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subjects occupy a higher position in the clause in the visible syntax¹. However, further investigation of BP data shows that it is not always the case that DQPs in object position cause the ungrammaticality of the sentence. Moreover, DQPs in subject position of sentences built with one argument predicate may also lead to ungrammaticality. In section 4 I claim that the Davidsonian event argument of the predicate plays an important role in DQP's licensing.

2. Theoretical assumptions

Given that under the Generative framework, language, embedded in performance systems, provides them with relevant information, the model of grammar proposed by that theory comprehends interface levels which contain a pair of representations built by the computational component. One such level is Logical Form (LF), at which "the grammatical structure relevant to semantic interpretation is provided" (Hornstein, 1995:3). Therefore, it is at the level of Logical Form that the scopal relations established either between Quantifier Phrases (QPs), or between QPs and operators in a sentence are defined. This means that the interpretations associated with sentences containing more than one QP or a QP and an operator are derived, at LF, by mechanisms which give a QP the possibility to have scope over the rest of the sentence. We understand that one QP has scope over another when the interpretation of the latter is dependent on the interpretation of the former.

Different proposals have been made in the literature under the Generative framework to implement these mechanisms, all of them sharing the idea that the hierarchical structure responsible for the syntactic relations among constituents plays an important role in the definition of scope relations. The main motivation for the syntactic treatment of scope relations is the fact that they are derived by the same set of principles explaining other grammatical facts.

One such proposal is the "Target Landing Site Theory of Scope" made by Beghelli (1995) and Beghelli & Stowell (1997). It shares with other theories of quantifier scope in the Generative framework the assumption that the scope of a QP is assigned by moving it at LF to a position from which it c-commands the domain it scopes over; that is, it shares with those theories the assumption that relations derived from the syntactic hierarchical structure play a determinant role in the semantics of scope relations. On the other hand, it departs from these theories by rejecting the assumption that Quantifier Raising (QR) applies uniformly to all QPs, justifying such a departure empirically. By recognizing that different QPs have different scope properties, Beghelli (1995) shows that QPs do not form an homogeneous class, thus proposing a typology of QPs based on these differences. The data in (2) constitute evidence for these differences:

- (2)a. Some student read every book
- b. Every student read some book
- c. Some student read more than five books
- d. Two students read three books

¹ Within the Generative tradition, visible syntax is the term used to refer either to the level of representation known as S-Structure in the Principles & Parameters framework or to a step in the derivation before the application of the Spell-out operation, which sends relevant information to the Phonological Component of the grammar, under the Minimalist framework.

THE SCOPAL PROPERTIES OF DISTRIBUTIVE QUANTIFIER PHRASES IN BRAZILIAN PORTUGUESE^{*}

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Abstract: This paper offers an explanation for the asymmetry attested in Brazilian Portuguese in regard to the structural position occupied by Quantifier Phrases introduced by cada 'each'. Using the mechanisms proposed by the "Target Landing Site Theory of Scope" in order to derive the distributive interpretation enforced by Distributive Quantifier Phrases when they interact with other Quantifier Phrases in the same clause, it is showed that the asymmetry is due to grammatical properties resultant from the sentence structure of this language and the role played by the Davidsonian event argument of the predicate of its sentences.

1. Introduction

The aim of the paper is to explain the asymmetry in grammaticality between sentences containing Distributive Quantifier Phrases (DQPs) introduced by cada 'each', in Brazilian Portuguese (BP), when those DQPs occupy the subject position in contrast with their appearance in object position. An example is given in (1):

- (1)a. Cada aluno leu alguns livros
each student read some books
- b. Cada homem ama uma mulher
each man loves a woman
- c. *Alguns alunos leram cada livro
some students read each book
- d. *Uma mulher ama cada homem
a woman loves every man

In section 2 I present the theoretical assumptions of the paper, focusing on the "Target Landing Site Theory of Scope" (TLS) proposed by Beghelli (1995) and Beghelli & Stowell (1997), a theory which offers a syntactic treatment to scope relations and distributive construals. In section 3 I show that the analysis developed by the TLS can explain the contrast between (1a & b) and (1c & d), the difference between English and BP being that, in the latter,

