

A PARAMETER-FREE UNDERSPECIFICATION APPROACH TO COMPLEMENTIZER AGREEMENT*UMA ABORDAGEM SUB-ESPECIFICADA, SEM PARÂMETROS, PARA A REALIZAÇÃO DE COMPLEMENTADORES**Yushi Sugimoto¹**Acrisio Pires²***ABSTRACT**

The issue of linguistic variation, corresponding to parametric variation in syntax, has not been explored comprehensively in the minimalist approach (but see e.g. ROBERTS, 2019 and references in). Two partially distinct, central views of linguistic variation in this framework are (i) variation comes from the lexicon (the so-called Borer-Chomsky conjecture, see BAKER, 2008) and (ii) variation is spelled out through externalization (or the Berwick-Chomsky conjecture). In this paper, we explore a third view of linguistic variation, invoking underspecification of rule ordering in narrow syntax, based on Obata et al. (2015). To implement this approach, we compare two languages, Brazilian Portuguese (BP) and Cabo Verdean Creole (CVC), regarding complementizer agreement in argument and adjunct wh-questions. Whereas CVC requires an overt complementizer in argument wh-questions, BP shows a general pattern of optionality in both argument and adjunct wh-questions. We argue that both systems can be accounted for in terms of rule-ordering underspecification in the grammar.

KEYWORDS: Generative grammar (minimalism). Syntactic variation; Underspecification of rule ordering; Complementizer agreement.

RESUMO

O tema da variação linguística, correspondendo à variação paramétrica na sintaxe, não tem sido explorado de modo compreensivo na abordagem minimalista (veja-se, no entanto, ROBERTS, 2019 e as referências lá citadas). Duas visões centrais e parcialmente distintas da variação linguística nesse arcabouço são: (i) a variação se origina no léxico (a chamada conjectura Borer-Chomsky, cf. BAKER, 2008) e (ii) a variação reside na externalização (a conjectura Berwick-Chomsky). Neste artigo, exploramos uma terceira visão da variação linguística, invocando a subespecificação do ordenamento de regras na sintaxe estrita, baseada em Obata et al. (2015). Para implementar essa abordagem, comparamos duas línguas, o português brasileiro (PB) e o crioulo cabo-verdiano (CCV), quanto à concordância do complementador em perguntas-WH envolvendo argumento e adjunto. Enquanto o CCV exige a expressão do complementador nas perguntas-WH, o PB apresenta um padrão geral de opcionalidade nas perguntas-WH tanto de argumento quanto de adjunto. Defendemos que os dois sistemas podem ser explicados em termos de subespecificação do ordenamento de regras na gramática.

PALAVRAS-CHAVE: Gramática gerativa. Minimalismo. Sintaxe. Variação. Subespecificação de traços. Concordância. Complementadores.

Introduction

In this paper, we analyze complementizer realization, which we will treat as an effect of complementizer agreement, by comparing Brazilian Portuguese (BP) and Cabo Verdean Creole (CVC). The morphological realization of the complementizer is partially different between these

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languages. We build upon Obata et al.'s (2015) analysis of CVC and argue that the crosslinguistic difference we consider in this paper comes from variation in the order of application of rules in the narrow syntax. However, we extend Obata et al.'s (2015) approach by adopting a derivational model where derivations proceed in a strictly cyclic way. In addition, we show how the optional realization of a complementizer in *wh*-questions in BP can result from variation in rule order application within the same language. Finally, after unifying the analysis of complementizers in argument *wh*-questions in BP and CVC, we extend the analysis to adjunct *wh*-questions in each language, which were not accounted for in Obata et al. (2015).

Before moving to our analysis of complementizer alternation phenomena, we briefly review the current state of the minimalist approaches to linguistic variation. Under the minimalist framework (CHOMSKY, 1995 and much later work), there are at least three main approaches to linguistic variation;

- (1) a. The Borer-Chomsky Conjecture (e.g. BORER, 1984; CHOMSKY, 1995; BAKER, 2008)
- b. The Berwick-Chomsky Conjecture (e.g. BERWICK and CHOMSKY, 2011, 2016)
- c. The Third-Factor Principle Approach (e.g. BIBERAUER, 2019a, ROBERTS, 2019)

The first approach (1a) indicates that the linguistic variation comes from the lexicon; more specifically, the feature make-up of functional categories (cf. FUKUI, 1995). For example, some languages might have a formal-feature *F* on a certain functional category *X*, then *F* has to be checked/valued before it is sent to the interfaces, whereas other languages might not have *F*. As for (1b), Berwick and Chomsky claim that different varieties of languages result from variation in how externalization takes place, assuming that the core component of the linguistic system (i.e., narrow syntax) is uniform (CHOMSKY, 2001). Combining these two approaches to linguistic variation, a theory of linguistic variation would provide an account of (micro-)parameters based on the feature specification of individual lexical items (1) and language-specific variation based on morpho-phonological externalization (1b), although the existence of macro-parameters is not clear in either approach. If macro-parameters exist, then there must be a theory in which macro-parameters are built as a component of UG in addition to Merge. This is not desirable given the strong minimalist thesis (CHOMSKY, 2000), by which Language is an optimal solution to the interface conditions, or due to evolvability, a condition by which UG must have naturally evolved as a biological system (CHOMSKY, 2021). If parameters evolved in our mind/brain system, then a question is how many parameters could have evolved within the evolutionary time span that was necessary for the emergence of human language? Given the evolvability challenge, there is a possibility that macro-parameters do not exist at all (CHOMSKY, 2017).

