

Syntactic change as *chain reaction*: The emergence of hyper-raising in Brazilian Portuguese

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1. Introduction

In contrast to European Portuguese (*EP*), Brazilian Portuguese (*BP*) is not a “Romance-type” null subject language.¹ Like German or Chinese (see Ross (1982), Huang (1984, 1989), and Cardinaletti (1990)), BP displays referential null subjects in matrix clauses as instances of topic-deletion (see Ferreira (2000, 2004) and Rodrigues (2002, 2004)), i.e. the empty category is a variable bound by a zero topic. In turn, its referential null subjects in finite embedded clauses show properties of obligatory control, such as the requirement of a local c-commanding antecedent and sensitivity to island effects, for instance. This state of affairs had led Ferreira (2000, 2004) and Rodrigues (2002, 2004), whose insights we will be following here, to analyze referential null subjects in embedded finite clauses in BP as traces of A-movement, rather than *pro*. Under this approach, a sentence such as (1a) in BP is analyzed along the lines of (1b), where the embedded subject moves to the matrix [Spec,VP] before reaching the matrix [Spec,TP]. In other words, sentences such as (1a) are analyzed as control-like structures under the movement analysis of control (see Hornstein (1999, 2001) and Boeckx, Hornstein, and Nunes (2006)).

- (1) a. *As crianças disseram que gostam da babá.*
the children said-3PL that like-3PL of-the baby-sitter
'The children said that they like the baby-sitter.'
b. [TP [as crianças]_i T [VP t_i [VP disseram [CP que [TP t_i gostam da babá]]]]]

The analysis of embedded subjects as traces of A-movement also encompasses hyper-raising structures (in the sense of Ura (1994)) such as (2a), which is derived along the lines of (2b) (see Ferreira (2000, 2004)).²

- (2) a. *As crianças parecem que gostam da babá.*
the children seem-3PL that like-3PL of-the baby-sitter
'The children seem to like the baby-sitter.'
b. [TP [as crianças]_i T [VP parecem [CP que [TP t_i gostam da babá]]]]]

¹ For an overview of the properties of null subjects in BP and the different interpretations they have received, see the collection of papers in Kato and Negrão (2000). On the split between BP and EP with respect to the acquisition of null subjects, see Simões (1997) and Magalhães (2006).

² Although the relevant examples in the text all involve the raising verb *parecer* 'seem', it should be noted that hyper-raising in BP (with or without apparent resumption) is not restricted to this verb, as illustrated in (i) with *acabar* 'turn out' and *perigar* 'be in danger of'.

- (i) a. Os estudantes acabaram que (eles) viajaram mais cedo
the students finished that they traveled more early
'The students ended up traveling earlier.'
b. Aqueles funcionários perigam que (eles) vão ser demitidos
those employees are-in-danger that they go be fired
'Those employees are likely to be fired.'

In addition to admitting hyper-raising constructions such as (2a), BP also allows constructions such as (3) (see Duarte 2003, 2004 and Martins and Nunes 2005), which appear to involve hyper-raising with a resumptive pronoun.

- (3) *As crianças parecem que elas gostam da babá.*
 the children seem-3PL that they like-3PL of-the baby-sitter
 ‘The children seem to like the baby-sitter.’

Sentences such as (1a) are of course allowed in EP, given its pro-drop nature. By contrast, sentences such as (2a) and (3) are ungrammatical in contemporary EP and are not attested at any stage of its history. This indicates that hyper-raising and apparent hyper-raising structures are the outcome of syntactic changes that took place in BP. In this paper, we will discuss how such constructions came to be grammatical options in BP and suggest that the emergence of both true and apparent hyper-raising was a byproduct of the loss of the Romance-type pro-drop property in the course of language acquisition by BP learners.

