

Article

A Late-Insertion-Based Exoskeletal Approach to the Hybrid Nature of Functional Features in Creole Languages

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Abstract: The goal of this paper is to further our understanding of the nature of functional features in Creoles while focusing on how the functional exponent is morphologically realized, assuming a late-insertion-based exoskeletal model in the language mixing scholarly literature. In language mixing, it is observed that words are mixed within a certain syntactic domain (e.g., DP-NP, VoiceP/*v*P-TP, etc.). For example, in the nominal domain, a determiner D may be from one language, and N (or a stem, e.g., root + categorizer) may originate from another language. Grimstad and Riksem propose that the functional projection FP intervenes between D and N, and both D and F are from one language and N from another language. The phonological exponent of the functional features (e.g., D and F) are assumed to be language-specific (i.e., from one language), subject to the subset principle. Closer to the case that concerns us, Åfarli and Subbarao show that through long-term language contact, functional features can be reconstituted, and the functional exponent can be genuinely innovative. In our study, we propose that functional features can be themselves recombined and that Creole languages can provide evidence for feature recombination either by virtue of their hybrid grammar or through the congruent functional categories they display, using a late-insertion-based exoskeletal model. That is, functional features are not individually inherited from one language or another but can be recombined to form new functional features, allowing a novel functional exponent. To show this, we use synchronic empirical data focusing on the anterior marker *-ba* from Cabo Verdean Creole (CVC), Manjako (one of CVC Mande substrates), and Portuguese (CVC lexifier) to show how the recombination may operate, as CVC *-ba* recombines the features it inherited from its source languages while innovating. In sum, the purpose of this study is to show that feature recombination targeting the functional categories of Creole source languages can lead to innovation and that a late-insertion exoskeletal model can best account for the novel functional exponents that result from feature recombination in Creole formation.

Keywords: Creole formation; hybrid functional features; feature-recombination; neo-constructivist/late-insertion-based exoskeletal model; null theory of Creole formation



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1. Introduction

This paper aims at elucidating the nature of the hybrid grammar of Creole languages with special reference to Cabo Verdean Creole (henceforth, CVC).¹ Using a late-insertion-based exoskeletal model (Borer 2003, 2005a, 2005b, 2013, 2017; Grimstad et al. 2018; Riksem et al. 2019), we propose that Creole hybrid components come from their source languages functional features, which are recombined in Creole formation, leading to innovation. Taking CVC as a case study, we demonstrate how new functional exponents are realized and argue that a late-insertion exoskeletal model can best account for the novel functional exponents that result from feature recombination in Creole genesis.

The idea that hybrid features are involved in the formation of Creole languages is far from novel. Based on Mufwene's (2001, 2008) concept of a feature pool that assumes features compete and are selected from the multiple sources/features that co-exist in the multilingual setting in which Creoles emerge, Aboh (2009, 2015) proposes that in

such settings, specific phonological, syntactic, and semantic features are selected and recombined. With respect to feature recombination, [Aboh \(2015\)](#) assumes that in a given linguistic ecology, competing formal features of functional categories can be recombined into a new functional category that “intersects” with the same category present in the source languages that contributed to the formation of a given Creole. More precisely, he proposes that:

“Two major possibilities arise in a contact situation: The emergent language may retain both the semantic and syntactic properties of a functional category from one of the competing languages. This [. . .] is referred to as *pattern* transmission. On the other hand, the emergent language may exhibit a functional category that results from the recombination of a feature on the basis of its semantics (e.g., discourse function) in a competing language, while its syntax may be determined under pressure from other competing languages and/or based on the principles of UG [universal grammar: YS/MB], the ultimate filter for combinatory possibilities in syntax. The latter possibility [. . .] referred to as *feature* transmission, illustrates linguistic hybridity”. ([Aboh 2015](#), p. 9)

Our proposal aims at capturing the hybrid nature of Creole languages by showing how they can draw some of their properties from their source languages and how such features can be recombined while leading to innovation. Even though [Aboh’s \(2015\)](#) proposal is promising, in this study, we adopt an alternative grammatical model to capture Creole formation that can reflect and explain the hybrid nature of Creoles in a more precise way. That is, we adopt a late-insertion-based exoskeletal model ([Borer 2003, 2005a, 2005b; Grimstad et al. 2018; Riksem et al. 2019](#), among others), which represents a null theory approach to language mixing. In our model, we propose that the site where feature recombination takes place is functional features.

In the literature on Creoles, a controversial debate regarding whether Creole languages are “exceptional” exists, in that some scholars assume them to be distinct from other natural languages on the basis of a set of linguistic properties (SVO, preverbal negation, preverbal tense, aspect, mood markers . . .) and purported simpler grammars (cf. [McWhorter 2018](#); see counter-arguments in [DeGraff 2003; Aboh and DeGraff 2016](#)). Following [Aboh and DeGraff \(2016\)](#), our proposed model is anti-exceptionalist and adopts the null theory approach, which assumes that the same mechanism that captures monolingual data also captures Creole languages and other contact languages that emerge, develop, and change in multilingual settings.

The goal of this paper is to demonstrate how the late-insertion-based exoskeletal model with feature recombination accounts for the properties of the anterior marker *-ba* in CVC. In order to show this, our paper proceeds as follows. Section 2 introduces some basic assumptions we adopt regarding Creole formation and discusses [Aboh’s \(2015\)](#) model of feature recombination. This section also provides examples from CVC and points out that [Aboh’s](#) model might not be sufficient enough to capture CVC data. Section 3 provides the formal model that captures word-internal language mixing, proposed by [Grimstad et al. \(2018\)](#), [Riksem et al. \(2019\)](#), and [Áfarli and Subbarao \(2019\)](#). Based on that model, we propose that functional features themselves can be recombined in Creole formation, and we show what our model contributes to [Aboh \(2015\)](#). Section 4 analyses the anterior marker *-ba* in CVC and shows how the proposed model provides an explanation for how the anterior marker behaves, and Section 5 lays out the implications of this model. Section 6 concludes this paper.