Another approach to linguistic variation is that parameters 'emerge' as consequences of other properties, without having to be encoded as basic properties of UG. Instead of taking parameters as given properties of UG, the second and the third factor for the development of language (CHOMSKY, 2005) could derive parameters (e.g., ROBERTS et al., 2014; BIBERAUER and ROBERTS, 2015;

BIBERAUER, 2019a,b). In a similar vein, Obata et al. (2015) argue that the rule ordering in narrow syntax is not fixed by UG, but the interaction between the first, second and third factors that determine the human knowledge of language (CHOMSKY, 2005) derive linguistic variation. Under this approach, rule ordering is underspecified or not specified by UG, but arises as the result of other second or third factors (experience or principles not specific to the faculty of languages).

In this paper, we explore a view of linguistic variation that invokes underspecification of rule ordering in narrow syntax, along the lines of Obata et al. (2015). We expand upon this approach by comparing Brazilian Portuguese (BP) and Cabo Verdean Creole (CVC) regarding the overt vs. null realization of complementizers, which we analyze as a type of complementizer agreement, following Obata et al. and other related work. Whereas CVC requires an overt complementizer in argument *wh*-questions, BP shows a pattern of optional complementizer realization in both argument and adjunct *wh*-questions. We reconcile the analysis of both systems within an approach built upon rule-ordering underspecification in the grammar.

This paper is organized as follows: Section 1 summarizes Obata et al.'s (2015) approach to complementizer alternation in CVC. Section 2 modifies Obata et al.'s approach in view of a strictly cyclic derivational approach to phase computation (CHOMSKY, 2015). Section 3 deals with the complementizer agreement in BP, in comparison to CVC.

1. Complementizer realization in CVC

Given a minimalist architecture of the narrow syntax, there is a structure-building operation Merge that generates syntactic structures. Phase-based derivations are assumed, as below.

- (2) Phase Theory (cf. CHOMSKY, 2007, 2008, 2013)
 - a. The structure building proceeds phase by phase
 - b. Phase heads are C and v^* ³
 - c. Phase heads have unvalued features (e.g., unvalued phi-features)
 - d. Feature inheritance takes place from a phase head to a non-phase head (RICHARDS, 2007; CHOMSKY, 2008)

- (3) Phase Impenetrability
 - a. The complement of a phase head becomes inaccessible (i.e., Phase Impenetrability Condition: PIC) in the next higher phase (CHOMSKY, 2000, 2001)
 - b. The complement of the phase head is transferred to the interfaces as part of Transfer. (CHOMSKY, 2004)

We also assume with Chomsky (2008) that there is a syntactic operation Agree (CHOMSKY, 2000, 2001) to value unvalued features.

³ As for the nominal domain, D/n might be a phase head. See e.g. Chomsky, 2005; 2007 for details. In this paper, we will not discuss nominal structures.

- (4) Agree (CHOMSKY, 2000, 2001)
- a. The probe P has (un)valued features and the goal G have matching (un)valued features
 - b. P c-commands G.
 - c. G is the closest goal to P.⁴

Thus, we have Phase theory and Agree, as well as Merge. Move is an instance of Merge, namely, internal Merge (CHOMSKY, 2004). Our derivations are based on these assumptions, taking (internal/external) Merge and Agree as operations or rules available as part of UG. More specifically, what are the possible derivations given that rule (e.g., AGREE; MERGE) ordering is underspecified, e.g., is Move-Agree order possible in addition to Move-Agree, for instance?

The final assumption that we adopt in this paper comes from Takahashi and Gračanin-Yuksek (2008), which is adopted in Obata et al. (2015). Takahashi and Gračanin-Yuksek (2008) propose that when the complementizer and wh-phrase agree in both Q and phi-features (in Haitian Creole (HC), in their analysis), the complementizer is morphologically realized (as *ki* in HC).

- (5) “C is spelled out as *ki* only if both *uw*h and *uphi*-features on C are checked off by a single goal.” (TAKAHASHI and GRAČANIN-YUKSEK, 2008, p. 229)

The assumption here, based on Germanic languages (CARSTENS, 2003; HAEGEMAN and van KOPPEN, 2012) and Bantu languages (CARSTENS, 2005), is that the C⁰ head possesses unvalued phi-features that are valued under Agree, as in Kilega:

- (6) Kilega
- Bikí bi-á-kás-íl-é bábo bíkulu mwámí mu-mwílo?
 8what 8ca-a-give-perf-fv 2that 2woman 1chief 18-3village
 ‘what did those women give the chief in the village’ (CARSTENS, 2005, p. 220)

Carstens (2005) argues that (6) shows the complementizer agreement with the wh-phrase. Let’s consider corresponding derivations in Cabo Verdean Creole (CVC). CVC also has a complementizer *ki* that is obligatorily realized in both subject and object wh-phrases (see BAPTISTA and OBATA, 2015).