We will be following Fodor (1998) and Dresher (1999), who propose that children are conservative incremental learners, who delay decisions until they have come across unambiguous triggers/cues for parametric setting. From this perspective, a trigger/cue is a piece of tree structure made available by Universal Grammar and incorporated into the learner’s grammar when the learner is exposed to input sentences that cannot be parsed otherwise. Structural representations become gradually more complex while acquisition proceeds following a (partially) ordered path, in which cues become increasingly abstract and grammar internal.³ This learning strategy is deterministic “in that the learner may not backtrack or undo parameter settings that have already been set. Some such restriction is necessary if the learner is to be prevented from getting into infinite loops.” (Dresher 1999:29).

Dresher’s model can derive the fact that children are *degree-0 learners* (Lightfoot 1991) up to a certain point. As simpler structures are parsed/acquired at earlier developmental stages, they will constitute cues for parameter settings which the child will not be allowed to reset at later developmental stages.⁴ Suppose, for instance, that in the case under discussion, the Romance-type pro-drop parameter is set at a stage when learners are exclusively dealing with unembedded structures. Once the negative value was assumed for the pro-drop parameter by some children at some point of BP history, these innovative learners exposed to input sentences with embedded referential null subjects could only parse them as traces of A-movement (given UG constraints), hence incorporating hyper-raising in their grammars.⁵ Under this interpretation of the change,

³ Both the acquisition path and the particular triggers/cues associated with each parameter value are assumed to be provided by Universal Grammar, thus part of innate knowledge.

⁴ Within the language acquisition model developed by Dresher (1999), the resetting of parameters is only possible when it is imposed by parameter dependencies along the (partially) ordered acquisition path: “Determinism does not hold in the following case: when a parameter is set to a new value, all parameters that depend upon it (follow it in the order) revert to default” (Dresher 1999:29).

⁵ Note that it is not the case that the loss of Romance-type pro-drop and the emergence of hyper-raising are two manifestations of the same parametric change. Crucially, there is no implicational dependency between the availability of null subjects and the availability of hyper-raising, as all types of combinations can be found: (i) non pro-drop + no hyper-raising (e.g. English, French); pro-drop + no hyper-raising (e.g. EP, Italian); pro-drop + hyper-raising (e.g. Romanian, maybe Occitain; see Ura (1994) Dobrovie-Sorin (1994), Camproux (1958), Sauzet (1989, 2006)); non pro-drop + hyper-raising (BP; see Ferreira (2000, 2004)). The

which we will further clarify in section 5, hyper-raising emerges in BP as the effect of a prior syntactic change, i.e. the loss of Romance-type pro-drop. This type of *chain reaction* (see Lightfoot 1991, 1999) is to be expected under a deterministic model of language acquisition and argues for the availability of syntactically induced syntactic change (which has been challenged by the *inertial theory* of Longobardi 2001).

The remainder of the paper is organized as follows. Sections 2 and 3 respectively present properties of true hyper-raising constructions such as (2a) and apparent hyper-raising constructions with resumptive pronouns such as (3), from which a formal analysis will be drawn in section 4. Section 5 explores the idea that the change arose in the context of language acquisition as a consequence of the interplay between the learning device, UG constraints, and an earlier innovative take along the learning path. Section 6 concludes the paper, by calling attention to the importance of *chain reactions* as a source for syntactic change.

2. Hyper-raising in Brazilian Portuguese

Ferreira (2000, 2004) presents two types of evidence to show that constructions such as (2a) above in BP, involve moved subjects (i.e. hyper-raising), rather than topics. First, the DPs in question trigger agreement with the matrix predicate, as illustrated in (4) below, and second, these DPs may involve elements that cannot be topicalized, such as quantified expressions, as shown in (5). Additional evidence for Ferreira's analysis is provided by Martins and Nunes (2005), who observe that the constructions in question may also involve idiom chunks, as illustrated in (6), which cannot be topicalized either.

