# Sentential negation in Brazilian Portuguese\*

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#### 1 Introduction

This paper offers a syntactic-semantic analysis of sentential negation in (standard) Brazilian Portuguese (BP). I argue that the negation marker não 'not', commonly assumed to be the semantic negation in BP (Schwenter 2005; Sousa 2007, 2011; Lopes & Rocha 2017), is in fact a negative element morpho-syntactically marked for negation, but semantically vacuous. Based on a range of empirical evidence, I show that the negative element não 'not', as the head of a phrase projected from its merge with VP, forms a complex head with  $\tilde{V}^0$  and  $\tilde{I}^0$ . Given this analysis, I demonstrate that if não were the semantic negation, it could only be a predicate negation. One immediate unwanted consequence of this is that the scope interactions between negation and universal quantification in BP would be left unaccounted for. Drawing on Zeijlstra's theory of Negative Concord as a syntactic agree relation between a single interpretable feature [iNEG] and one or multiple uninterpretable features [uNEG], I propose that não is the head of a Polarity Phrase (PolP) generated by its merge with VP. In this approach, *não* hosts a [uNeg] feature and as such is licensed by the insertion of a covert NEG operator above IP. The advantage of this analysis is that it accounts for the scope ambiguity of sentences in BP with negation and universal quantification, as opposed to an analysis that treats the negative word não as the semantic negation.

The paper proceeds as follows. In Section 2, I offer a range of syntactic evidence that the negative element  $n\tilde{a}o$  in BP is the head of a maximal projection that selects a VP as complement. It is also demonstrated that  $n\tilde{a}o$  forms a complex head with V<sup>0</sup> and I<sup>0</sup>. In Section 3, I show that by treating  $n\tilde{a}o$  as a semantic negation head of a NegP, we would be committed to interpreting it as denoting a predicate negation. As a result, sentences where it co-occurs with the universal quantifier

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todo will always be represented as having truth conditions in which the negation has narrow scope. This contradicts the speakers' judgements, which allow for wide and narrow scope interpretations. In Section 4, I propose an analysis of  $n\tilde{a}o$  as an element that is not semantically marked for negation and occupies the head of a Polarity Phrase (PolP). In this configuration, it establishes a formal agreement relation with an unpronounced semantically active operator that c-commands it, and which,  $\dot{a} \ l\dot{a} \ Rizzi \ (1996)$ , is in the Spec of a NegP above IP. This approach correctly captures the scope ambiguity left unexplained in Section 3. Finally, Section 5 is the conclusion.

# 2 The distribution of *não*

In standard BP, the negation marker  $n\tilde{a}o$  always occurs pre-verbally, as shown in (1) and (2):

- (1) a. Alberto **não** ama Maria. Alberto not love.PRES.3SG Maria 'Alberto doesn't love Maria.'
  - b. \*Alberto ama **não** Maria.
- (2) a. Quem Alberto **não** ama? who Alberto not love.PRES.3SG 'Who doesn't Alberto love?
  - b. \*Quem Alberto ama **não**?

Furthermore,  $n\tilde{a}o$  immediately precedes the verb.<sup>1</sup> So much so that (aspectual) adverbs, such as *frequentemente* 'often', although having a sentential distribution relatively unconstrained in BP, as shown in (3), are blocked from intervening between  $n\tilde{a}o$  and the verb, as illustrated by the ungrammaticality of (4):

<sup>&</sup>lt;sup>1</sup> In this paper, I don't consider a variety of BP, spoken in Northeastern Brazil, in which  $n\tilde{ao}$  can be post-verbal. Furthermore, I will not analyse emphatic uses of  $n\tilde{ao}$ , i.e., clauses in which there are two co-occurrences of  $n\tilde{ao}$ : one pre-verbal and the other clause-final, the latter being the emphatic negation. I believe these cases can be incorporated into my analysis. However, for reasons of space, they are not investigated here. For pragmatic analyses of them see Schwenter 2005 and Sousa 2011.