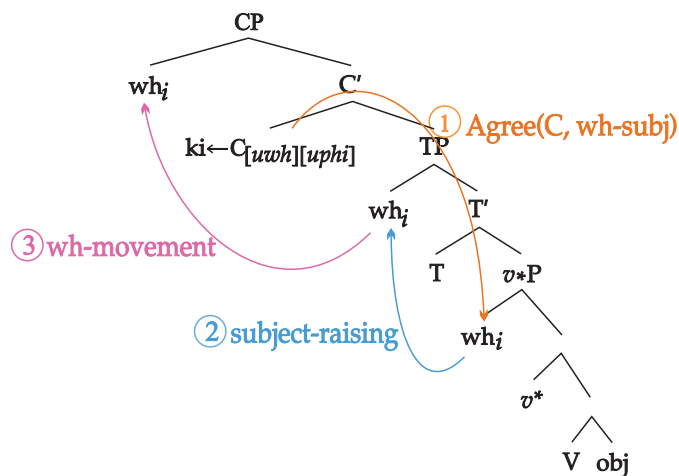
- (7) a. Kenhi ki odja João?
 who COMP see João
 ‘Who saw João?’
- b. *Kenhi odia João?
 Who see João
 ‘What saw João?’

⁴ See also Hiraiwa (2005) for relevant discussion.

- (8) a. Kuze ki nhos odja?
 What COMP you see
 ‘What did you see?’
- b. *Kuze nhos odja?
 what you see
 ‘What did you see?’ (OBATA et al., 2015, pp. 5-6)

Obata et al. (2015) argue that *ki* is spelled-out when C agrees with a single element that has both *wh*- and *phi*-features. They assume that the properties of the complementizer are similar to HC (see their paper for the corresponding analysis of HC, based on TAKAHASHI and GRAČANIN-YUSEK, 2008). Obata et al. (2015) argue that the steps of the derivation for subject *wh*-extraction in CVC are as follows (starting at the point where the C head is merged):

- (9) a. {C, {T, {wh, {v*, {V, Obj}}}}}}
 b. External Merge (EM) of C
 c. Agree (C,wh-subj)
 d. Internal Merge (IM) of the *wh*-subject to [spec,TP]
 e. IM of the *wh*-subject to [spec,CP]
 f.

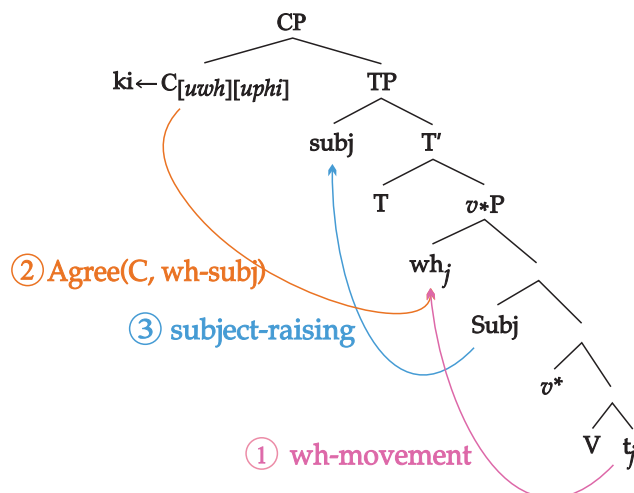


C agrees with the *wh*-subject in [spec,v*P] both in *wh*-feature and *phi*-features. According to Obata et al. (2015), this triggers the morphological realization of *ki*. After Agree takes place between C and *wh*-phrase, the *wh*-phrase moves up to the [spec, CP] via [spec, TP].

Next is the case of object *wh*-extraction in CVC (OBATA et al., 2015, p. 8).

- (10) a. {C, {T, {wh_j, {subj_i, {v*, {V,wh<sub>j
 b. Agree (C,wh)
 c. IM of the *wh*-phrase to [spec,CP]
 d. IM of the subject to [spec,TP]</sub>

e.



Assume that at the v^* phase level, the object wh -phrase moves to the edge of $[spec, v^*P]$, which is higher than the subject in $[spec, v^*P]$. After C is introduced, *Agree* takes place. C finds the higher element, namely wh -phrase. Notice that *Agree* takes place before subject raising from $[spec, v^*P]$ to $[spec, TP]$. Given this rule ordering, C agrees with a single element, namely, the wh -phrase in terms of both wh -feature and ϕ -features, which again triggers the morphological realization of ki .

To summarize, Obata et al.'s (2015) point out that, in both HC and CVC, the morphological realization of the complementizer ki depends on how C agrees with the wh -phrase; the complementizer ki is spelled out when C agrees with a single element (i.e., a wh -phrase) in both wh -feature and ϕ -features (following TAKAHASHI and GRAČANIN-YUKSEK, 2008, (5)). The subject raising takes place after *Agree*. In overt C cases, C Agrees with the wh -object in both wh - and ϕ -features, which explains the morphological realization of ki .

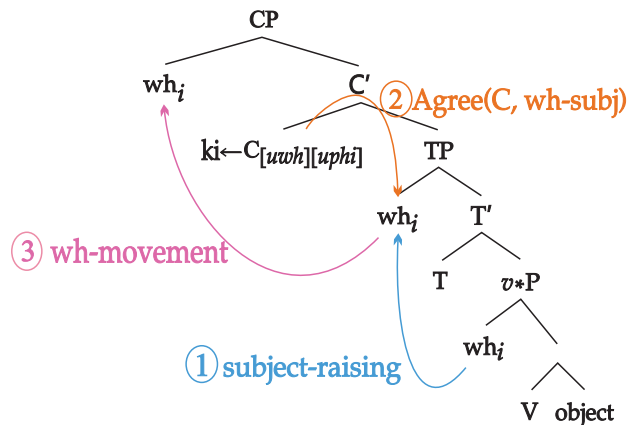
2. Strictly cyclic derivations

One conceptual question arises regarding the derivations of CVC in (9) and (10). In both derivations, C agrees with the wh -phrase before subject raising to $spec, TP$, which is a countercyclic movement, rejected in Chomsky (2015).