- (4) a. *A criança parece que gosta da babá.*
 the child seem-3SG that like-3SG of-the baby-sitter
 'The child seems to like the baby-sitter.'
- b. *As crianças parecem que gostam da babá.*
 the children seem-3PL that like-3PL of-the baby-sitter
 'The children seem to like the baby-sitter.'
- (5) a. **Alguém, a babá me disse que chorou.*
 someone the baby-sitter me told that cried
 'The baby-sitter told me that someone cried.'
- b. *Alguém parece que chorou.*
 someone seem-3SG that cried-3SG
 'Someone seems to have cried.'
- (6) a. *O pau vai comer feio.*
 the stick goes eat ugly
 'There's going to be a big discussion/fight'
- b. **O pau, o João disse que vai comer feio.*
 the stick the João said that goes eat ugly
 'João said that there's going to be a big fight.'

specific innovation triggered by the resetting of the pro-drop parameter which allowed the incorporation of hyper-raising in BP will be discussed in section 4 below.

- c. *O pau parece que vai comer feio.*
 the stick seems that goes eat ugly
 ‘It seems that there’s going to be a big fight’

It is very illuminating to contrast BP with EP with respect to the constructions above. Since hyper-raising is not an option in EP, subject verb agreement in the matrix clause is prohibited, as shown in (7) below. Note that (7a) resembles a case of hyper-raising, because third person singular is the default agreement form for impersonal constructions, as seen in (7c). Hence, the DP *a(s) criança(s)* is an agreeing *subject* in the BP sentences in (4a) and (4b), but a non-agreeing *topic* in the EP sentences in (7a) and (7c).

- (7) European Portuguese:
 a. *A criança parece que gosta da baby-sitter.*
 the child seem-3SG that like-3PL of-the baby-sitter
 ‘It seems that the child likes the baby-sitter.’
 b. **As crianças parecem que gostam da baby-sitter.*
 the children seem-3PL that like-3PL of-the baby-sitter
 ‘The children seem to like the baby-sitter.’
 c. *As crianças parece que gostam da baby-sitter.*
 the children seem-3SG that like-3PL of-the baby-sitter
 ‘It seems that the children like the baby-sitter.’

(8) below shows that when standard raising out of an infinitival is involved, a quantified expression may be the matrix subject in both BP and EP. By contrast, the analogous construction with a finite embedded clause is possible in BP, but not in EP.

- (8) a. *Pouca atenção parece ter sido dada às crianças doentes.* (BP/EP: OK)
 few attention seems have-INFIN been given to-the children sick
 ‘It seems that little attention has been paid to the sick children.’
 b. *Pouca atenção parece que foi dada às crianças doentes.* (BP: OK; EP:*)
 few attention seems that was given to-the children sick
 ‘It seems that little attention was paid to the sick children.’

Finally, (9) shows that in EP, only standard raising allows idiom chunks in matrix subject positions (cf. (9b)). There is no grammatical counterpart with a finite complement clause, as opposed to what happens in BP (cf. (6c) vs. (9c)). Once hyper-raising is not allowed in EP, the ungrammaticality of (9c) is to be ascribed to the general restriction blocking idiom chunks as topics.

- (9) European Portuguese:
 a. *A montanha pariu um rato.*
 the mountain gave-birth-to a mouse
 ‘The results were well below the expectations.’
 b. *A montanha parece ter parido um rato.*
 the mountain seems have-INFIN given-birth a mouse
 ‘The results seem to have been well below the expectations.’

- c. **A montanha parece que pariu um rato.*
 the mountain seems that gave-birth a mouse
 ‘It seems that the results were well below the expectations.’

To summarize, several contrasts between BP and EP receive a uniform account if we assume that BP – but not EP – allows A-movement out of a finite clause, yielding hyper-raising constructions.

3. Apparent hyper-raising with resumptive pronouns in Brazilian Portuguese

As mentioned in section 1, BP also departs from EP in permitting constructions like (10), which seems to involve hyper-raising, with the difference that the matrix agreeing DP is doubled by a resumptive pronoun in the embedded subject position.⁶

- (10) *As crianças parecem que elas gostam da babá.*
 the children seem-3PL that they like-3PL of-the baby-sitter
 ‘The children seem to like the baby-sitter.’