- (3) a. *Frequentemente* Maria **não** visita Sandra. often Maria not visit.PRES.3SG Sandra 'Maria doesn't often visit Sandra.'
  - b. Maria *frequentemente* **não** visita Sandra. Maria often not visit.PRES.3SG Sandra 'Maria doesn't often visit Sandra.'
  - c. Maria **não** visita *frequentemente* Sandra. Maria not visit.PRES.3SG often Sandra 'Maria doesn't often visit Sandra.'
  - d. Maria **não** visita Sandra *frequentemente*. Maria not visit.PRES.3SG Sandra often 'Maria doesn't often visit Sandra.'
- (4) \*Maria **não** frequentemente **visita** Sandra. Maria not often visit.PRES.3SG Sandra 'Maria doesn't often visit Sandra.'

On the assumption that adverbs (in BP) are base generated in a position demarcating the left boundary of the VP (Pollock 1989), as in (5), I suggest that (6a), the positive counterpart of (4), is evidence of  $V^0$ -to- $I^0$  raising in BP, as in (6b).<sup>2</sup>

- (5)  $[_{IP} NP I [_{VP} (Adv) V...]]$
- (6) a. Maria visita *frequentemente* Sandra. Maria visit.PRES.3SG often Sandra 'Maria often visits Sandra.'
  - b.  $[_{IP} \text{ visita}_i [_{VP} (\text{frequentemente}) \dots t_i \dots ]]$

Given (5) and the account of (6a) just outlined, I propose that (4) is ruled out because the presence of  $n\tilde{a}o$  as the head of an XP projected from the merge of  $n\tilde{a}o$  with a VP triggers the raising of V<sup>0</sup> to X<sup>0</sup>, forming a complex head with it and blocking the intervention of an adverb between

<sup>&</sup>lt;sup>2</sup> For a classical overview of the head movement debate, see Roberts 2003.

them. Thus, under this view, the structure  $n\tilde{a}o+V^0$  in BP is represented as in (7):

(7)



As a result, whenever there is an adverb adjoined to V', the head  $n\tilde{a}o+V^0$  is pronounced above it. In turn, the tense marker hosted by I<sup>0</sup> triggers V<sup>0</sup> or  $n\tilde{a}o+V^0$  movement to I<sup>0</sup>. Such an analysis assigns, hence, the syntax (8b) to  $n\tilde{a}o+V^0$  raising in sentences of the type (8a):

- (8) a. Maria **não visita** frequentemente Sandra. Maria not visit.PRES.3SG often Sandra 'Maria doesn't often visit Sandra.'
  - b.  $[_{\text{IP}} n \tilde{a} o + V_i^0 [_{\text{XP}} ... t_i ... [_{\text{VP}} (\text{Adv}) ... t_i ...]]]$

Another piece of evidence indicating that  $n\tilde{a}o$  forms a complex head with  $V^0$  comes from negative questions where  $I^0+n\tilde{a}o+V^0$  precedes the subject. Consider sentence (9):

(9)	Ο	que	não	viu	Pedro?
	D	what	not	see.PAST.3SG	Pedro
	ʻW	/hat die	dn't P	edro see?'	wh-word <sub>object</sub> $\mathbf{I}^{0}$ + $n\tilde{a}o$ + $\mathbf{V}^{0}$ S

By contrast,  $V^0$  cannot raise and leave behind *não*, as in (10):

(10)	*0	que	viu	não	Pedro?
	D	what	see.PAST.3SG	not	Pedro
	ʻW	hat did	n't Pedro see?'		*wh-word <sub>object</sub> <b>I</b> <sup>0</sup> + <b>V</b> <sup>0</sup> não S

Assuming that the subject is in the Spec of IP, the well-formedness of (9) and the ungrammaticality of (10) strongly support the hypothesis that in (9)  $I^{0}+n\tilde{a}o+V^{0}$  can raise to the head of a YP above IP. In due time (Section 4), after spelling out my analysis of sentential negation as an unpronounced operator in the Spec of a NegP, I will argue that the landing site Y<sup>0</sup> of  $I^{0}+n\tilde{a}o+V^{0}$  in sentences where  $n\tilde{a}o$  and verbs precede the subject is the head of NegP. But before that, let us look at the consequence for scope ambiguity if we assume that  $n\tilde{a}o$  is the semantic negation in BP.

