [that   /
            eles$_{i+j}$ serão   avaliados em breve].
            they   will-be evaluated in   brief.

            'The nurse$_i$ said the doctor$_j$ thinks they$_{??(i+j)}$ will be evaluated
            soon.'

4.2   Null Subjects in Antecedents of VP Ellipsis

Another key difference between reflexives and pronouns can be found in their
anaphoric behavior in ellipsis contexts. Constructions of VP ellipsis whose an-
tecedent contains a pronoun allow for two readings, the so-called sloppy and
strict readings. When the antecedent of VP ellipsis constructions contains a re-
flexive, in turn, only a sloppy reading is available.

   Also in this respect, null Subjects behave like reflexives.

   In examples like a. above, where null Subjects are in the antecedent of a
VP ellipsis, only the sloppy reading is available, while in b., with the same
construction but with a pronoun, both sloppy and strict readings obtain:[19]

(29)   a. A   Ana$_i$ acha   que $\emptyset_i$ será   operada em breve e   a   Maria$_j$
            the Ana thinks that   will-be operated in brief and the Maria
            também.
            too.

            'Ana$_i$ thinks she$_i$ will undergo an operation soon and Maria$_j$ thinks
            she$_j$ will too.' (SLOPPY)

       b. A   Ana$_i$ acha   que ela$_i$ será   operado em breve e   a
            the Ana thinks that she will-be operated in brief and the
            Maria$_j$ também.
            Maria too.

            'Ana$_i$ thinks she$_i$ will undergo an operation soon and Maria$_j$ thinks
            she$_j$ will too.' (SLOPPY)

            'Ana$_i$ thinks she$_i$ will undergo an operation soon and Maria also
            thinks she$_i$ will.' (STRICT)

5   Further Issues

In the discussion above, there is broad and cogent empirical evidence supporting
the generalization that null Subjects are reflexives. A possible twin viewpoint

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[19] Data like these are noticed in (Figueiredo Silva, 2000).

could have been that the classification of null Subjects as reflexives leads to correctly predicting the set of their admissible antecedents.

Taken in this latter perspective, the classification of null Subjects as reflexives deliver a *prima facie* prediction that happens not to hold in a very specific set of constructions. As illustrated below, in completive clauses with volitive verbs, the Subject of the matrix clause cannot be picked as an antecedent by the null Subject:

(30) a. O médico$_i$ quer que $\emptyset_{*i}$ / ele$_{*i}$ seja operado amanhã.

    'The doctor$_i$ wants that he$_{*i}$ will be subject to an operation tomorrow.'

  b. O médico$_i$ quer [ser operado amanhã].

    'The doctor wants to be subjected to an operation tomorrow.'

The example in a. illustrates this point. Interestingly, that construction is replicated in b. with a variant where the completive includes not a finite, like in a., but a non finite verb. As this example b. shows, there is no deep semantic incompatibility for a volitive verb to select a completive clause whose Subject is anaphorically dependent on the Subject of the volitive verb, a circumstance which cannot thus be invoked to explain away the data in example a.

Interestingly, however, this impossibility of anaphorically linking the Subject of the finite completive with the Subject of the volitive verb is not limited to null Subjects. As it is also shown in a., it extends also to (phonetically overt) pronouns, thus clearly suggesting that rather than a predictive failure of the claim that null Subjects are reflexives what may be at stake here is a very specific grammatical construction that calls to be appropriately taken into account.

In fact, the options in terms of the tense of the completive clause of a volitive verb appear to be strongly correlated to the options for the tense of the matrix, volitive verb itself:

(31) a. O médico quis   que a   Ana fosse   / *seja
       the doctor wanted-PAST that the Ana be-PAST / *be-PRES
       operada.
       operated.

    'The doctor wanted that Ana was subjected to an operation.'

  b. O médico quer   que a   Ana *fosse   / seja
       the doctor wants-PRES that the Ana *be-PAST / be-PRES
       operada.
       operated.

    'The doctor wants that Ana is subjected to an operation.'

While some kind of correlation between tenses may be apparent between matrix and completive clauses in general, the strong constraining effect illustrated above is not found with verbs from other classes:

(32) a. O   médico informou   / informa   que a   Ana foi
          the doctor informed-PAST / informs-PRES that the Ana was-PAST
          / é   operada Terça-feira.
          / is-PRES operated Tuesday.

          'The doctor informed/informs that Ana is/was subjected to an op-
          eration Tuesday.'

      b. A   Maria lamentou / lamenta que a   Ana tivesse   / tenha
          the Maria$_i$ was-sorry / is-sorry that the Ana had-PAST / has-PRES
          de esperar pelo   médico.
          of wait   by-the doctor.