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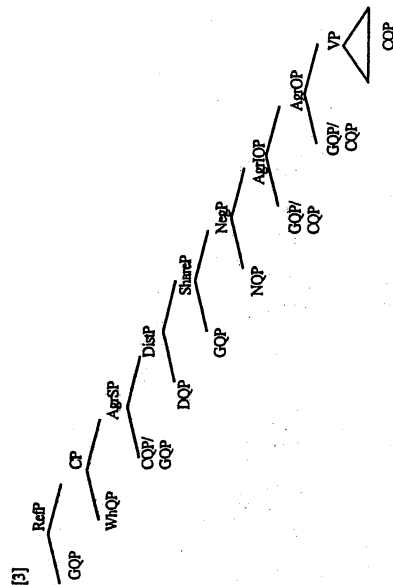
Sentences (2a & b) are both ambiguous. Sentence (2a), for example, supports not only the reading that "there is some student who read every book", but also the interpretation that "for every book x, there is some student who read x". Both readings are also available for sentence (2b). On the other hand, sentence (2c) is not ambiguous. The reading in which "for more than five x, a book, some student read x" is not available.

The analysis of the interpretations associated with sentences (2a, b & c) shows a different behavior between QPs introduced by *every* in comparison with the ones introduced by *more than five*. When in object position, QPs introduced by *more than five* do not allow for an inverse scope construal. Moreover, although sentence (2d) is also ambiguous, which means that sentences containing QPs introduced by bare numerals such as *three* may support an inverse scope construal, their interpretation is different from the one available when this type of QP occupies the subject position. When in subject position they can support a distributive reading, whereas this reading is not available when they occupy the object position of the sentence. In object position, the inverse scope construal enforces an existence presupposition reading of the set of individuals denoted by the QP. The possible reading is: "there is a set of three books such that two students read them", whereas the reading "for each of the three books, there is a different group of two students who read them" is excluded.

In as much as: the distributive construal is always available when a sentence contains a QP introduced by *every*, regardless of the hierarchical position it occupies; the inverse scope construal is blocked when a QP introduced by *more than five* appears in object position; a distributive construal is not available when a QP introduced by bare numerals takes wide scope with respect to a clausemate QP, Beghelli claims that the difference in scope patterns is evidence for rejecting the assumption that scope is assigned uniformly to all Quantifier Phrases.

Based on these differences, the author distinguishes the following QP-Types: Interrogative QPs (WHQPs), Negative QPs (NQPs), Distributive-Universal QPs (DQPs) such as QPs introduced by *every* and *each*, Counting QPs (CQPs) including cardinality expressions, and Group-denoting QPs (GQPs). GQPs encompass four subtypes of QPs: (i) indefinite QPs and plain existentials like *some students*; (ii) bare-numeral QPs like *two students*; (iii) definite QPs like *the students*, *those students*; and partitive QPs like *one of the men*, *two of the men*. This typology, as I said, relies on differences in the scope patterns observed when these QPs interact.

Rejection of scope uniformity is achieved by proposing that, at LF, each QP-type moves to the specifier (Spec) position of a different functional projection in order to check the semantic feature that characterizes it, by a Spec-head agreement relation with the operator that heads this projection. Beghelli (1995) and Beghelli & Stowell (1997) propose a hierarchical structure of functional projections such as (3) to capture the different scope properties of QP-types, including the QP-types that will be treated in this paper.



Besides the functional projections generally assumed in the Generative literature, the authors propose three new projections: the Distributive Phrase (DistP), in which head the distributive operator resides and to whose specifier position a Distributive Quantifier Phrase (DQP) raises in order to check its [+distributive] feature; the Referential Phrase (RefP), in which head an Existential (closure) operator resides and to whose specifier position a Group denoting QP (GQP) functioning as the logical subject of predication raises; and the Share Phrase (ShareP), in which head an Existential (closure) operator also resides and to whose specifier position moves the constituent that offers a domain over which the DQP may distribute.

As a result of how the theory is formulated, it can capture the empirically attested differences in the distribution of readings available when QPs interact, by the conspiracy of two means: 1) the semantic features associated with each QP-type checked in the relevant functional projection; 2) the hierarchical structure of the functional projections and the principles regulating movement.