# 3 Scope ambiguity and *não*

In a negative sentence of the type (11a), which exhibits the linear order S  $n\tilde{a}o+V$ , the scope interaction between the generalized quantifier (GQ) *todo mundo* 'everybody' and negation gives rise to an ambiguity between two readings. In one reading, the universally quantified DP has scope over the negation, as paraphrased in (11b), abstracting away from tense. Another reading is one in which the negation scopes over the GQ, as captured by (11c).

(11) a. **Todo mundo não** chegou. everybody not arrive.PAST.3SG 'Everybody didn't arrive/hasn't arrived.'

b.	Re	ading	<u>g 1</u> :	∀x[perso	$\operatorname{on}_{C}(\mathbf{x}) \rightarrow \neg$	arrive(x)]	()	1 >	7)
	P		~			• ( ) ]			

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c. <u>Reading 2</u>: \neg \forall x [person_C(x) \rightarrow arrive(x)] (\neg > \forall)
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Reading 1 is true in a scenario where nobody arrived, whereas reading 2 can describe a situation in which some people arrived, and some didn't. In (11b) and (11c) the restrictor of the universal quantifier is a contextually salient set of people. I assume that C is a variable introduced by the quantifier that ranges over a salient subset provided by each context of utterance (von Fintel 1994).

Importantly, the raising of  $I^0+n\tilde{a}o+V^0$ , resulting in an inverted order, as in (12), doesn't seem to rule out the scope ambiguity attested above.

(12) Não chegou todo mundo. not arrive.PAST.3SG everybody. 'Didn't arrive/hasn't arrived everybody.'  $(\neg > \forall / \forall > \neg)$  Recall that we have demonstrated in Section 2 that  $n\tilde{a}o$  always forms a complex head with V<sup>0</sup> and I<sup>0</sup>. As such, if one assumes that  $n\tilde{a}o$  is the semantic negation, she must provide a compositional semantics for (11a) and (12) that captures their available readings. However, such an analysis fails the task from the start. To show this, let us temporarily assume that  $n\tilde{a}o$  is the head of a NegP between VP and IP. On top of that, I posit, for the sake of the argument, that  $I^0+n\tilde{a}o+V^0$  covertly raises to C<sup>0</sup> in (11a), whereas in (12) it raises overtly. Lastly, let us assume that the GQ *todo mundo*, by Quantifier Raising (QR), adjoins to IP. Such a configuration is exhibited in (13), which is cast in conventions of Heim and Kratzer (1998).<sup>3</sup>

(13) a.  $\begin{bmatrix} CP & [C^{\circ} & [C^{\circ} & n \ensuremath{\tilde{a}o} & chegou_2 & [IP^{\circ} & todo\_mundo_1 & [IP & t_1 & t_2 & [NegP & t_1 & t_2 & [VP & t_1 & t_2]]] \end{bmatrix} \end{bmatrix}$ 



In (13b), the arrow indicates the stages of head movement of  $V^0$  to Neg<sup>0</sup>, then to I<sup>0</sup> and finally to C<sup>0</sup>. The indexed t<sub>2</sub> indicates the traces left behind by the movements, which are assumed to be of the same type as the raised head(s). As for t<sub>1</sub>, it is the trace of type *e* left by the QR of *todo mundo*.

<sup>&</sup>lt;sup>3</sup> For a detailed elaboration of the QR theory, see May 1977, 1985.

By following the (partial) derivation illustrated above, it is easy to see that the truth conditions generated are ones in which the GQ has scope over the negation. This is so because  $n\tilde{a}o$ , due to its syntactic status as part of the complex head  $C^0+I^0+n\tilde{a}o+V^0$ , can only be a predicate negation, i.e., it can only take predicates as arguments. One crucial element here is that the movement of the complex head does not affect the interpretation. This is so because, by leaving a higher-order variable as their traces, predicative complex heads containing  $V^0$  undergo semantic reconstruction. In other words, although the complex head  $C^0+I^0+n\tilde{a}o+V^0$  c-commands the DP *todo mundo*, the former inevitably is interpreted as the semantic argument of the universal quantifier.<sup>4</sup> As a consequence, the only reading is one with *não* having narrow scope with respect to *todo mundo*.