Let's assume a cyclic derivation which wasn't explored in Obata et al. (2015) and Epstein, Obata, and Seely (2018). In Chomsky (2015), subject raising takes place before reaching the phase level (i.e. before merge of a phase head C). Therefore, under this strictly cyclic approach, subject raising has to apply before C is introduced in the derivation.

Considering conceptual arguments for strictly cyclic derivations, we propose the following derivation, which shows strictly cyclic movement in the wh -subject extraction in CVC. That is, the subject raises to the $[spec, TP]$ before C is introduced.

- (11) a. $\{C, \{wh_i, \{T, \{v^*, \{wh_i, \{V, Obj\}\}\}\}\}\}$
 b. IM of the subject to [spec,TP]
 c. EM of C
 d. Agree(C,wh-subj)
 e. IM of the wh-subj to [spec, CP]
 f.

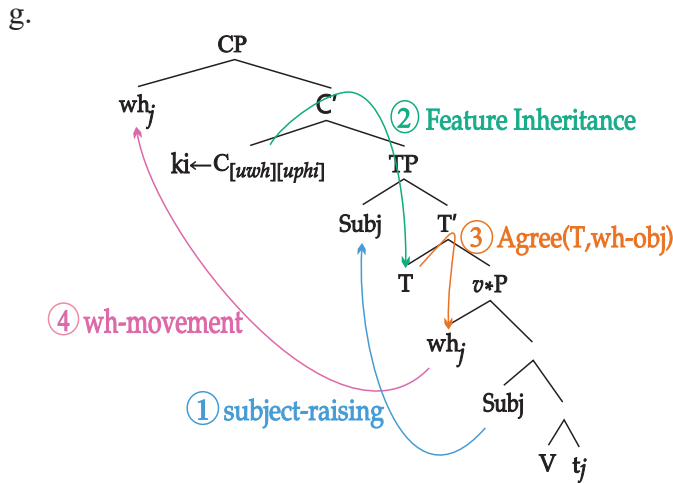


Since the *wh*-subject moves to the [spec,TP] before C is introduced, when C seeks the closest element, the *wh*-subject is found and C agrees with it in terms of both *wh*-feature and phi-features. Therefore, *ki* is morphologically realized. This derivation is representationally similar to (9). In (9), subject raising follows C-Agree, but counter-cyclic movement is involved in Obata et al. (2015). That is, in Obata et al.'s derivation in (9), only after C is introduced in narrow syntax, does subject raising to [spec,TP] take place. We propose here that (11) is the legitimate derivation for *wh*-subject extraction in CVC to capture the morphologically realized *ki*.

The next derivation is *wh*-object extraction. The strictly cyclic derivational model in Chomsky (2015) does not allow counter-cyclic subject movement, therefore we need to find another derivation where C agrees with a single element, namely, the *wh*-object. We will show two possible derivations, though we will adopt the second derivation as the expected one.

The first possible derivation for *wh*-object extraction in CVC is shown below.

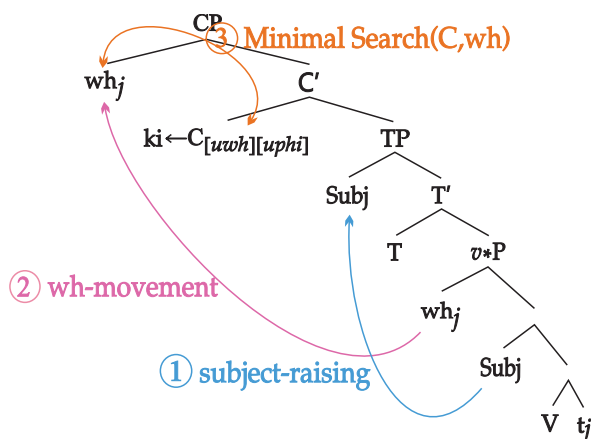
- (12) a. $\{wh_j, \{C, \{subj_i, \{T, \{subj_i, \{v^*, \{wh_j, \{V, wh_j\}\}\}\}\}\}\}\}$
 b. IM of subj to[spec,TP]
 c. EM of C
 d. Feature inheritance
 e. Agree (T,wh-obj)
 f. IM of the *wh*-obj to [spec,CP]



In order to make the derivation strictly cyclic, the subject has to move to [spec,TP] before C is introduced. From C, the closest goal would be the raised subject. However, in the wh-object extraction, this is not desirable since C has to agree with the wh-object in both wh- and phi-features. Suppose feature inheritance applies and the relevant features transmit from C to T before Agree takes place. Then T agrees with the wh-object in both wh- and phi-features, whereas the wh-phrase moves to [spec,CP]. Unfortunately, this derivation cannot correctly predict that the complementizer *ki* is morphologically realized since what agrees with the wh-object is T, not C.

Alternatively, we consider that the following derivation is the accurate one.

- (13) a. $\{wh_j, \{C, \{subj_i, \{T, \{subj_i, \{v^*, \{wh_j, \{V, wh_j\}\}\}\}\}\}\}\}$?
- b. IM of subj to [spec,TP]
- c. EM of C
- d. IM of the wh-obj to [spec,CP]
- e. Minimal Search/MS (C,wh-obj)
- f.



First, subject raising takes place. Then C is introduced, and *wh*-movement takes place to CP. C directly agrees with the *wh*-object in [spec,CP] in a spec-head relation via minimal search, which is introduced as an alternative to allow Agree to take place. In fact, Baptista and Obata (2015) argue that the complementizer *ki* in CVC is realized only in a spec-head configuration. Since *wh*-feature and *phi*-features on C are valued by a single element (i.e., *wh*-object), the complementizer *ki* is again morphologically realized.