Despite what may appear at first sight, the two superficially akin constructions in fact have different properties. The main distinctive feature of constructions like (10) is that their matrix subject seems to exhibit a mixed behavior, showing both subject and topic properties. Like topics and unlike standard subjects, the matrix DP in apparent hyper-raising constructions is incompatible with quantified expressions and idiom chunks, as illustrated in (11c) and (12c), in sharp contrast with the true hyper-raising constructions discussed in section 2 (cf. (11b) and (12b)).⁷

- (11) a. **Duas crianças, a babá me disse que adoeceram.* Topic-construction
 two children the baby-sitter me told that fell-sick
 ‘The baby-sitter told me that two children fell sick.’
 b. *Duas crianças parecem que adoeceram.* Hyper-raising
 two children seem-3PL that fell-sick-3PL
 ‘Two children seem to have fallen sick.’

⁶ The pronoun that doubles the matrix DP does not have to be third person, as shown by the data in (i) (from Duarte (2003, 2004)), attested in a corpus of spoken language.

- (i) a. *Eu pareço que eu vou explodir de tanta raiva.* (Duarte 2004)
 I seem-1SG that I go-1SG explode of much anger
 ‘It seems that I’m going to explode in rage.’
 b. *Vocês parecem que vocês não pensam na vida.* (Duarte 2003)
 you-PL seem-3PL that you-PL not think-3PL in-the life
 ‘It seems that you don’t care about your lives.’

⁷ The contrast between (11b) and (11c) is not due to Montalbetti’s (1984) Overt Pronoun Constraint, for in BP an overt pronoun in an embedded subject position can be bound by a local quantified expression in constructions other than apparent hyper-raising constructions, as shown in (i). For further discussion on Montalbetti’s effects in BP, see Ferreira (2000, 2004)

- (i) [*Duas crianças*]_i disseram que elas_i adoeceram
 two children said that they fell-sick
 ‘Two children said they fell sick.’

- c. **Duas crianças parecem que elas adoeceram.* Apparent hyper-raising
 two children seem-3PL that they fell-sick-3PL
 ‘Two children seem to have fallen sick.’
- (12) a. **O pau, o João disse que vai comer feio.* Topic-construction
 the stick the João said that goes eat ugly
 ‘João said that there’s going to be a big fight.’
- b. *O pau parece que vai comer feio.* Hyper-raising
 the stick seems that goes eat ugly
 ‘It seems that there’s going to be a big fight’
- c. **O pau parece que ele vai comer feio.* Apparent hyper-raising
 the stick seems that it goes eat ugly
 ‘It seems that there’s going to be a big fight’

On the other hand, like standard subjects and unlike topics, the matrix DP in apparent hyper-raising constructions gives rise to Principle C effects with respect to epithets and demonstratives:⁸

- (13) a. Topic-construction:
 [*esses senadores*]_i, *parece que* [*os idiotas*]_i, *vão ser reeleitos*
 these senators seem-3SG that the idiots go-3PL be reelected
 ‘As for the senators, it seems that the idiots will be reelected.’
- b. Apparent hyper-raising:
 **[esses senadores]*_i, *parecem que* [*os idiotas*]_i, *vão ser reeleitos*
 these senators seem-3PL that the idiots go-3PL be reelected
 ‘As for the senators, it seems that the idiots will be reelected.’
- (14) a. Topic-construction:
 [*os senadores radicais*]_i, *parece que* [*esses*]_i, *vão ser reeleitos*
 the senators radical seem-3SG that these go-3PL be reelected
 ‘As for the radical senators, it seems that they will be reelected.’
- b. Apparent hyper-raising:
 **[os senadores radicais]*_i, *parecem que* [*esses*]_i, *vão ser reeleitos*
 the senators radical seem-3PL that these go-3PL be reelected
 ‘As for the radical senators, it seems that they will be reelected.’