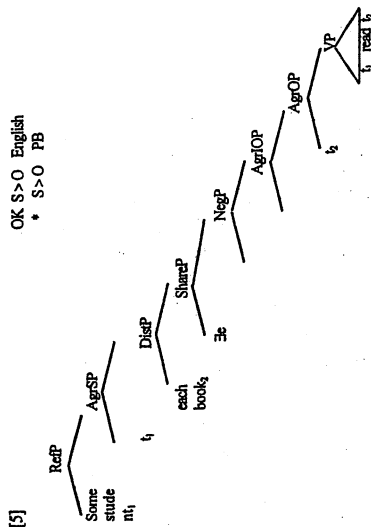
2.1. Distributivity according to TLS

In order to present how the TLS Theory derives the scope properties of DQPs, that is, quantifier phrases introduced by *each* and *every* in English, some assumptions must be made explicit.

Firstly, following Choe (1987), Beghelli (1995) takes distributivity to be a binary relation which requires a *distributor* and a *distributee* (in Choe terms, *sorting key* and *distributed share*, respectively). As phrased by Beghelli (1995:147): "I only consider as 'distributive' relations where the distributee co-varies depending on the distributor".

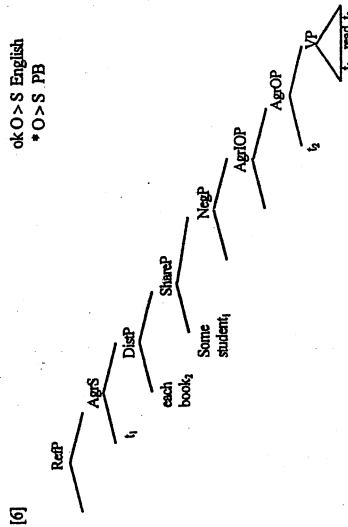
Secondly, the author distinguishes the Strong pattern of Distributivity (SD) exhibited by DQPs from the Pseudo pattern of Distributivity (PD) exhibited by Group denoting Quantifier Phrases (GQPs) because DQPs support a distributive reading over any GQP, from any argument or adjunct position (except when within syntactic islands), consequently allowing for inverse distributive scope construals, as opposed to GQPs, whose distributive

OK S>O English
* S>O PB



On the other hand, the structure in (6) represents the reading "for each x, x a book, there is some student who read x". The derivation in (6) shows some of the same movements which took place in the derivation represented in (5). The QP *some student*, generated in the VP Spec position, also raises to the Spec of AgrSP, in visible syntax, in order to check its Case feature and the DQP *each book* also raises to the Spec of DisP, at LF, in order to check its [+distributive] feature in a Spec-Head agreement relation with the distributive operator. The difference here resides in the fact that, at LF, the QP *some student* reconstructs to the Spec position of ShareP. In doing so, it functions as the distributee for the distributor, the DQP *each book*, thus providing an interpretation in which students co-vary with books. This derivation accounts for the wide scope construal of the DQP *each book* over the QP *some student*.

ok O>S English
* O>S PB



An important consequence of the TLS's architecture is that the wide and narrow scope construals associated with sentences containing DQPs in their object position result from the position to where QOPs, with which they interact, raise in order to check their own features.

reading depends not only on the presupposition properties of distributor and distributee, but also on the structural position occupied by the constituent fulfilling the role of distributor, consequently not allowing for inverse scope construals.

The interpretations associated to sentences containing DQPs are derived by projecting a functional projection Distributive Phrase (DisP), headed by Dist⁰, where the distributive operator resides, to whose specifier position (Spec) the DQP functioning as a distributor moves in order to check its [+distributive] feature. Dist⁰ selects another functional projection, Share Phrase (ShareP), whose Spec position, in turn, will be occupied by the argument functioning as the distributee, that is the distributed share. The distributee role may be played by a QQP with the feature [+group referent] or a CQP, or else by the existentially quantified event argument of the VP. Following the Davidsonian tradition, Beghelli (1995) and Beghelli & Stowell (1997) assume that all VPs have an event theta-position filled by an event argument. When another QP cannot function as the share over which DQPs can distribute in order to satisfy their distributive properties, the existentially quantified event argument of the predicate will fulfill this role.

Going through the derivation of the different readings associated with a sentence exemplifying the interaction between Distributive Quantifier Phrases and Group denoting Quantifier Phrases will help us in better characterizing the differences between the two languages and, consequently, in explaining the BP data.