The same result holds if one assumes that  $n\tilde{a}o$  merges with IP. Let's posit that in this case the complex head  $n\tilde{a}o+I^0+V^0$  undergoes head movement to C<sup>0</sup> and by QR the GQ *todo mundo* adjoins to NegP, as laid out in (14).

(14) a.  $\begin{bmatrix} CP & [C' & [C^0 & nao \ chegou_2 & [NegP' & todo_mundo_1 & [NegP & [IP & t_1 & t_2 & [VP & t_1 & t_2]]] \end{bmatrix} \end{bmatrix}$ 



<sup>&</sup>lt;sup>4</sup> The analysis of head movement as a PF operation and as such semantically null (see Chomsky 1995, 2001; Schoorlemmer & Temermman 2012; LaCara 2016) would lead to the same result as the one offered above, since in both accounts head movement does not affect the semantic interpretation.

b.

As can be easily seen, even though the complex head  $C^0+n\tilde{a}o+I^0+V^0$  again c-commands *todo mundo*, the outcome is the same truth conditions as the ones exhibited by (13a–b), with the negation under the scope of the universal quantifier. No matter whether the complement of  $n\tilde{a}o$  is a VP or IP, by the very fact that it forms a complex head with  $I^0$  and  $V^0$ ,  $n\tilde{a}o$  cannot help but be a verbal predicate negation, hence forcing a narrow scope interpretation.

To summarize, due to its syntax,  $n\tilde{a}o$  is interpreted as negating a verbal predicate. That is,  $n\tilde{a}o$  is a function that takes a predicate as argument and returns a predicate as value. As a result, even in a configuration where the complex head c-commands the universally quantified DP, semantic reconstruction will give rise to the narrow scope reading of  $n\tilde{a}o$ . Thus, if the premise that  $n\tilde{a}o$  is part of a complex head is true, one available reading of (11a) and (12) is left unaccounted for by any compositional theory that treats  $n\tilde{a}o$  as hosting the semantic negation. But there is a way out of this stalemate, and it does not amount to giving up the analysis in Section 2. A solution will be offered in the next section.

#### 4 The analysis

## 4.1 Theoretical background

In this section, in line with Ladusaw's (1992) analysis of negation in English, I propose that sentential negation in BP is accomplished via an unpronounced NEG operator and that  $n\tilde{ao}$  is a negative element morphosyntactically marked for negation, but semantically vacuous. My analysis also builds on Zeijlstra's theory of Negative Concord as an instance of syntactic agreement (2004, 2008, 2012). I claim that  $n\tilde{ao}$ , as a semantically non-negative word, carries an uninterpretable feature [uNEG] that is checked in an upward agree relation it establishes with an abstract single NEG operator (above IP) that carries the interpretable feature [iNEG] and c-commands it. That is,  $n\tilde{ao}$  is licensed by the NEG operator.

Two theoretical assumptions are crucial to oil the wheels of my analysis. Firstly, I adopt Zeijlstra's Upward Agree condition below, which reverses the canonical direction of agreement relations:

#### (15) **Upward Agree** (Zeijlstra 2004, 2008, 2012)

 $\alpha$  can agree with  $\beta$  iff:

- a.  $\alpha$  (Probe) carries at least one uninterpretable feature [uF] and  $\beta$  (Goal) carries a matching interpretable feature [iF].
- b.  $\beta$  c-commands  $\alpha$ .
- c.  $\beta$  is the closest goal to  $\alpha$ .