2. Creole Genesis: Competition and Selection Model and Feature Recombination

The notion of ‘hybrid grammar’ illustrated by [Aboh \(2009, 2015\)](#) captures some general aspects of creole genesis (i.e., how creoles emerge) by suggesting that formal features (syntactic, semantic, and phonological features) are ‘recombined’ in Creoles and that some of the Creole features can be traced back to the Creole superstrate and substrate(s). This idea is based on [Mufwene’s \(2001, 2008\)](#) competition and selection model that stipulates that

features from substrates and superstrates² compete with each other in a multilingual setting and that some are selected from that feature pool whereas others die out. Although ecology plays a crucial role in Mufwene's model, Aboh (2009, 2015) argues that the 'competition and selection of linguistic features is free' (Aboh 2009, p. 332), assuming that this process takes place within I-creole (the internalized language system that is represented in the speaker's mind/brain). In sum, selecting formal features from the feature pool is free because external factors do not affect I-creole.³

2.1. Feature Recombination: The Case of Saramaccan

One can observe such feature recombination in the Saramaccan light verb. Saramaccan is a Creole language whose substrate is Gungbe and superstrate English. For instance, the so-called inherent complement verbs (ICV) in Gungbe "require an object in their citation form (Aboh 2009, p. 328)", and verbs such as *dú* 'eat' change meaning depending on the object that follows them. To be more precise, Aboh (2009, 2015) argues that the verb *dú* 'eat' is a light verb, and the V is empty, resulting in the incorporation of N (i.e., N-to-V incorporation). As shown in (1), the meaning of the verb *dú* 'eat' in Gungbe is altered by the following object: *dú* followed by a pronoun means 'to have a headache', as shown in (1a) but *dú* followed by 'money' means 'to spend' (1b).

- (1) Gungbe
 a. Tà dù mi
 Head eat 1SG
 'I have a headache.'
 b. Kòfí dù Kwé cè
 Kofi eat money my
 'Kofi spent my money.'
- (Aboh 2009, p. 329, (10a), (10b))

In contrast to Gungbe, the English verb *eat* has the specific meaning of 'ingesting N' and shows V to *v* movement (verb raising), which means that the verb *eat* moves to the light verb position *v*.

Bearing this in mind, Aboh (2009) argues that the verb *njan* 'eat' in Saramaccan has inherited hybrid features from both Gungbe and English. The example in (2) shows that the object can be realized in Saramaccan, which is compatible with the object requirement of Gungbe.

- (2) Saramaccan
 Amato njan di bakuba
 Amato eat DET banana
 'Amato ate banana.'
- (Aboh 2009, p. 332, (13))

Another parallel with Gungbe is that Saramaccan also shows V-N incorporation. The Saramaccan examples in (3) align well with the Gungbe examples in (1).

- (3) Saramaccan
 a. Njan moni
 eat money
 'to spend money'
 b. Njan pena
 eat pain
 'to suffer'
- (Aboh (2009))

On the other hand, the Saramaccan verb *njan* 'eat' can appear in sentences where the object is absent (as seen in (4)), which is compatible with English but not allowed in Gungbe where the object is required.

- (4) Saramaccan
- | | | | |
|--|------|---------|-----------|
| a. I | njan | kaa | no? |
| 2. SG | eat | already | Q |
| 'Have you already eaten?' | | | |
| b. Ai | mi | njan | (kaa) |
| yes | I | eat | already |
| 'Yes, I have eaten (already).' | | | |
| c. Ai | mi | njan | soni |
| yes, | 1.SG | eat | something |
| * 'Yes, I ate (something [non-specific]).' | | | |
| 'Yes, I ate something [specific].' | | | |
- (Aboh 2009, p. 332 (13) and (14))

This state of affairs leads Aboh (2009, 2015) to conclude that “Saramaccan *njan* maps the semantic properties of English and Gbe ‘eat’ onto the syntax of English (Aboh 2009, p. 334)”, which recombines the properties of the verb ‘eat’ in Gungbe and English.

Such examples show that feature recombination can involve phonological-, semantic-, and syntactic features of any given lexical item in Aboh’s (2009, 2015) proposal. The logical possibilities of feature recombination are summarized in Table 1.

Table 1. The logical possibilities of feature-recombination in Aboh (2009, 2015).

Lexical Items	
Phonological features	substrate/superstrate
Syntactic features	substrate/superstrate
Semantic features	substrate/superstrate

These combination patterns should be possible and, in principle, play an important role in creolization. In sum, Aboh’s feature recombination shows how some of the properties of Saramaccan *njan* ‘eat’ can be argued to be derived from English (its superstrate), whereas others are derived from Gungbe (its substrate).

In the next section, we contrast Aboh’s feature recombination to a different type of feature recombination involving functional categories (instead of lexical categories such as Saramaccan *njan* ‘eat’ in Aboh 2009) and leading to innovation. More precisely, we show that while functional categories can draw some of their properties from their source languages, they can also display striking innovations. To demonstrate this point, we examine the Cabo Verdean anterior marker *-ba*.

2.2. Feature Recombination in CVC

The Cabo Verdean anterior marker *-ba* can append both lexical verbs and auxiliaries, hence participating in the tense-mood-aspect-mood (TMA) system of Cabo Verdean Creole (henceforth, CVC). On this issue, we do not label the phrases projected by TMA markers AuxP, AspP, and MoodP, but we use FP instead for expository reasons⁴, as we elaborate in Section 3.

In order to support our feature recombination analysis of *-ba* in CVC, which rests on contact between Portuguese (CVC superstrate) and Manjako (CVC substrate), we briefly provide below a sociohistorical introduction to CVC.

2.3. A Brief Sociohistorical Introduction

Cabo Verde (a former Portuguese colony) is an archipelago that lies in the Atlantic Ocean about 400 miles from Senegal (West Africa). The Portuguese arrived in the Cabo Verde islands in 1445, and they were shortly thereafter followed by African enslaved populations (Kihm 1994, p. 2). The enslaved populations are believed to have originated from the region of Cacheu and Bissau and were composed of Jalofo, Peul, Bambara, Bolola, Manjako, Banhun, Mandinka, Balante, Bijago, and Feloupe people, among others (Brásio 1962). As a result, CVC emerged from a mixture of nonstandard varieties of

Portuguese and African languages, including Manjako, Mandinka, Wolof, and Temne, among others.

In 1975, Cabo Verde became independent from Portugal, but CVC remained in close contact with the Portuguese while moving away long ago from the African substrates that contributed to its genesis.

2.4. The Functions of *-ba* in CVC

As a result of such contacts, the anterior marker *-ba* is argued to have originated from the Portuguese *-va*, a past tense marker that modifies Portuguese verbs whose infinitive form is *-ar* and that belong to the first conjugation of verbs (ex: *andar* 'to walk' > past tense *andava*, or *falar* 'to talk' > past tense *falava*) and from the Manjako form *ba* which marks the completion of an event (Kihm 1994, p. 103; Baptista forthcoming; Pratas 2007). In order to demonstrate how feature recombination operates with respect to the anterior marker *-ba* in CVC, we provide below relevant data featuring *-ba* in CVC, Portuguese, and Manjako. We start by examining the functions of *-ba* in CVC.