3. Distributive Quantifier Phrases: the derivation of their interpretations

Sentence (4), the English version of the BP sentence (1c), an ungrammatical sentence in the latter language, contains a QQP in subject position and a DQP in object position:

- (4) Some student read each book²

In as much as it is an ambiguous sentence, two different LF representations are presented, each of them corresponding to a particular interpretation.

In the structure presented in (5), representing the reading "there is some x, x a student, x read each book", the QQP *some student*, generated in the VP Spec position, raises to the Spec of AgrSP, in visible syntax, in order to check its Case feature. Subsequently, at LF, it raises to the Spec position of RefP. In this way, the QQP *some student* takes wide scope over the DQP *each book*. Being in the Spec position of RefP, it behaves as the logical subject of predication, a topic-like feature.

The DQP *each book*, in turn, raises to the Spec of DisP at LF, in order to check its [-distributive] feature in a Spec-Head agreement relation with the distributive operator. As already mentioned, a Distributive Quantifier Phrase needs a distributed share. Since Beghelli (1995), following Szabolcsi (1997), assumes that reconstruction cannot undo semantically-motivated movements, a distributed share is in need, in as much as the QQP *some student*, raised to Spec RefP in order to behave as the logical subject of the predication, (therefore, a semantically-motivated raising) cannot reconstruct to the specifier position of ShareP. The existentially quantified event argument of the predicate will fulfill this role.

² Sentence (4) allows for the same scope interpretations already presented in regard to sentence (2a) above. The differences between every and each in English will be left aside in this paper.

This consequence opens the possibility for treating language variation in regard to scope patterns of their Quantifier Phrases to grammatical properties of the constituent distribution in the hierarchical structure of their sentences.

3.1. Distributive Quantifier Phrases in BP: their distribution and available readings

As pointed out in section 1, BP shows an asymmetry in grammaticality between sentences containing Distributive Quantifier Phrases (DQPs) introduced by *cada* 'each'. When in object position, they may lead to ungrammaticality, as shown in (1). Sentences (1a) and (1c) are repeated here for convenience as (7a) and (7b), respectively:

- (7)a. Cada aluno leu alguns livros
each student read some books
b. *Alguns alunos leram cada livro
some students read each book

The contrast between (7a) and (7b) can be explained in the following way. In both sentences, the *cada* DQP moves to the specifier position of DistP at LF, because, independently of the position it occupies in the visible syntax, it has to raise to Spec of DistP in order to check its [+distributive] feature. In the case of (7a), the object QQP *alguns livros* 'some books' moves to the specifier position of ShareP and, in this way, it functions as the distributes, that is, the distributed share. As a result of taking the widest scope, the *cada*-DQP allows for an interpretation in which sets of books co-vary with each element of the set denoted by student. The sentence is grammatical in as much as the distributive requirements of the *cada*-DQP are attained in this case.

On the other hand, in the case of sentence (7b) the claim is that the sentence is ungrammatical because the distributive requirements of the *cada*-DQP are not attained, since no distributed share can be provided to set up distribution. Under the assumptions of the analysis here developed, by saying that no distributed share can be provided we mean that, at LF, there is no constituent occupying the Spec position of ShareP. Since there are two ways in which a distributed share can be provided to set up distribution - either the QQP in the subject position or the existentially quantified event argument of the predicate - it is necessary to show that, in fact, these two possible distributes are not available, in order to sustain the claim made.

The literature on BP Syntax points out that, in this language, subjects occupy a higher position than Spec of AgrSP. Negrão (1999) and Negrão & Viotti (2000) argue that, being a discourse oriented language, BP has the main predicative relation of its sentences established between the whole projection AgrSP and a nominal phrase occupying the specifier position of a functional projection in the CP system. Therefore, in (7b), the Group denoting Quantifier Phrase occupies the subject of the predication position, namely Spec of RefP, already in the visible syntax. Since raising to Spec of RefP is a semantically-motivated movement, it cannot be undone. Therefore, at LF, the QQP *alguns alunos* 'some students' cannot reconstruct into its base position in order to function as a distributive share for the Distributive Quantifier Phrase.

As previously presented, Beghelli & Stowell assume that when another QP cannot function as the share over which DQPs can distribute in order to satisfy their distributive

properties, the covert existential quantifier over events functions as a distributed share on a distributive event construal.