Upward Agree states that agreement — defined as a relation between an element that carries an interpretable formal feature and one or more element(s) that have uninterpretable counterparts of this same feature (Chomsky 1995, 2001) — is established via a c-command relation between a goal and a probe constituent. The goal hosts the interpretable feature [iF] and c-commands the probe, i.e., the constituent carrying the uninterpretable feature [uF] that must be checked for the derivation to converge. Formal agreement, according to (15), presents the following configuration:



Crucially, on this approach, it is not mandatory that the constituents with the uninterpretable features move in order for agreement to occur. Once Y has the uninterpretable counterpart of the interpretable feature that X carries, by the very fact that X c-commands Y, [uF] is immediately checked. Furthermore, Upward Agree allows for multiple uninterpretable features in the same clause to be checked against one interpretable feature, as is the case with Negative Concord (NC) constructions.

Secondly, I assume Rizzi's Negative Criterion, which posits that (i) a semantic operator such as NEG "fills an A-bar specifier position" (Rizzi 1996:74) in a Spec-head configuration, and (ii) "negative sentences involve an independent clausal projection, the Negative Phrase" (Rizzi 1996:74). Thus, the structure proposed is as follows:

(17) NegP

## 4.2 NEG in BP

Now, with the apparatus laid out above, which brings together the Upward Agree condition and the Negation Criterion, we can consider sentences (11a) and (12) again and look at how their common scope ambiguity can be accounted for. I argue that the sentential NEG operator hosting the [iNEG] feature in BP is in the Spec of NegP, just above IP and that  $n\tilde{a}o$ , analysed as a semantically vacuous negative marker that carries an uninterpretable feature [uNeg], is the head of a Polarity Phrase (PoIP) right above VP. Therefore, having in mind the syntax of  $n\tilde{a}o$  offered in Section 2, I assign two configurations to negative sentences with  $n\tilde{a}o$  in BP: one in which Pol<sup>0</sup>+V<sup>0</sup> lands in I<sup>0</sup>, as is the case in sentence (11a), and one in which V<sup>0</sup>+Pol<sup>0</sup>+I<sup>0</sup> raises to Neg<sup>0</sup>, as in (12a). The former is displayed in (18a) and the latter in (18b):

(18) a.



b.



Let us begin looking at the narrow scope reading of clauses (11a) and (12). Sentence (12) has the structure in (19):

(19) a.  $\begin{bmatrix} CP' \text{ todo}_{\text{mundo}_1} & [CP [NegP \neg_{[ineg]}] & [Neg' [Neg'' [Neg'' não_{[uneg]} chegou_2 & [IP t_1 t_2 [PoIP t_1 t_2]]]]] \end{bmatrix} \end{bmatrix}$ 



In the structure above, the universally quantified DP *todo mundo*, by QR, adjoins to CP, a position above the NEG operator. From this position, it c-commands NEG, and in virtue of this has the latter within its scope domain. As for  $n\tilde{a}o$ , it forms with V<sup>0</sup> and I<sup>0</sup> a complex head whose landing site is Neg<sup>0</sup>. Moreover, NEG c-commands the complex head Neg<sup>0</sup>+I<sup>0</sup>+ $n\tilde{a}o$ +V<sup>0</sup>, and by doing so guarantees that  $n\tilde{a}o$  is in an agree relation with it, i.e., in a configuration where its uninterpretable feature can be checked by NEG. The outcome is the reading in which the abstract negation is under the scope of the universal quantifier.

As for the narrow scope reading of sentence (11a), it has the following structure:

(20) a.  $[_{CP'} todo\_mundo_1 [_{CP} [_{NegP} \neg_{[ineg]} [_{Neg'} [_{IP} [_{I'} [_{I}^0 n \tilde{a} o_{[uneg]} chegou_2 [_{PoIP} t_1 t_2 [_{VP} t_1 t_2]]]]]]]$ 



In (20), the GQ again adjoins to CP, i.e., above NegP, c-commanding the sentential negation. In turn, the semantically non-negative  $n\tilde{a}o$ , as a complex head with V<sup>0</sup>, raises to I<sup>0</sup>. Once again it is c-commanded by NEG. By satisfying Upward Agree, it gets its [uNEG] feature checked. As a result, the configuration in (20) gives rise to the truth conditions in which NEG is once more under the scope of the GQ.