To summarize, this and the previous subsection discussed the possible derivations of complementizer agreement in CVC in terms of different derivational models (CHOMSKY, 2013 and CHOMSKY, 2015). Obata et al. (2015) explore two different rule orderings in CVC that yield distinct outcomes regarding the realization of the complementizer *ki*, based on Takahashi and Gračanin-Yuksek (2008). Our particular interest was how to capture *wh*-object extraction in CVC, since in order to yield the derivation, counter-cyclic movement was assumed in Obata et al. (2015). However, Chomsky (2015) does not allow counter-cyclic movement because it is an illegitimate operation not possible as the result of the Merge operation. We proposed that we can avoid counter-cyclic movement assuming minimal search, and still capture the derivation where the *wh*-object in CVC can agree in all features with C, so the complementizer *ki* is morphologically realized, as shown in (13).

In the next subsection, we analyze a pattern of complementizer agreement in Brazilian Portuguese (henceforth BP), which was not previously explored in an approach to variation in rule ordering. In the BP pattern, complementizer realization is optional in both *wh*-subject extraction and *wh*-object extraction.

3. On Optional complementizer in *wh*-questions

In this section, we extend and generalize Takahashi and Gračanin-Yuksek's (2008) proposal, as in (5), repeated as (14).

- (14) C is morphologically realized only if both *uwh* and *u ϕ* -features on C are valued/checked off by a single goal (e.g., a *wh*-subject or a *wh*-object).

In a more specific way, we propose the following.

- (15) In Brazilian Portuguese (BP), the complementizer *que* 'that' in *wh*-questions is morphologically realized on the main clause C only when C is valued by Agree with another element in both *uwh* and *uphi*-features.

Unlike CVC, BP shows another relevant pattern. The complementizer is optionally realized in both subject *wh*-questions and object *wh*-questions.

- (16) Brazilian Portuguese
- a. Quem (que) viu o João?
who (C) saw the João?
'who saw João?'
 - b. Quem (que) você viu?
whom (C) you saw
'who did you see?'

This is different from, for instance, Standard French, where the overt complementizer *qui/que* cannot occur with the *wh*-subject/object in the matrix clause, as shown below:

- (17) French
- a. *Quel garçon qui est venu?
which boy C has come
'which boy has come?'
(TAKAHASHI and GRAČANIN-YUKSEK, 2008, p. 234, fn12)
 - b. *Qui que tu as vu?
who that you have seen
'Who did you see?' (KAYNE, 1976, cited from TORRENCE, 2013, p. 245, (37a))

In BP, an optional *wh-in-situ* pattern is also allowed, but the complementizer is not morphologically realized in such cases.

- (18) Você viu quem?
you saw who
'Who did you see?' (see PIRES & TAYLOR, 2007; KATO, 2013)

The *wh-in-situ* question can be interpreted as an ordinary question or an echo question.⁵ Therefore, in BP, when the *wh*-phrase is fronted, the morphological realization of the main clause complementizer is optional, whereas the main clause complementizer cannot be realized when the *wh*-phrase stays *in-situ*.

In what follows, we argue and demonstrate that the optional realization of the complementizer in a main clause in BP *wh*-questions is due to the different rule orderings as well. However, in the *wh-in-situ* cases, we argue that there is no way to realize the complementizer, since there is a closer candidate for Agree with C, therefore, an intervention effect takes place.

3.1. Rule orderings for movement of *wh*-subjects and *wh*-objects

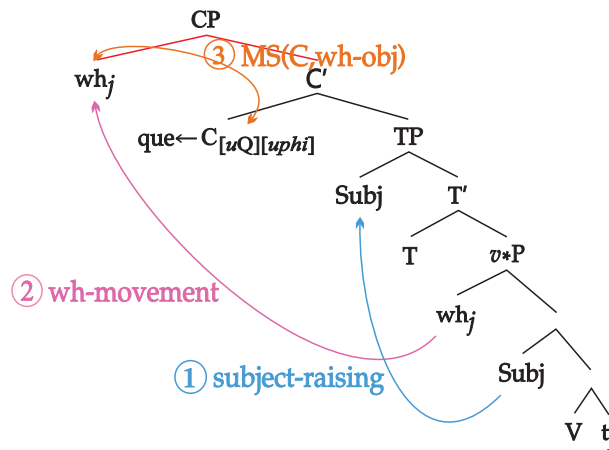
The first relevant pattern in BP is the presence of the complementizer with a *wh*-object. This is same as CVC, not the same as HC.

⁵ Which depends on prosody. See Pires and Taylor (2007), Kato (2013) for details.

(19) Quem que você viu?⁶

whom C you saw
'who did you see?'

- $\{C, \{\text{subj}_i, \{T, \{\text{subj}_i, \{v^*, \{\text{wh}_j, \{V, \text{wh}_j\}\}\}\}\}\}\}$
- IM of subj to [Spec,TP]
- EM of C
- IM of the *wh*-object to [spec,CP]
- MS (C,wh-obj)
-



In this derivation, as we proposed for the *wh*-object extraction in CVC, the subject raises to [Spec,TP]. Then the object *wh*-phrase moves to [spec,CP], and C agrees with the *wh*-object in both *wh*-feature and phi-features via minimal search (matching a spec-head configuration), which results in the morphological realization of *que*.