          'Maria was/is sorry that Ana had/has to wait for the doctor.'

These data suggest that the underlying grammatical structure of the con-
structions with finite completives induced by volitive verbs may be quite specific
and distinct from the general case. Of particular relevance here is the fact that
a phonetically overt pronoun in the Subject position of the completive cannot
take the Subject of the matrix clause as its antecedent. This is a behavior that is
in contradiction with the typical anaphoric behavior of overt pronouns in similar
constructions, in general. This seems thus an important indication that, in spite
of the apparent embedding of the finite completive clause into the matrix clause,
the Subject of the completive and the Subject of the matrix are in the same
underlying predicational domain, which counts as a local domain for the sake of
the anaphoric discipline of the pronoun.

In this connection it is worth noting that, under this hypothesis, what surfaces
as the Subject of the completive turns out not to be the least oblique item of
its underlying grammatical obliqueness hierarchy. However, this is very likely to
be a key feature for the licensing of null Subjects. Accordingly, this hypothesis
may also help to understand the other odd aspect at stake here, namely why
null Subjects are not admissible in finite completives of volitive verbs.

While this hypothesis is very compelling for its plausibility, it calls naturally
to be further worked on. It is important to research whether it can receive
further empirical validation. It is also important to discuss how it could be
accommodated in formal grammars, and check what implications it may bring
for current assumptions on the grammatical structure of sentences of Portuguese.
Given the central aims of the present article, this lies, however, outside of its
scope and has to be reported in future papers.

6   Discussion and Conclusions

Much of the interest around null Subjects was triggered by initial proposals
about the specifics of (i) their anaphoric type and (ii) the conditions licensing
their occurrence: In a nutshell, a null Subject was assumed (i) to be a pho-
netically null pronoun (thus complying with Principle B, and abbreviated as
"little *pro*") and (ii) to be licensed in contexts bearing discernible inflectional
features (sometimes abbreviated as "strong Φ features"), namely the contexts of

inflectional agreement between a Subject and its verb. The appealing functional rationale was thus that the phonetically null anaphoric expression had to occur in an agreement context where the other, perceptible term of the agreement relation could somehow supplement its null phonetics and reveal its occurence.[20]

Subsequent research on a wider range of languages, focusing mainly on claim (ii) above, brought to light data showing that this functionalist rationale was not empirically supported: Some of the languages that have no inflectional morphology, e.g. Chinese, Japanese, Korean, etc. — but not all[21] — have null anaphoric expressions not only occurring in Subject positions but also in positions with other grammatical functions.[22]

The research reported in the present paper, in turn, focus mainly on issue (i), with the similar outcome that this claim is not also empirically grounded: Not only is the data discussed above incorrectly predicted if null Subjects are classified as pronouns, but also these data provide overwhelming evidence that null Subjects are reflexives. The correct account of the anaphoric behavior of null Subjects was thus shown to simply fall out from:

- their classification as **reflexives** — with their set of admissible antecedents captured by Principle A; together with
- the observation that, given that they are Subjects, these reflexives occur **in a top-command position** — with the corresponding effects:
  - the inducing of a reshuffled local domain, which is the local domain of the upstairs predicator immediately subcategorizing the predicational domain where the top-command reflexive occurs, in case such upstairs domain exist;
  - or else the exemption from the grammatical constraint on their anaphoric discipline, captured by Principle A, in case they occur in an absolute top-command position.

It would not be fair, however, not to mention that in previous works, a few aspects of the anaphoric behavior of null Subjects were brought to light that were noticed as problematic for the empirical adequacy of claim (i).[23] Nevertheless, these problems tend typically to be detected or handled in the frame of linguistic inquiries whose major concern is to relate claim (i), about anaphoric type, with claim (ii), about licensing contexts, mainly in view of improving the empirical adequacy of the latter.

Hence, such drawbacks were calling to be systematically aligned together and discussed under a fresh perspective, decisively focused on the anaphoric behavior of null Subjects and illuminated by advanced results on binding theory. As reported here, this permits to obtain an important progress with respect to issue (i). In our view, this progress, with a more accurate classification of null Subjects

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[20] Vd. (Chomsky, 1981) and (Rizzi, 1982).

[21] E.g. Scandinavian languages (Platzack, 1987).

[22] Vd. (Huang, 1989).

[23] For recent discussion about Portuguese, see (Kato *et al.*, 2000), (Barbosa, 2004) and (Barbosa *et al.*, 2005).

as reflexives, may now have a serendipitous effect on the inquiry about issue (ii)
as well: It may well foster progress on the research about the licensing conditions
of null Subjects when crossed with the key data concerning this research issue,
eventually helping to reinterpret such data under a new perspective or eliciting
new relevant data that has remained unnoticed or undervalued so far.

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