In the next sections we will offer a unified analysis for true and apparent hyper-raising constructions in BP and entertain the hypothesis that despite their different properties, both constructions emerge as the outcome of the same grammatical innovation in the history of BP.

4. An analysis for the innovative structures of Brazilian Portuguese

It is a well known fact that BP verbal inflection underwent significant erosion across time, with the result that certain person/number distinctions ceased to be overtly expressed (see Galves (1984, 1993, 2001), Duarte (1993, 1995, 2000), and the references

⁸ Demonstratives behave like referential expressions in what concerns Principle C.

therein). Assuming Chomsky's (2000, 2001) Agree-based framework, Ferreira (2000, 2004) proposes that this weakening of verbal morphology led finite T in BP to be of two sorts, either ϕ -complete or ϕ -defective, thus becoming an optional Case-assigner. When the Case-assigning version of finite T is selected (i.e. a ϕ -complete T), it will assign nominative to the DP in its Spec, freezing it for further A-movement. If the non-Case-assigning version of T is selected instead (i.e. a ϕ -defective T), the DP in its Spec will have to undergo further movement in order to have its Case checked.

We will be assuming with Ferreira (2000, 2004) that once we find such defective finite T in a particular grammar, the subject in its Spec should in principle be able to agree with a higher probe, such as the matrix T in hyper-raising constructions.⁹ Moreover, given that Case-checking/valuation and the EPP can be dissociated in Chomsky's (2000, 2001) Agree-based system, if something can independently check the EPP feature of the matrix T, the embedded subject of a defective finite clause must then stay put, in accordance with Chomsky's (1995) Merge-over-Move economy condition. We now have all the ingredients to account for apparent hyper-raising.

We propose that apparent instances of hyper-raising with resumptive pronouns in BP are to be analyzed like existential constructions in Chomsky's (2000, 2001) system, where the expletive checks the EPP and the ϕ -complete T agrees with the associate valuing its Case, as sketched in (15) below. That is, an apparent hyper-raising sentence such as (16a) is in the relevant respects the structural correlate of the existential sentence in (15a) in that Case-valuation by $T_{\phi\text{complete}}$ via Agree is dissociated from the operation that checks the EPP feature of $T_{\phi\text{complete}}$.

(15) a. *There are two men in the room.*

b. $[_{TP} \text{there} [_{\text{are}+T_{\phi\text{complete}}} [_{[_{\text{two men}}]_{\text{Case}}} \text{in the room}]]]$

(16) a. *As crianças parecem que elas gostam da babá.*

the children seem-3PL that they like of-the baby-sitter

'It seems that the children like the baby-sitter.'

b. $[_{topP} [_{\text{as crianças}}] [_{TP} t T_{\phi\text{complete}} [_{VP} \text{parecem} [_{CP} \text{que} [_{TP} \text{elas} [_{T_{\phi\text{incomplete}}} t \text{gostam da babá}]]]]]]]]$

In (16b), the embedded subject moves from its θ -position to the embedded [Spec,TP] to check the EPP. Given that the selected embedded T in (16b) is not of the Case-assigning type (its ϕ -set is defective), the pronoun still has to check its Case-feature, which can be achieved through agreement with the matrix ϕ -complete T (see fn. 9). In true hyper-raising constructions, such agreement is accompanied by overt movement of the embedded subject to check the EPP of the higher clause. In (16b), however, a DP marked with "topic" Case merges with the matrix TP, checking the EPP, before moving to the position where it can have its topic Case checked (say, [Spec,*topP*], meant as a low (unmarked) *topic* position in the IP domain, distinct from the (marked) topic position in the left periphery of the C domain). Since the topic DP has only checked the EPP feature

⁹ As suggested by Ferreira (2000:55), one may assume that if C selects a ϕ -incomplete T, it should not define a strong phase (in the sense of Chomsky 2000, 2001), rendering the CP it heads transparent for "long distance" agreement. This suggestion becomes even more plausible if we adopt Chomsky's (2005) proposal that ϕ -features are associated with C (and only indirectly with T).

of the matrix T, leaving its ϕ -features unvalued, the matrix T can agree with the embedded subject and value its Case-feature as nominative, yielding what we have been calling an apparent hyper-raising construction.