In CVC, the anterior marker *-ba* can be affixed to a nonstative verb, conveying pluperfect as in (5a), simple past when suffixed to a stative verb, as in (5b), and imperfective when combining with the markers *sta* and *ta*, as in (5c). The simple past of a nonstative verb involves a bare verb stem (no suffixation), as shown in (5d). When combined with the CVC TMA markers *sta* and *ta*, yielding *staba ta*, the combination can express past imperfective, as shown in (5e).

- (5) Verbal Domain (TAM domain): *-ba* in CVC
- a. Paulo kumeba katxupa.
Paulo eat + ba katxupa
'Paulo had eaten katxupa.'
 - b. Paulo staba duenti.
Paulo was sick
'Paulo was sick.'
 - c. Paulo staba ta kume katxupa to ki bu txiga
Paulo PROG+ANT MOOD TMA eat Katxupa when that you arrive
'Paulo was eating katxupa when you arrived' (Baptista 2020, p. 171, (13)).
 - d. N kanta
I sang.'
 - e. N staba ta kanta.
'I was singing.'

As mentioned earlier, the marker *-ba* is argued to be derived from both the Portuguese anterior marker *-va* and the Manjako (*pe-*)*ba*, which means 'finish' and marks the completion of an event (Kihm 1994, pp. 102–3).

The functions of *-ba* in CVC are summarized in (6).

- (6) The functions of *-ba* (cf. Baptista 2002, p. 84)
- a. Pluperfect with nonstative verbs
 - b. Simple past with stative verbs.
 - c. Imperfective when combined with TMA marker *sta* (and *ta*).

Let us first turn our attention to the function of *-va* in Continental Portuguese (note that the marker behaves differently in Brazilian Portuguese).

2.5. The Functions of *-va* in Portuguese

In Portuguese, *-va* appends to verbs belonging to the first conjugation ending in *-ar*, such as *cantar* 'to sing'.⁵ For instance, *eu cantava* can be interpreted as 'I sang, I would sing, or I used to sing', as shown in (7a). The simple past takes on a different inflection on the verb, as shown in (7b). In addition, *-va* can append the auxiliary *estar* to convey imperfectivity, as in (7c).

- (7) Portuguese
 - a. Eu cantava
'I sang, I would sing, I used to sing.'
 - b. Eu cantei
'I sang.'
 - c. Eu estava a cantar.
'I was singing.'

2.6. The Function of *ba* in Manjako

In Manjako, which is one of the substrates of CVC, *ba* is a verb meaning 'finish' that, when combined with other verbs, marks the completion of an event (8).

- (8) Manjako
a-reala **ba**
'He finished eating.'
(Kihm 1994, p. 103)

One should also note that *ba* is a form that is attested in the speech of enslaved individuals reported in 16th-century Portuguese plays (9), suggesting that the languages in contact could indeed have contributed to its emergence in CVC.

- (9) como mi **saba** primeyro
'as I was the first.' (Gil Vicente 16th century Língua de Preto)
(Teyssier 1959, p. 235)

2.7. Summary of the Functions of *-va* in Portuguese, *ba* in Majako, and *ba* in CVC

Having examined the formal features of *-ba* in CVC and its source languages, a feature recombination analysis would account for the fact that *-ba* in CVC combines the marking of anteriority (the simple past reading with stative verbs and the past imperfective reading with auxiliaries align with Portuguese) and completion (the completion reading aligns with Manjako) in addition to the postverbal position found in the source languages. However, the pluperfect reading of *-ba* with CVC nonstative verbs is absent in CVC source languages. Table 2 summarize the formal features of *-ba* in CVC, Portuguese, and Manjako.

Table 2. The functions of *-ba* in CVC, *-va* in Portuguese, and *ba* in Manjako.

	<i>-va</i> in Portuguese	<i>ba</i> in Manjako	<i>-ba</i> in CVC
Simple past	✓		✓
Past habitual	✓		
Imperfective with an Auxiliary	✓		✓
Completion		✓	✓
Pluperfect			✓

Recall that the feature recombination analysis offered in Aboh (2009, 2015) accounts for the superstratal and substratal sources of inherited properties of the verb *nyan* 'to eat' in Saramaccan, for instance, but would not be able to account for the innovation of the CVC stative-nonstative verb distinction (see 6a and 6b above), a distinction that is absent from source languages. To be more precise, the traditional feature recombination analysis does not account for the pluperfect reading of *-ba* when modifying the nonstative verb such as *kume*, 'to eat' in (6a), a reading that is genuinely innovative in that it does not exist in CVC source languages. In order to explain the innovative feature on *-ba* in CVC, in the next section, we propose a different way of capturing feature recombination based on a late-insertion-based exoskeletal model.

3. A Late-Insertion-Based Exoskeletal Model

In this section, we introduce the model that we adopt to explore the rise and recombination of functional categories in Creole languages. The model we assume can be labeled as a *neo-constructivist approach*⁶ or a *late-insertion-based exoskeletal model* (Grimstad et al. 2018; Riksem et al. 2019). It is important to note that since the model we assume here is a combination of Borer’s (2003, 2005a, 2005b, 2013, 2017) exoskeletal model and tenets from distributed morphology (Halle and Marantz 1993, among others), we do not necessarily adopt all assumptions underlying these two approaches. In what follows, we introduce only the most relevant assumptions to our analysis.

We assume that “all aspects of the computation emerge from properties of the structure, rather than properties of (substantive) listemes⁷” (Borer 2005a, p. 21). The basic idea is that structure is not formed by lexical items (e.g., verbs). The assumption is instead that functional features are determined by syntactic structure and roots do not have grammatical features. To be more precise, roots might only refer to a concept and they are uncategorized. The category of the root is determined by its syntactic environment (such as combining a root with *v*), which stands for a verbalizer, and will express a verbal element, etc. See (Alexiadou et al. 2014; Alexiadou and Lohndal 2017) for a thorough discussion about roots. At spell-out (when the derivation is complete phase by phase, e.g., (Chomsky 2000, 2001, 2004)), vocabulary items (phonological exponents) are inserted. As for functional features, the *Subset Principle* applies (Halle 1997). The subset principle is defined as follows:

“The phonological exponent of a vocabulary item is inserted into a position if the item matches all or a subset of the features specified in that position. Insertion does not take place if the vocabulary item contains features not present in the morpheme. Where several vocabulary items meet the conditions of insertion, the item matching the greatest number of features specified in the terminal morpheme must be chosen” (Halle 1997, p. 428)

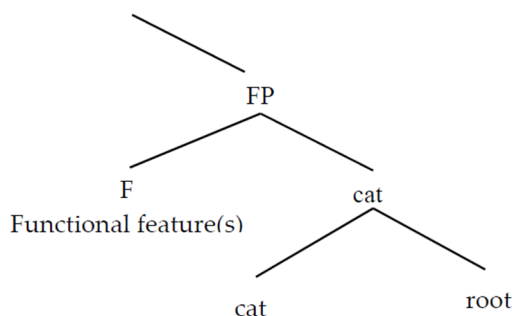
Functional features normally have their own features such as [+PRES], [-PL], etc., based on the list in a particular language⁸, whereas roots do not have such features. Therefore, roots are not subject to the subset principle.