Next, consider the absence of the complementizer in the *wh*-object extraction case.

(20) Quem você viu?

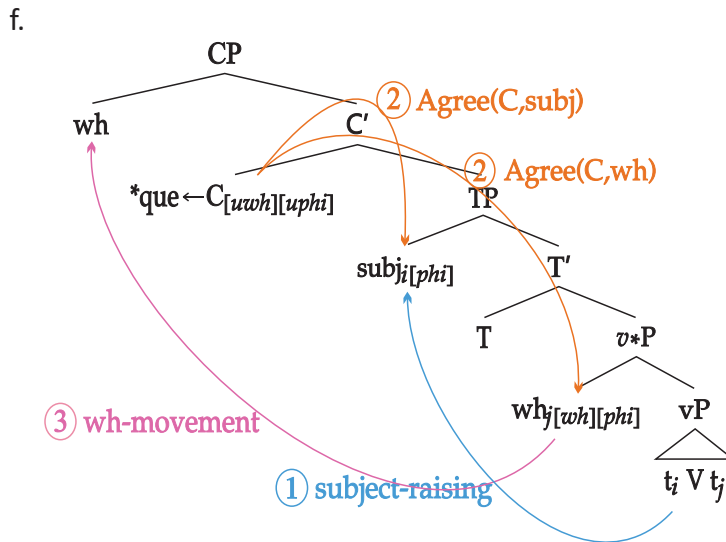
whom you saw
'who did you see?'

- $\{C, \{\text{subj}_i, \{T, \{\text{wh}_j, \{\text{subj}_i, \{v^*, \{V, \text{wh}_j\}\}\}\}\}\}\}$
- IM of subj to [spec,TP]
- c, Agree (C,subj)
- Agree (C,wh-obj)
- IM of the *wh*-obj to [spec,CP]

⁶ One anonymous reviewer points out that PP *wh*-extraction needs more elaboration in terms of minimal search. The following example is provided by the reviewer.

- De quem que você gosta.
of whom C you like
'who do you like?'

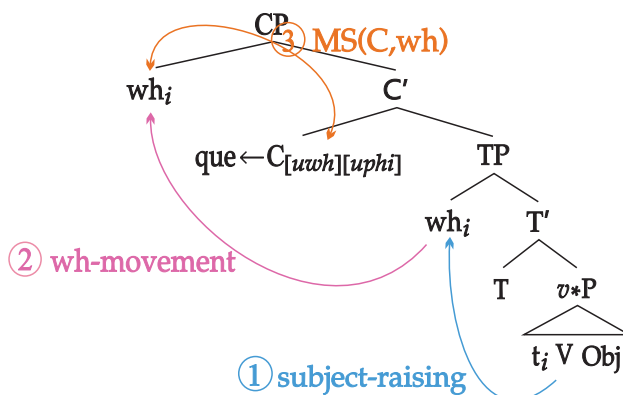
Although the paper does not propose an analysis of *wh* PP pied-piping, relevant points were previously discussed in the minimalist literature. See Cable (2010), Narita (2014).



In this derivation, C agrees with the subject in terms of phi-features since subject raising takes place before Agree with the wh-phrase. At the same time, C also agrees with the object in wh- feature. Since C does not agree with the wh-object in both phi-features and wh-feature, the complementizer is not morphologically realized.

Let's consider now the presence of the complementizer *que* with the wh-subject. This is the same as in CVC wh-subject questions.

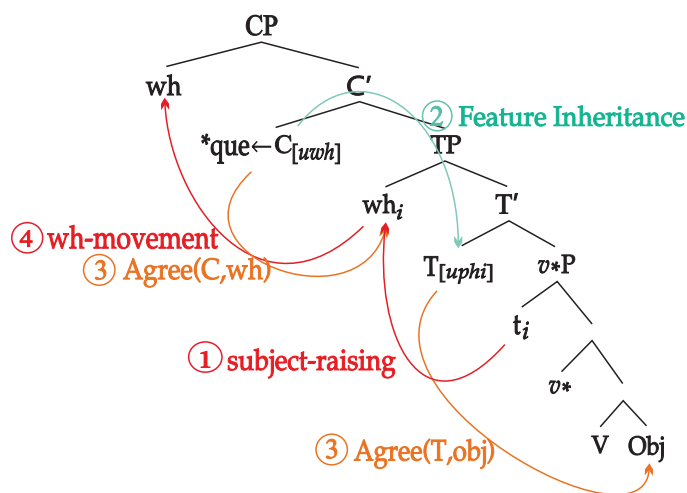
- (21) Quem que viu o João?
 who C saw the João?
 'who saw João?'
- {C, wh_i {T, {wh, {v*, {V, Obj}}}}}
 - IM of wh-subj to [spec,TP]
 - EM of C
 - IM of wh-subj to [spec,CP]
 - MS (C,wh-subj)
 -



The *wh*-subject moves to [spec,TP], and C agrees with the subject. Then *wh*-movement takes place. In this derivation, C agrees with the *wh*-subject in both *wh*- and phi-features, thus *que* is morphologically realized.

The last argument *wh*-movement pattern is the absence of the complementizer with the *wh*-subject.