The type of topic Case licensing displayed by the matrix DP is available in languages like BP, which exhibits a pervasive use of base-generated topics (as extensively discussed in the literature on BP).¹⁰ This analysis straightforwardly accounts for the mixed topic/subject properties of the matrix DP in apparent hyper-raising structures in BP. The fact that the matrix DP is generated in [Spec,TP] derives its A-properties; hence, it will induce Principle C effects (cf. (13b) and (14b)). On the other hand, the fact that the matrix DP moves to a topic position derives its incompatibility with quantified expressions and idiom chunks (cf. (11c) and (12c)).

Appearances are, however, very misleading in what concerns “resumption” and “subject-verb” agreement. The DP generated in the matrix [Spec,TP] must bind some element in its domain in order to be properly interpreted as a topic. However, once it is base-generated in an A-position, Principle C excludes R-expressions from being potential bindees (cf. (13b) and (14b)). Thus, only pronouns remain as licit candidates for the appropriate connection with the topic DP, yielding what appears to be an instance of a resumptive pronoun. Finally, the fact that the topic DP and the embedded pronoun must be co-referential due to discourse requirements gives the impression that the topic DP triggers agreement with the matrix T. However, the matrix T agrees with the embedded pronominal subject – as in instances of true hyper-raising – and not with the topic DP.

Independent evidence to support this analysis is provided by the contrast in (17) below. Since Agree is subject to minimality (see Chomsky (2000, 2001)), it is expected that T cannot skip a closer goal and agree with a more deeply embedded one. Thus, the ungrammaticality of (17b) is due to a minimality violation, as a closer goal (the embedded subject *a babá* ‘the baby-sitter’) intervenes between the matrix T and the pronoun with which it agrees.

- (17) a. *Essas crianças, parece que a babá fez elas comer a sopa.*
 these children seem-3SG that the baby-sitter made them eat the soup
 ‘It seems that the baby-sitter made these children eat the soup.’
 b. **Essas crianças parecem que a babá fez elas comer a sopa.*
 these children seem-3PL that the baby-sitter made them eat the soup
 ‘It seems that the baby-sitter made these children eat the soup.’

We will not discuss here the distributional and internal properties of the projection where the matrix DP moves to in order to check its topic Case. What we are labeling *topP* might as well be identified with the Σ P position of Martins (1994) or the SubjP position of Cardinaletti (1997, 2004). For our present concerns, the important point is that we are dealing with a position that must be kept distinct from the CP left-peripheral position of canonical topics. The *top* head, we claim, is crucially involved in the licensing of a particular type of Case feature, namely a “topic” feature.¹¹

¹⁰ See, among others, Pontes (1987), Kato (1989, 1998), Britto (1997, 2000), Galves (1998, 2001), and Negrão (1999).

¹¹ This is the hypothesis put forth by Martins (1994), while Cardinaletti (1997, 2004) proposes a “subject-of-predication” feature. There seems to be no substantial difference between the two approaches, as Martins (1994) and Cardinaletti (1997, 2004) also concur in placing the relevant projection in the left-periphery of

The distribution of second person pronouns in BP gives us the means to clearly separate the two positions for topics that we are postulating for BP. Consider the data in (18).

- (18) a. *Você, a babá me disse que está doente.*
 you_{strong} the baby-sitter me said that is sick
 ‘The baby-sitter told me that you are sick.’
- b. **Cê, a babá me disse que está doente.*
 you_{weak} the baby-sitter me said that is sick
 ‘The baby-sitter told me that you are sick.’
- c. *Cê parece que está doente.*
 you_{weak} seem that is sick
 ‘You seem to be sick.’
- d. *Cê parece que cê está doente.*
 you_{weak} seem that you_{weak} is sick
 ‘You seem to be sick.’