The authors adopt the proposal that the event argument is a theta-position, syntactically generated inside the VP, which can be occupied by overt or covert QPs. As examples, they list the adverbial QPs ranging over events such as rarely, never, always and a covert existential event QP, \exists event. They assume that such a position exists for all types of predicates, in spite of recognizing that there is some disagreement in regard to this assumption.

However, if that were the case, it would be impossible to fully understand the ungrammaticality of sentence (7b). In the last section of this paper I will investigate further the role of the event argument in the licensing of DQPs in order to show that their assumption must be weakened.

4. The role played by the event argument in DQP's licensing

Thus far, I have pointed out that the ungrammaticality of sentences in which a DQP in object position interacts with a QQP in subject position in BP is due to the fact that the DQP cannot have wider scope over the QQP. In such language, QQP subjects occupy the position in which they function as the (logical) subject of predication already in the visible syntax. From there, they cannot reconstruct, that is, they cannot take a narrower scope in relation to the DQP object. Consequently, the QQP cannot function as a distributed share for the DQP.

According to the TFS Theory, the alternative distributes would be the existentially quantified event argument of the predicate. Nevertheless, the BP data constitute evidence that it is not always the case that the event argument position is available to function as a distribute.

Kratzer (1995) claims that stage-level and individual-level predicates differ in argument structure in regard to having an extra argument position for the Davidsonian event argument or spatio-temporal locations. Stage-level predicates as opposed to individual-level ones have such an argument position. However, the sentences in (8) show that further investigation in the precise role of this argument is in need.

- (8)a. *Cada homem é inteligente
Each man is intelligent
b. *Cada funcionária está grávida
Each worker is pregnant

Both sentences (8a & b) are ungrammatical despite of the fact that, in (8a), the predicate is individual-level whereas in (8b) it is stage-level.

On the other hand, the sentences in (9) exhibit a contrast: (9a), which contains an individual-level predicate continues being unacceptable, whereas (9b) is a good sentence.

- (9)a. *Cada homem é inteligente num período do ano
Each man is intelligent in a period of the year
b. Cada funcionária está grávida num período do ano
Each worker is pregnant in a period of the year

Comparing the paradigm in (8) to the one in (9), we observe that besides the necessity of being a stage-level predicate, that is, being a predicate that has an extra argument position for the

Davidsonian event argument, BP requires the modification of this argument in order that it can function as a distributed share for a Distributive Quantifier Phrase. It is worth notice that, in these sentences, the Distributive Quantifier Phrase occurs in subject position.

The sentences in (10) confirm this generalization. It is a stage-level predicate inflected for past tense, thus a predicate that has the extra event argument. Nevertheless, sentence (10a) is an unacceptable sentence, whereas (10b&c) are perfect sentences. Both the Quantifier Phrase expressing the vehicle in which each guest arrived in (10b), and the adverbial QP in (10c) modify the event argument of the predicate:

- (10)a. *Cada convidado chegou
Each guest arrived
b. Cada convidado chegou num carro
Each guest arrived in a car
c. Pouco a pouco cada convidado chegou
Little by little each guest arrived

Returning to sentences in which DQPs occupy the object position, also in these cases the modification of the event argument renders these sentences grammatical. In sentence (11), the same adverbial QP present in sentence (10c) makes sentence (7b), an ungrammatical sentence as discussed above, a perfect sentence:

- (11) Pouco a pouco alguns alunos leram cada texto
Little by little some students read each text

There is a very interesting property of the kind of modification exerted by the adverbial QP: it brings about a temporal sequence of events interpretation. This interpretation may also be found in the lexical meaning of certain predicates. In sentence (12), the event described by the sentence contains a sequence of subevents of applauding occurring in times which do not overlap.

- (12) Os mendigos aplaudiam ruidosamente cada conferencista
The poor people loudly applauded each speaker

5. Concluding remarks

In this paper I have shown that, in BP, sentences containing a Distributive Quantifier Phrase introduced by cada 'each', a distributor requiring a distributive share over which it can distribute, must have as its clausemate either another quantifier phrase able to scope under such DQP or a modified event argument.

Type of predicate, modification of spatio-temporal locations, and tense/aspect predicate play an important role in the licensing of DQPs in as much they offer an event/spatio-temporal argument which, being bound, allows for a temporal sequence of non overlapping subevents interpretation

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