Now, to generate the second available reading of (11a) and (12), i.e., the one in which negation scopes over the universal quantifier, it suffices to posit that the GQ *todo mundo* adjoins by QR to IP. When the complex head moves to Neg<sup>0</sup>, i.e., sentence (12), the result is the structure in (21). In this NEG c-commands both the complex head Neg<sup>0</sup>+I<sup>0</sup>+não+V<sup>0</sup> and the GQ. Thus, não is in an Upward Agree relation with the semantically negative operator, which has *todo mundo* in its scope.

(21) a.  $\left[ CP \left[ NegP \neg_{[ineg]} \right] \left[ Neg' \left[ Neg'' \left[ Neg'' \right] nao_{[uneg]} chegou_2 \right] Chegou_2 \left[ P' todo mundo_1 \left[ P t_1 t_2 \left[ PolP t_1 t_2 \right] VP t_1 t_2 \right] \right] \right] \right] \right]$ 



Therefore, the truth conditions assigned to (12), given (21), are the ones in which the abstract NEG operator scopes over the GQ.

Regarding (11a), it is easy to see that like in the narrow scope derivation the landing site of the complex head doesn't interfere at all in the scope interactions between NEG and the GQ. In (22), since *todo mundo* again adjoins by QR to IP, NEG c-commands it and  $I^0+n\tilde{a}o+V^0$ . This structure again kills two birds with one stone: it allows the uninterpretable feature of the head to be checked against its interpretable counterpart hosted by NEG, and the sentential negation operator has again the GQ within its scope domain.

(22) a.  $\begin{bmatrix} CP \ [NegP \ \neg[ineg] \ [Neg' \ [IP' \ todo\_mundo_1 \ [IP \ [I' \ [I^0 \ não_{[uneg]} \ chegou_2 \ [PolP \ t_1 \ t_2 \ [VP \ t_1 \ t_2] ]]]] \end{bmatrix} \end{bmatrix}$ 

b.



To sum up, the shared ambiguity of (11a) and (12) is due to the scope interactions between the phonologically null sentential NEG operator (type (tt)) in the Spec of NegP above IP and the GQ *todo mundo*. When *todo mundo*, by QR, adjoins to CP, i.e., to a position from where it ccommands the NEG operator, we get the reading 1 (i.e.,  $\forall > \text{NEG}$ ). On the other hand, by adjoining to IP, hence below NegP, *todo mundo* is ccommanded by the negation, deriving reading 2 (i.e., NEG >  $\forall$ ). The semantically non-negative word *não*, whose presence is licensed by the abstract NEG operator, is just a manifestation of syntactic agreement. As the head of PoIP above VP, it can, by integrating a complex head, occupy I<sup>0</sup> or raise to Neg<sup>0</sup>. In both cases it is in Upward Agree relation with the semantic negation and, therefore, gets its uninterpretable feature checked.

Thus, the analysis proposed in this section, by portraying negative sentences in BP that contain  $n\tilde{a}o$  as an instance of Negative Concord, provided a syntax and compositional semantics capable of assigning to (11a) and (12) the two readings they have. This is a clear advantage over a position that treats  $n\tilde{a}o$  as the semantic negation, since the latter falls short of accounting for the scope ambiguity exhibited by both constructions.

## 5 Conclusion

In this paper I argued that sentential negation in BP is an unpronounced NEG operator occupying the Spec of NegP above IP. I demonstrated that

the negative marker  $n\tilde{a}o$ , due to its syntactic status as a head that always forms a complex head with V<sup>0</sup> and I<sup>0</sup> via head movement, cannot have the semantics of a sentential negation. If it were the semantic negation, it would be a predicate negation. Consequently, the range of scope ambiguities in sentences containing  $n\tilde{a}o$  and universally quantified DPs is left unaddressed. In contrast, drawing on Zeijlstra's theory of Negative Concord (2004, 2008), I show that an analysis of  $n\tilde{a}o$  as a semantically non-negative element head of a PoIP, which bears an uninterpretable [uNEG] in Upward Agree relation with an abstract sentential negation, accounts for the scope interaction between negation and universally quantified DPs in BP.

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