We also adopt the root-categorizer assumption.

- (10) Categorization Assumption (Embick and Noyer 2007, p. 296, cf. Marantz 1997; Marantz 2013; Arad 2005, among others)
 Roots cannot appear without being categorized; roots are categorized by combining with category-defining functional heads.

The root combines with *cat*, which stands for categorizer. The category of this stem depends on the type of categorizer (e.g., if *cat* is *v*, the stem becomes a verb). Another component of syntactic structure has to do with functional features.

(11)



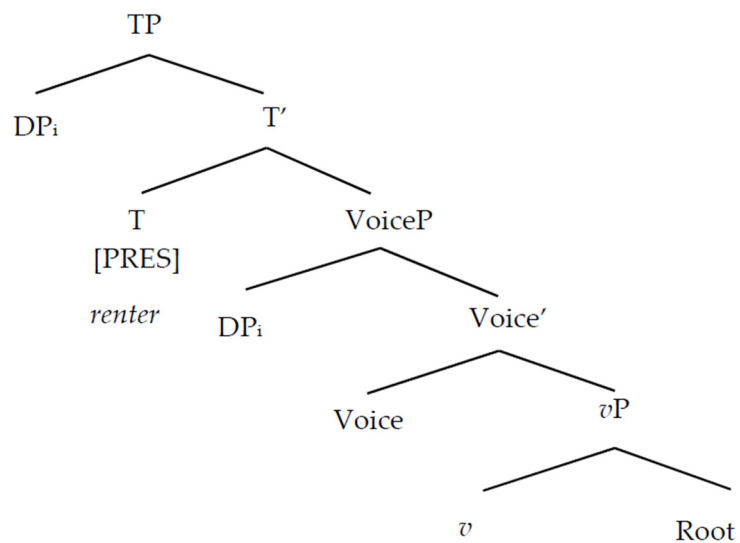
In (11), FP stands for functional projection and the features of F vary depending on the syntactic context. FP is realized as, for example, CP, TP, VoiceP/*v*P, DP, etc. (see also Borer 2003; Ramchand 2008; Lohndal 2014 for variants of the structures of functional projections).

The purpose of Sections 3.1 and 3.2 below is to show the application of the late-insertion-based exoskeletal model to language mixing.

3.1. Language Mixing in American Norwegian

In cases of word-internal language mixing/code-switching⁹, it is observed that words are mixed within some syntactic domains in a systematic way (cf. Alexiadou 2017; Alexiadou 2020; Alexiadou and Lohndal 2018). In late-insertion-based exoskeletal models (Grimstad et al. 2018; Riksem et al. 2019), the syntactic feature bundles form the syntactic structure (cf. Borer 2005a; Lohndal 2014), and the morphological exponents of the functional features are inserted later, subject to the subset principle (Halle 1997). For instance, (12) shows that the functional exponent *-er* is from Norwegian, and the stem (the verbalizer/root) *rent* is from English.

- (12) Verbs in American Norwegian (Riksem et al. 2019, p. 200, (7i))
- a. rent-er
 rent-PRES
 ‘rent(s)’
 - b. [TP DP_i [T' T_[PRES] [VoiceP DP_i [Voice' Voice [*v*P *v* Root]]]]]
 - c.

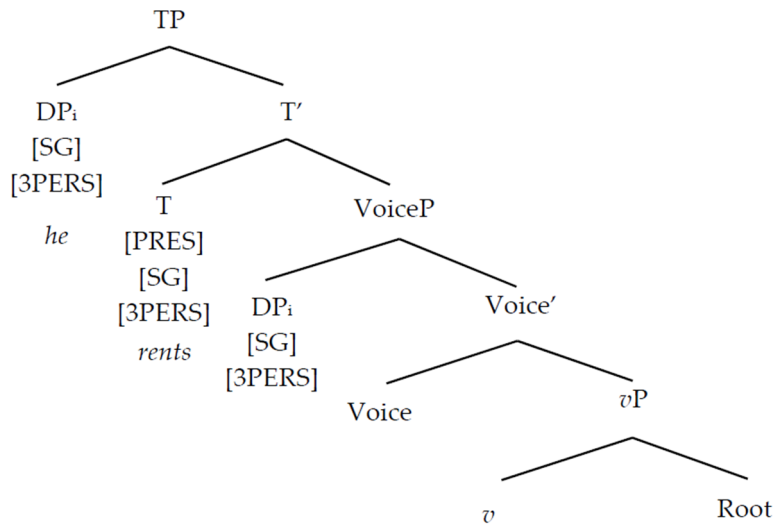


(cf. Riksem et al. 2019, p. 201, (8))

The tree in (12c) shows that since Norwegian does not have subject–verb agreement, the functional feature on T is only [PRES], standing for present tense. The verb moves up to T via the voice head, and the functional exponent is *-er*.¹⁰ If the functional exponent *-a* is inserted, the tense feature [PRES] on T does not match with the functional exponent *-a* since it has [PAST], whereas the functional exponent *-er* has a tense feature [PRES]. Thus, the functional exponent *-a* is ruled out by the subset principle.

If the functional features are from English (13), T has valued tense, an unvalued number, and an unvalued person feature.

- (13) English
 a. He rents
 b. [TP DP_{[SG, 3PERS]i} [T' T_[PRES, NUM:U, PERS:U] [VoiceP DP_{[SG, 3PERS]i} [Voice' Voice
 [vP v Root]]]]]
 c.