The strong pronoun *você* ‘you’ is allowed to occur in the CP left-peripheral Topic position (cf. (18a)), while the weak pronoun *cê* ‘you’ is barred from such position (cf. (18b)). *Cê* can however occur in both true (see Ferreira 2000, 2004) and apparent (see Martins and Nunes 2005) hyper-raising structures, as respectively shown in (18c) and (18d). According to our analysis of apparent hyper-raising in BP, the weak form *cê* in (18d) must have moved to a topic position lower than the Topic position occupied by the strong form *você* in (18a). The predicted positions for the two types of topics become transparent in sentences such as (19a) below, where the higher position is filled with *você* and the lower position with *cê*. (19b) further confirms that the weak pronoun cannot occupy the higher Topic position. Finally, (19b) also shows in tandem with (19c) that in the apparent hyper-raising construction, the matrix [Spec,TP] and the lower topic position cannot be independently filled. This is expected under our analysis because the pronoun in the matrix [Spec,TP] would not have its Case-feature valued.

- (19) a. *Você, cê parece que cê está doente.*
 you_{strong} you_{weak} seem that you_{weak} is sick
- b. **Cê, cê parece que cê está doente.*
 you_{weak} you_{weak} seem that you_{weak} is sick
 ‘You seem to be sick.’
- c. **Você, cê cê parece que cê está doente.*
 you_{strong} you_{weak} you_{weak} seem that you_{weak} is sick
 ‘It seems that you are sick.’

To summarize: hyper-raising in BP arises when a finite T fails to assign Case to its subject position, allowing the embedded subject to enter into an agreement relation with the matrix (ϕ -complete) T. If there is no element to check the EPP feature of the matrix T, such an agreement relation is coupled with subject-to-subject movement, yielding true hyper-raising constructions. On the other hand, if some other DP can check the EPP

evanescence of Romance-type pro-drop in BP are to be seen as related changes, as proposed by Ferreira (2000, 2004). In the course of language acquisition, the negative setting of the pro-drop parameter started a *chain reaction* that would make room for the appearance of the new kind of finite T.

The loss of Romance-type pro-drop in BP has been thought of by most authors as the by-product of a previous morphological change, namely the impoverishment of verbal inflection (see Kato and Negrão (2000) and the references therein). Against this main trend of thought, Negrão and Viotti (2000) interpret the BP particular behavior with respect to null referential subjects as rather the effect of a typological change in the direction of the so-called discourse-oriented languages.

Both perspectives allow us to trace a former scenario with BP still being a Romance-type pro-drop language while the increase in the frequency of overt pronominal subjects was reaching a critical point. Under the morphology-induced-change approach, null subjects would be decreasing in frequency because the impoverished verbal inflection *per se* could do little to avoid discourse ambiguity with respect to subject identification. On the other hand, under the alternative approach of Negrão and Viotti (2000), overt subjects would be progressively gaining ground over null subjects because BP was turning into a topic-prominent language. The important point to retain here is that, in one way or the other, a clear asymmetry between main clauses and certain embedded clauses is predicted to have emerged. Concretely, in complex sentences with co-referential subjects (cf. (20)), the tendency to fill in the subject position would apply to the matrix subject but not to the embedded subject. There are two possible sources for this asymmetry: first, the matrix subject, not the embedded one, qualifies as the sentential *topic*; second, the embedded subject can have its content unambiguously identified by a very close discourse antecedent, that is, the matrix subject.¹² So, there must have been a stage in the history of BP when matrix subjects tended not to be null while embedded co-referential subjects were regularly null. This stage in turn set in motion the sequence of changes that made BP a non-pro-drop language allowing hyper-raising.