- (22) Quem viu o João?
 who saw the João?
 ‘who saw João?’
- {C, {wh_i, {T, {wh_i, {v*, {V,obj}}}}}}
 - IM of the *wh*-subj to [spec,TP]
 - EM of C
 - Feature inheritance(C-T)
 - Agree(T,obj)⁷
 - Agree(C,wh)
 - IM of the *wh*-subj to [spec,CP]
 -



This is a pattern where the *wh*-subject moves to [spec,CP] without phi-agreement with C, and C agrees with the *wh*-subject only in *wh*-features. Interestingly, neither HC nor CVC have this pattern.^{8,9}

⁷ One might wonder why the T-object agreement pattern would not override subject-T agreement, a question we leave open for further research. An alternative is to have T agree with the subject before *wh*-subj raises to agree with C, to match the pattern of T-subject agreement.

⁸ Another possible derivation is that the sentence involves a cleft formation, as suggested by Kato (2013)

- (i) (É) quem (que) chegou?
 is who that arrived
 ‘Who has arrived?’

As the example above shows, Kato (2013) needs to argue that in such a derivation the copula would later be deleted.

⁹ A reviewer suggests that the lack of morphological realization of *que* in *wh*-object extraction is degraded, whereas *wh*-subject extraction without *que* is not degraded. There are possible dialectal differences in such cases, which we

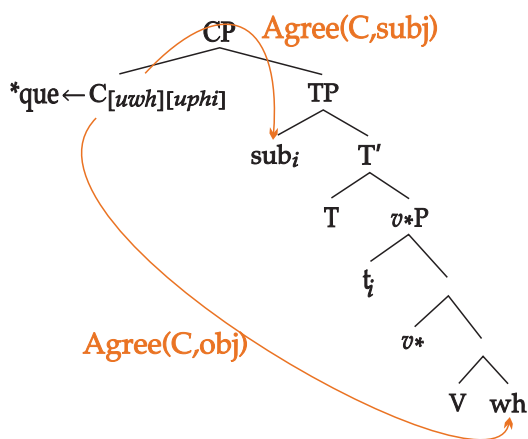
3.2. A *wh-in situ* pattern

As we pointed out before, the *wh-in situ* pattern shows no realization of the complementizer in main clauses in BP.

- (23) Você viu quem?
 you saw who
 ‘Who did you see?’

The derivational steps that we propose to account for this generalization with object *wh-in-situ* are shown below.

- (24) Você viu quem?
 a. $\{C, \{\text{subj}_i, \{T, \{\text{subj}_i, \{v^*, \{V, \text{wh}\}\}\}\}\}\}$
 b. EM of C
 c. Agree (C, subj)
 d. Agree (C, *wh-obj*)
 e.



Since C finds the subject to value the unvalued phi-features, C only agrees with the *wh-obj* in terms of the *wh*-feature, which results in non-realization of the complementizer. The pattern that accounts for what corresponds to subject *wh-in-situ* would be akin to the *wh-subject* case in (22), just without the step of overt *wh*-movement to Spec, CP.

3.3. Adjunct *wh*-questions

We have analyzed multiple patterns regarding argument *wh*-questions (including *wh-in-situ*

leave for future research. Furthermore, the reviewer points out that the overt realization of a complementizer blocks the presence of a weak pronominal. Such a pattern can be explained by the fact the weak pronominal *cê* ‘you’ (a reduced form of *você* ‘you’) is only possible in non-standard dialects, whereas the lack of realization of the complementizer *que* in the main clause in *wh*-questions is more characteristic of a formal or standard dialect of BP.

- (i) Quem *(que) *cê* viu?
 whom C you saw
 ‘Who did you see?’

clauses). Yet, there are some patterns that we have not explored yet, regarding adjunct *wh*-movement.¹⁰ Consider the following example.

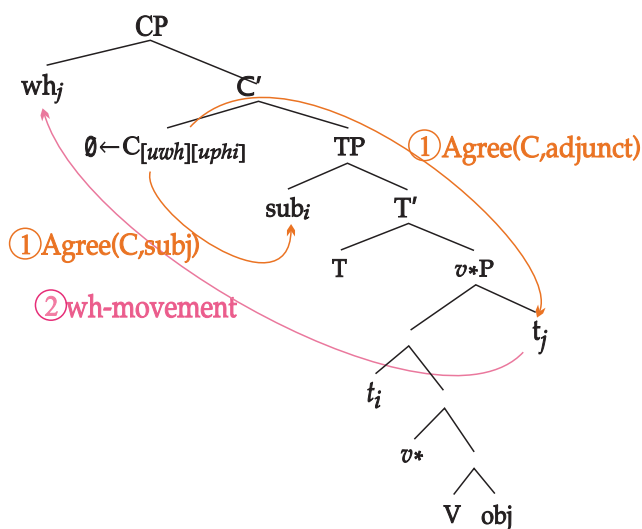
- (25) Desde quando (que) você gosta dele
 Since when (that) you like him
 ‘Since when do you like him?’

Notice that *wh*-adjuncts do not have ϕ -features. In this case, the generalization (5) does not seem to apply in the same form to adjunct *wh*-questions. Suppose that (5) can be extended in the following way.

- (26) When C only agrees with a single element (meeting the requirement that it will agree in all features with a single goal), C will be morphologically realized.

Assuming this, the optional realization of the complementizer can be captured in general, accounting for cases in which C agrees with a single goal and is morphologically realized in *wh*-argument questions, as discussed in previous sections. In what follows, we will show the corresponding derivations for *wh*-adjunct examples. The first example shows no realization of the complementizer, corresponding to (25) without an overt C.