(Riksem et al. 2019, p. 201, (9))

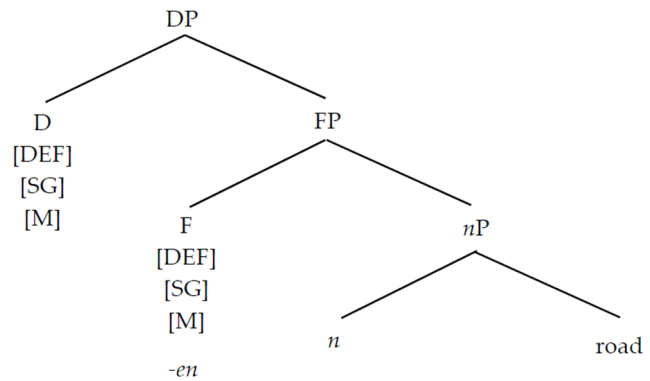
After valuation (e.g., via agree; Chomsky 2000, 2001), the phonological exponent of the functional feature [PRES], [SG], and [3PERS] is *-s* in English (i.e., *rents*). If the verb is already inflected in the lexicon (e.g., Chomsky 1995), this language mixing pattern (12) cannot be captured at all. If the functional exponent *-er* in Norwegian is inserted in (13), it only matches with the tense feature [PRES]. The functional exponent *-s* in English has features such as [PRES], [SG], and [3PERS] that match best with T in English. Thus, the insertion of *-er* is ruled out by the subset principle. Furthermore, Riksem et al. (2019) capture this linguistic phenomenon without any additional assumption beyond the late-insertion-based exoskeletal model (i.e., the null theory approach to language mixing, “is an approach that claims that the same theory that accounts for monolingual data should account for language mixing as well”. Riksem et al. 2019, p. 194).

A similar language mixing pattern is observable in the nominal domain. First of all, Norwegian has double-definiteness that is realized as a suffix that is attached to a noun postnominally, in addition to a determiner. Grimstad et al. (2018) assume that this suffix is evidence of a functional projection in addition to a DP projection. In American Norwegian, when the DP and FP are from Norwegian, the double-definiteness is realized, as shown in (14), assuming that the noun moves to the specifier of FP later.

- (14) Nominals in American Norwegian
 a. denne heritage tour-en
 this-M heritage tour-SG.DEFM
 ‘This heritage tour.’ (Grimstad et al. 2018, p. 200, (13b))
 b. [DP D_[NUM:U, GEN:U] [FP F_[SG:M] [nP n root]]

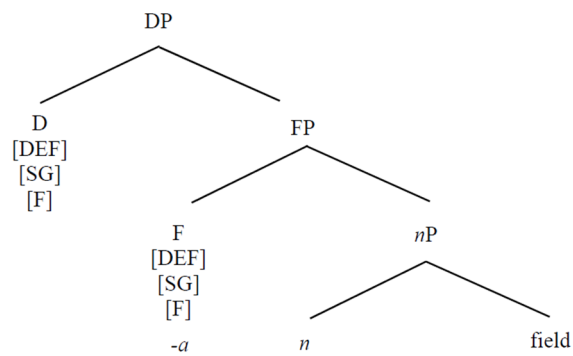
In American Norwegian, the phonological exponent for the functional features (double-definiteness and masculine gender) is realized as *-en* in (14) and (15a), whereas the functional exponent is realized as feminine gender *-a* in (16a), which is from Norwegian, not from English. Note that the stem (*nP*) moves to F.

- (15) Nominals in American Norwegian
 a. road-en
 road-DEF.SG.M
 'the road'
 b. [DP D_[NUM; SG, GEN: U] [FP F_[NUM; SG, GEN: M] [_{nP} n road]]]
 c.



(Riksem 2018, p. 505, (19))

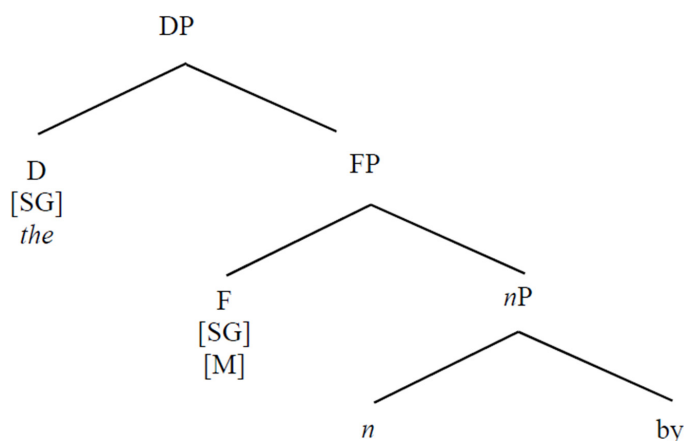
- (16) Nominals in American Norwegian
 a. den
 that.DEF.SG.F
 'that field'
 field-a
 field-DEF.SG.F
 b. [DP D_[NUM; SG, GEN: F] [FP F_[NUM; SG, GEN: F] [_{nP} n field]]]
 c.



(Riksem 2018, p. 508, (22a))

The opposite pattern is also illustrated in Grimstad et al. (2018), in which functional features come from English and the stem originates from Norwegian.

- (17) Nominals in American Norwegian
 - a. the by
'the city' SG M
 - b. [DP D_[NUM; SG] [FP F_[NUM; SG, GEN: M] [_{nP} n city]]]
 - c.



(Grimstad et al. 2018, p. 206, (17))

Grimstad et al.’s (2018) study demonstrate how the late-insertion-based exoskeletal model can effectively capture the language mixing patterns of American Norwegian nominal and verbal domains.

3.2. Language Mixing in Dakkhini

In sum, Grimstad et al. (2018) and Riksem et al.’s (2019) late-insertion-based exoskeletal model provide an account for language mixing that proposes that functional features can come from one language, whereas the stem can come from another language.¹¹ However, in CVC (see Section 2), the morphological realization of functional features is not as clear as in the American Norwegian case.

On this issue, Åfarli and Subbarao (2019) suggest in the context of language change that there are two possible changes in the functional domain. The first one is a reconstitution of functional exponents so that the existing exponent may receive new criteria of the subset principle. To illustrate this point, they use examples from Dakkhini, a language that is the outcome of long-term contact between Hindi/Urdu and Telugu, and the authors provide a three-way comparison of complementizers in Dakkhini, Hindi/Urdu, and Telugu. They show that in embedded questions, Dakkhini uses the same complementizer *ki* as Hindi/Urdu but with the crucial difference that the Dakkhini complementizer is clause-final (see (19)), just like the Telugu complementizer *-o* (see (20)), whereas it is clause-initial in Hindi/Urdu (see (18)). In sum, Dakkhini aligns with Telugu in having a clause-final complementizer.