The rationale for the changes is to be found in the context of language acquisition. At a “degree-0 stage” of the acquisition path, some BP learners must have taken certain unembedded structures as indicating that the Romance-type pro-drop parameter was to be set with the negative value.¹³ Afterwards, the same learners would have come across complex sentences regularly displaying embedded null subjects. If at this later developmental stage, backtracking from the earlier ‘non-pro-drop’ decision was not an option (in the spirit of Dresher (1999)), either the evidence of such complex sentences would be disregarded¹⁴ or they would be processed (thus acquired) as instances of hyper-raising. The hyper-raising choice would imply incorporating in the growing grammar an optional ϕ -defective finite T, in accordance with UG principles.¹⁵

¹² As is well known, in the pro-drop Romance languages the unmarked case for complex sentences with co-referential subjects is to have a null subject in the embedded clause.

¹³ The incremental learning model designed by Dresher (1999) allows a relativized version of degree-0 learnability (cf. Lightfoot (1991, 1999)) to be derived from the general tenet that “the series of grammars a learner traverses in the course of acquisition does not resemble a succession of states, but represents a movement from lesser to greater complexity along a number of dimensions” (Dresher 1999:44).

¹⁴ As argued by Lightfoot (1991, 1999) and Dresher (1999), learners are not compelled to match the input.

¹⁵ This picture of the emergence of the new syntactic properties in the grammar of BP echoes previous analyses of classical cases of syntactic change in the history of English (see Lightfoot 1991, 1999):

6. Syntactic change as *chain reaction*

In this paper we have discussed the appearance of some new syntactic structures in BP, where the matrix T assigns nominative Case to the embedded subject. These innovative structures surface as hyper-raising constructions if the embedded subject moves to check the EPP feature of the matrix T or apparent hyper-raising constructions if the embedded pronominal subject stays in the embedded [Spec,TP] and the EPP feature is independently checked by a topic DP. It was shown that BP, in contrast to EP, allows hyper-raising and apparent hyper-raising because in BP grammars finite T can be ϕ -defective, hence a non-Case-assigning head (like infinitival T).

We then explored the idea that the change arose in the context of language acquisition as a consequence of the interplay between the learning device, UG constraints and an earlier innovative move along the learning path. Our proposal takes a prior change, namely the loss of Romance-type pro-drop, to have prompted a chain reaction leading to the adoption of the new hyper-raising and apparent hyper-raising structures. The two sequential grammatical changes must have happened in the course of language acquisition with the former indirectly causing the latter.

Such chain reactions are expected as a consequence of the way in which grammars are built by learners and identify clear cases of syntactic changes syntactically induced. So under our analysis, hyper-raising was not prompted into BP syntax by some kind or other of “external” pressure, although that might have been the case with respect to the loss of Romance-type pro-drop. Because chain reactions are a function of the learning path, in the sense of Dresher (1999), empirical inquiry on the acquisition of syntax may open new avenues for isolating and understanding instances of “predictable” syntactic change. The reverse trend of investigation is also very auspicious, as the study of actual cases of syntactic changes identified as chain reaction can give us valuable insights on the ordering of the learning path.

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parameter settings (...) sometimes set off chain reactions. (...) Such chain reactions can be understood through the acquisition process: a child with the new verb-complement setting is forced by the constraints of Universal Grammar to analyze expressions like *I ordered the grass cut+infin* differently from the way they were analyzed in earlier generations, with *the grass* coming to be analyzed as the subject of the embedded clause. (Lightfoot 1991:167)

not only is a new grammatical property typically manifested by a cluster of new phenomena; it also sometimes sets off a chain reaction. An example from the history of English is the establishment of verb-complement order. I showed (Lightfoot 1991) that this led indirectly to the introduction of an operation analyzing *speak to*, *spoken to*, etc. as complex verbs. Such chain reactions can be understood through the acquisition process: a child with the new verb-complement setting is induced by the constraints of UG to analyze some expressions differently from the way they were analyzed in earlier generations. As a result, the new grammar comes to differ from the old in more than one way. (Lightfoot 1999:105)

where the distribution of cues results from an earlier grammatical shift (...) one has a “chain” of grammatical changes. One example would be the recategorization of the modal auxiliaries (...), which contributed to the loss of V to I (Lightfoot 1999:166)

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