- (27) Desde quando você gosta dele
 Since when you like him
 ‘Since when do you like him?’
- $\{wh_j, \{C, \{subj_i, \{T, \{subj_i, \{v^*, \{V, obj\} wh_j\}\}\}\}\}\}$
 - EM of C
 - Agree(C, subj) (in phi-features)
 - Agree (C, *wh*-adjunct) (in *wh*-feature)
 - wh*-movement
 -

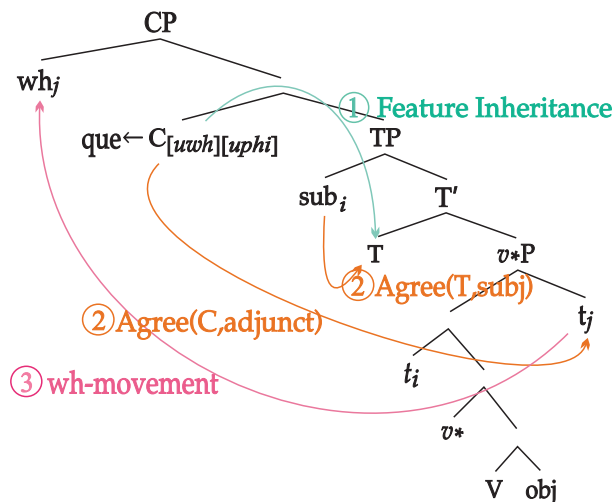


¹⁰ We thank an anonymous reviewer for asking about this pattern.

In this derivation, C agrees with the subject and the *wh*-adjunct separately, which results in no morphological realization of the complementizer.

Next is the case of the overt realization of the complementizer. In this case, feature inheritance takes place first, then C maintains only its *wh*-feature. In this case, C only agrees with the *wh*-adjunct phrase, which satisfies (26).

- (28) Desde quando que você gosta dele
 Since when that you like him
 ‘Since when do you like him?’
- $\{wh_j, \{C, \{subj_i, \{T, \{subj_i, \{v^*, \{V, obj\} wh_j\}\}\}\}\}\}$
 - EM of C
 - Feature Inheritance of phi-features from C to T
 - Agree(T, subj) (in phi-features)
 - Agree (C, *wh*-adjunct) (in *wh*-feature)
 -



These two patterns reiterate the observation that the status of the C head and the timing at which it agrees with different elements determine whether the complementizer is overtly realized.

Interestingly, CVC shows a pattern in which the realization of *ki* with adjunct-*wh* words is also optional, similar to BP, but unlike argument *wh*-questions in CVC.¹¹

- (29) a. Undi bu bai?
 where you go
 ‘Where did you go’
 b. Undi ki bu bai?
 where ki you go
 ‘Where did you go.’

(OBATA et al. 2015, p. 5, fn8)

¹¹ Notice that Obata et al. (2015) point out the optionality of the realization of *ki*, although they don’t provide an account for this pattern.

Since the derivations for both patterns are identical to the BP *wh*-adjunct, we won't illustrate the derivation. Given the analysis above, the optionality of the realization of the complementizer with *wh*-adjuncts is captured by our analysis in both BP and CVC.

4. Conclusion

To summarize, we analyzed in a unified way the distribution of the complementizer *ki/que* 'that' in both argument and adjunct *wh*-questions in CVC and BP (See Table 1).

Table 1: The distribution of the complementizer in CVC and BP. () indicates optionality

	wh-subject	wh-object	wh-adjunct
CVC	ki	ki	(ki)
BP	(que)	(que)	(que)

This different distribution in the realization of the complementizer in CVC and BP can be captured by our proposed analysis, as the result of variation in the order of application (rule ordering) of Agree, feature inheritance, and movement.

In this paper, we expanded on alternatives to derive linguistic variation under the minimalist framework (CHOMSKY, 1995). Adopting an approach involving underspecification of rule ordering (OBATA et al., 2015), we accounted for the distinct and variable distribution of *wh*-complementizers in *wh*-questions in CVC and BP. In particular, this paper showed how this approach could account for the derivation of adjunct *wh*-questions in both languages, which were previously not captured in Obata et al. (2015).

Overall, this paper also develops a strictly cyclic derivational analysis of these phenomena in terms of complementizer agreement, extending a theory that does not assume parameter specification as part of UG, which is desirable, considering a third-factor restriction on UG, namely, evolvability.

An additional question is why BP grammar allows such optionality of complementizer realization in *wh*-questions (which is also observed in adjunct *wh*-questions in Cabo Verdean Creole). As we briefly addressed in our introduction, the principles and parameters approach may not be tenable in terms of evolvability. Even if parameters were possible, the optionality would not be accounted by them, under the view that parametric settings are binary and deterministic (yes or no, and not both). This limitation does extend to the underspecification approach developed here for complementizer realization, since it does not encode parameters as primitives, but only the variable ordering of operations in narrow syntax, which is enough to generate the range of legitimate/grammatical structures we considered. Alternative rule orderings might be fixed through language acquisition (though see OBATA and EPSTEIN, 2016; EPSTEIN et al., 2018 on 'intra'-variation). Concerning the generalized optionality of an overt complementizer in *wh*-questions in BP, it might be the case that it maintains multiple orderings (or underspecification) of rule application due to dialectal variation. However, the

underspecification approach we developed in principle allows the variable rule orderings to co-exist in the same grammar, as we observed not only in BP, but also in CVC adjunct wh-questions, offering an account of variability within the same grammar.¹² This is a welcome outcome, which is also hard to implement in theories assuming parameters as primitive properties of universal grammar.

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¹² This also raises interesting questions for language change and language contact. Due to the scope of this paper, we will not discuss these questions here.

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