- (18) Hindi/Urdu: *ki* as Initial Complementizer (IC)

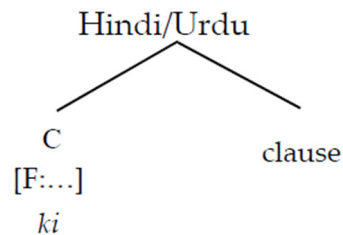
Mujhe	kyā patā	[S ki rām kab āyega]?
I+ _{DAT}	what known	IC Ram when will-come
'How do I know when Ram will come?'		
- (19) Dakkhini: *ki* as Final Complementizer (FC)

[S rām	kab	ātā	ē ki] mere ku kyā mālum?
Ram when	comes	FC I+ _{DAT}	what known
'How do I know when Ram will come?'			

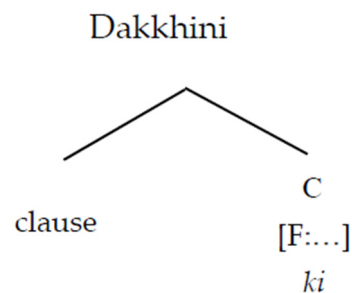
- (20) Telugu: *o*: as FC
 [s rāmuDu yeppuDu ostāD -o:] nā.ku yēmi telusu?
 Ram when comes FC I+DAT what known
 ‘How do I know when Ram will come?’ (Åfarli and Subbarao 2019, p. 32)

The CP structures featuring the complementizer of each language are shown below.¹² These structures show that Dakkhini CP structure headed by the complementizer *ki* (22) uses the same structure as Telugu *-o* in (23), although the functional exponent *ki* is from Hindi/Urdu (18)/(21). This allows Åfarli and Subbarao to argue that Telugu provides Dakkhini with its structure, shown in (22).

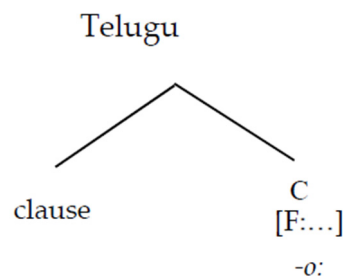
(21)



(22)



(23)



(Åfarli and Subbarao 2019, p. 43)

Åfarli and Subbarao (2019) propose that Dakkhini *ki* is reconstituted to become a head-final complementizer and to match the functional feature of the complementizer *-o* in Telugu. This is different from American Norwegian, where the functional exponent is related to the functional feature of a particular language (English or Norwegian in Grimstad et al. 2018; Riksem et al. 2019). Long-term contact with Hindi/Urdu and Telugu also affected Dakkhini’s that-clauses which also display innovations.

The second change that Åfarli and Subbarao (2019) suggest is when a new functional exponent is inserted with new insertion criteria of the subset principle. As shown in the

examples below, the complementizer in Dakkhini is in a final position in the embedded clause (25) and is argued by [Åfarli and Subbarao \(2019\)](#) to be inherited from Telugu. However, the functional exponent of the Dakkhini complementizer *bol ke* is neither the functional exponent of the complementizer of Hindi/Urdu (*ki* in (24)) nor Telugu (*ani* in (26)). Thus, the Dakkhini functional exponent is novel.¹³

- (24) Hindi/Urdu: *ki* as IC
 Mujhe nahi: patā [s ki si:tā cali: gayi: hai].
 I + DAT NEG known IC ita village has gone is
 ‘I did not know that Sita has gone to the village’
- (25) Dakkhini: *bol ke* as FC
 [s si:tā gā:v ku cale gayi: bol ke] mere ku mālum nai:
 Sita village DAT went away FC I + DAT known not
 ‘I did not know that Sita had gone to the village.’
- (26) Telugu: *ani* as FC
 [s si:tā u:ri ki wellindi -ani] nāku teliyadu.
 Sita village DAT went FC I + DAT not known
 ‘I did not know that Sita had gone to the village’ ([Åfarli and Subbarao 2019](#), pp. 32–33)

In this subsection, we showed that there different patterns of language mixing regarding the relation between functional feature and functional exponent exist. We reviewed [Åfarli and Subbarao \(2019\)](#) and discussed two changes that exist in Dakkhini due to long-term contact. The first change, illustrated in (19), occurs when an existing exponent (e.g., *ki*) is reconstituted, so the existing exponent is inserted. The other change, shown in (25), consists of the realization of *bol ke* in the embedded clause where it is inserted as a new exponent by new insertion criteria.

In [Åfarli and Subbarao \(2019\)](#), they focus on functional exponents and their insertion criteria. In contrast, in our paper, we propose that functional features themselves can be novel. Thus, the new criteria of the functional exponent emerge from the feature recombination of the functional features. The study of Creoles such as CVC adds to our understanding of the range of possible patterns of language mixing. Indeed, as we discussed in Section 2, the anterior marker *-ba* in CVC has multiple functions, some of which overlap with source languages (*-ba* in CVC expresses anteriority as in Portuguese and completion, as in Manjako), whereas others do not overlap with source languages and are totally novel, i.e., pluperfect. In order to account for this type of language mixing, the next section introduces our proposal that functional features themselves can be recombined, leading to the rise of a novel functional feature and novel functional exponents.

3.3. Proposal

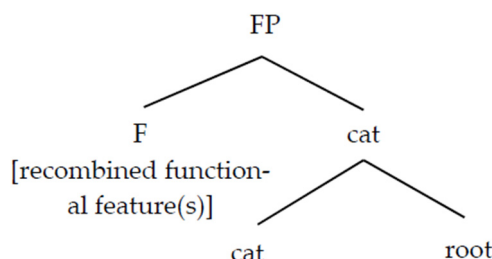
In the previous sections, we summarized the application of the late-insertion-based exoskeletal model to language mixing based on [Grimstad et al. \(2018\)](#), [Riksem et al. \(2019\)](#), and [Åfarli and Subbarao \(2019\)](#). In American Norwegian, the functional features are from one language (either from English and Norwegian), and the functional exponent is subject to the subset principle. Dakkhini shows that the feature matching between functional features and the functional exponent is changed for the complementizers *ki* and *bol ke*. [Åfarli and Subbarao \(2019\)](#) suggest that the functional exponent could be an innovation. Note that in Dakkhini, the functional exponent for the complementizer is novel, but the structure is still from Telugu and the function of the complementizer remains the same in Dakkhini and Telugu (i.e., indicating the *that*-clause).

In CVC, the novel pluperfect reading of the anterior marker *-ba* in CVC does not originate from source languages (Portuguese and Manjako). This is a novel pattern. Although there are several overlaps between *-ba* in CVC, *-va* in Portuguese (CVC and Portuguese share the expression of anteriority), and *ba* in Manjako (CVC and Manjako share the ex-

pression of completion), *-va* in Portuguese and *ba* in Manjako do not have exactly the same function (pluperfect) as *-va* in CVC.

In order to capture this innovation and the novel structure, we propose the following syntactic structure for Creoles, based on key assumptions presented in (27).

- (27) A proposal
In Creole languages, functional categories can be but need not be directly inherited from source languages. When such features are not directly inherited from source languages, they are decomposed into features and are recombined as “hybrid functional categories”.
- (28) Schema of the syntactic structure (see also (11))
 - a. [FP F₁] [cat Root] (where *cat* is a categorizer)
 - b.



Based on the late-insertion-based exoskeletal model and (28), we assume here that the functional feature F is formed through competition and selection (between the languages in contact) and form the syntactic structure.¹⁴ The structure illustrated in (28) is identical to the structure in (11), while the functional feature in (28) is recombined. This is distinct from the language mixing pattern observable in American Norwegian in that functional features do not originate from just one language, and this could capture the Dakkhini data in [Åfarli and Subbarao \(2019\)](#) as well. The logical possibilities for Creoles are that functional features are (i) from one or several substrates, and (ii) from the superstrate, (iii) or can be novel/recombined features. (iv) Suggests that the recombination of functional features could allow for a novel functional exponent. In this sense, feature recombination provides a new and distinct pattern from the model [Åfarli and Subbarao \(2019\)](#) propose. This, of course, does not preclude functional exponents from originating from source languages since they contribute to creole genesis. Table 3 summarize the logical possibilities of recombination in Creole languages.

Table 3. The logical possibilities of recombination based on a late-insertion-based exoskeletal model for Creoles.

Phonological Features	Late Insertion
Functional features	(i) substrates/(ii) superstrate/(iii) recombination
Semantic features	Syntactic structure encodes the meaning + Late insertion

Moreover, the late-insertion-based exoskeletal model is, in principle, applicable not only to language mixing or monolingual grammar but also to all sorts of other scenarios of language contact, heritage languages, and Creole languages.¹⁵

We not only illustrate pattern (iii) in Table 3 but also demonstrate how feature recombination is operationalized in CVC in Section 4.

4. An Analysis

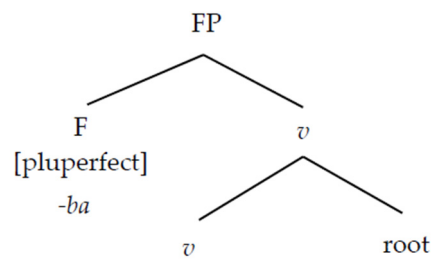
Going back to CVC examples regarding the anterior marker *-ba*, recall that some of its functions come from Portuguese (anteriority), others from Manjako (completion), whereas

others represent a novel feature, namely, *pluperfect* (see (29)), which does not exist in *-va* in Portuguese or *ba* in Manjako (see Table 2 for a summary).

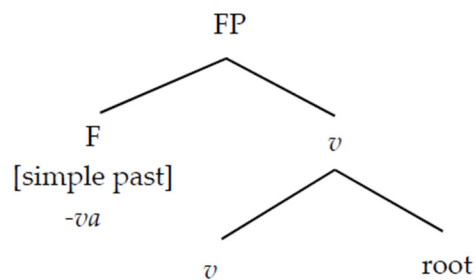
- (29) (=6a)
 Paulo kumeba katxupa.
 Paulo eat+ba katxupa
 ‘Paulo had eaten katxupa.’

The relevant structures for each language are represented in (30) for CVC, (31) for Portuguese and (32) for Manjako.

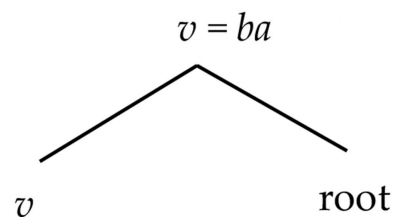
- (30) The structure for *-ba* in CVC



- (31) The structure for *-va* in Portuguese (in the case of simple past)



- (32) The structure for *ba* in Manjako



The anterior marker *-va* in Portuguese and *ba* in Manjako do not have a pluperfect function. The exponent of pluperfect in Portuguese is not *-va*. For instance, the Portuguese pluperfect of CVC *N kumeba katxupa* ‘I had eaten katxupa’ is *Eu tinha comido katxupa* ‘I had eaten katxupa’. As for Manjako, *ba* is realized as the verb ‘finish’. Thus, CVC must have a unique functional head/projection, which we call F (since the TMA-system is a complex system, we assume the general functional feature here for the purpose of exposition) in which the functional feature includes pluperfect. We also assume that the stem [*v root*] moves to F to obtain the right order (V-ba, [Baptista 2002](#)). The entire structure includes the spell-out of the functional exponent, along with the [*v root*] structure, pronounced as ‘V-ba’.

As a result of the feature recombination of the tense marker, the functional feature itself ([pluperfect]) might change in a unique way, and the exponent is easy to insert here since the insertion restriction (i.e., the subset principle) is novel due to the novel functional feature of *-ba* (pluperfect). The nature of CVC *-ba* is different from the Dakkhini's complementizer *bol ke* in (25) in that *-ba* is a new exponent, and its functional features are not simply inherited from source languages. This is in contrast to Dakkhini in (25), where the functional features are still from Telugu, as [Åfarli and Subbarao \(2019\)](#) argue, which is a distinct pattern from what *-ba* shows in CVC. Of course, this does not undermine the idea that CVC is the result of long-term language contact between its source languages, leading to the emergence of *-ba* in CVC being able to express a novel feature, pluperfect when modifying nonstative verbs.

Interestingly, the morpheme *-ba* in CVC, *-va* in Portuguese, and *ba* in Manjako look similar in their forms. Although each form has a different function, there are still some overlaps, as discussed in Section 2 (see Table 2). This suggests that 'similar form and function' in the languages in contact could lead to congruence ([Kihm 1990](#)), and this, in turn, may make it easy to implement a novel functional exponent (see [Baptista 2020](#) about the role of congruence in the genesis of Creole languages).¹⁶

5. Implications and Consequences of This Proposal

This analysis builds on [Aboh's \(2015\)](#) approach in novel ways in that (i) we are proposing that functional features can also be recombined. This is different from [Aboh's \(2009, 2015\)](#) proposal since, in Aboh's proposal, the recombination of syntactic, semantic, and phonological features is possible, but he did not show how syntactic features are recombined. (ii) Our proposal is based on the null theory of creole formation, just like the late-insertion-based exoskeletal model of language mixing, which also adopts the null theory approach ([Riksem et al. 2019](#), p. 194, see Section 3.1). This means that even in multilingual settings, we do not have to assume any additional apparatus, at least in the core narrow syntactic system, once we assume this syntactic model (cf. [Baptista et al. 2020](#)).

Another point that we would like to mention is that the model that we adopt applies to any kind of I-language ([Chomsky 1986](#); see [Aboh and DeGraff 2016](#) for I-Creole). Thus, our proposal is not suggesting that all Creole languages show feature-recombination patterns with similar morphological realizations. Some Creole languages would show different language mixing patterns.

6. Conclusions

In this paper, we adopted a late-insertion-based exoskeletal model that captures multilingual data to show the hybrid nature of Creole languages. The important part of the model is the restriction of the functional exponent, namely, the subset principle. In monolingual grammar, the specification of the functional features is given as a list (where functional features are stored), and the functional exponent is inserted at spell-out.

Under this model, we propose that the functional features are assembled from multiple sources, not selected from just one source. Language mixing patterns in American Norwegian suggest that the functional projection could be either English or Norwegian, but once the structure is formed based on the functional features, the functional exponent has to match the functional feature. In Dakkhini, [Åfarli and Subbarao \(2019\)](#) argue that the exponent for the functional features could be novel/reconstituted due to long-term language contact.

Considering [Åfarli and Subbarao's \(2019\)](#) data and CVC data, we proposed that feature recombination is the mechanism that forms a novel functional feature, allowing the spell-out of a novel functional exponent. This not only captures Dakkhini data and supports Aboh's feature recombination but also captures the novel function of the anterior marker *-ba* in CVC. This anterior marker has a novel feature, pluperfect, which does not exist as such in the forms of *-va* in Portuguese and *ba* in Manjako. We argued that this novel feature is due to feature recombination in that functional features are recombined in a novel

way, which is different from Aboh's feature recombination, where formal features such as phonological, syntactic, and semantic features necessarily come from the source languages. Based on our proposal, the structure of the functional feature pluperfect in CVC is a novel functional projection (FP).

Our proposal suggests that functional features on functional heads are not grouped together and fixed in the list in UG but rather that they are recombined. As a result of the feature recombination of functional features, we suggest that the restriction (i.e., the subset principle) involves new criteria, so the novel functional exponent becomes easy to insert at spell-out; this, of course, does not rule out that functional exponents can originate from source languages due to language contact.

In this paper, we only had space to study one TMA-marker in one Creole, but our hope is that the proposed model can extend to other domains and apply to different phenomena in the future.

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Notes

- ¹ In this paper, following DeGraff (2003), we capitalize the word Creole to signal a language grouping in reference to the multilingual ecology in which Creole languages typically emerge.
- ² In the contact literature about Creoles, 'substrates' refers to the early creolophones' first languages that contributed to the grammatical structure of the emerging Creole. 'Superstrate' typically refers to the European, colonial (though not always) language that contributed to the Creole lexicon.
- ³ Although we agree with Aboh that ecological factors do not interact with I-language, we suspect that feature recombination is not totally free. The process of acquiring formal features necessarily involves the environment/pool where the acquirers detect the formal features. Especially in the context of Creole genesis, the features of source languages are subject to feature recombination. In this sense, it's not entirely clear that feature recombination is totally free. See also Baptista (2020) for more details about how features that happen to be congruent in the source languages may play a role in Creole genesis.
- ⁴ See Baptista's (2002, pp. 160–61) TMA templates, which shows the possible and impossible patterns TMA markers combinations in CVC. Here, we limit ourselves to the anterior marker *-ba* since the treatment of the entire TMA system is beyond the scope of this paper.
- ⁵ We thank wholeheartedly Nélia Alexandre and Ana Luís for their thorough input on the various interpretations of *-va* in Continental ()Portuguese.
- ⁶ Borer (2003) uses the term 'neo-constructivist', which is inspired from the constructivist approach to language, as it is proposed in Goldberg (1995, 2006): Construction Grammar. According to *Construction Grammar*, constructions that are pairs of form and function are the primitives that are stored in the lexicon. The common assumption that Borer's and Goldberg's approaches share is that verbs do not have argument structures but obtain the argument structure based on the syntactic structure/construction that they occur in. The key difference between these two approaches is whether a generative computation is provided by universal grammar. In this paper, we adopt Borer's approach to constructivism.
- ⁷ "listemes" are understood as traditional lexical items in that each listeme includes not only its phonological representation but also its meaning and syntactic information (see Borer 2005a, p. 3).
- ⁸ Each language has its own specific selection of features and a combination of features. For example, English has a third person singular inflection, which is [+SG], [+PRES], [3PER], etc.
- ⁹ We describe language mixing/code switching as "a situation where a speaker produces linguistic outcomes constituted by a mixture of elements from two or more languages (Lohndal 2014, p. 216, fn1)".
- ¹⁰ Note that American Norwegian has a V2 rule, so the head moves up to C, which is not illustrated here.

- 11 We thank one of the reviewers for bringing this paper to our attention.
- 12 The relevant F feature is omitted here, which is not crucial for our discussion in this paper.
- 13 Note that [Áfarli and Subbarao \(2019, p. 44\)](#) point out that *bol ke* is a calque from Telugu.
- 14 We assume that complement, adjunct, and specifier positions are ‘open slots’ ([Riksem 2018](#), pp. 492–93). Normally, the stems (e.g., [*n* root]) are inserted in these positions that are not subject to the subset principle.
- 15 In future research, we would like to explore the connections between our analysis for Creoles and the structural reanalysis that occurs in heritage grammar. We suspect that such comparisons would yield important insights into the types of feature recombinations that are possible. We set aside for the time being such comparisons as the study of heritage languages is beyond the scope of this paper, but we refer readers to [Polinsky \(2011, 2016\)](#) and [Putnam and Sánchez \(2013\)](#) for elaborate analyses regarding heritage languages. We are thankful to one of our reviewers for bringing this important research to our attention.
- 16 As suggested by a reviewer, another way of analyzing *-ba* in CVC is to say that the functional feature pluperfect is inherited from Portuguese and that *-ba* can be inserted based on new insertion criteria. However, as we indicated, the pluperfect form in Portuguese is not a suffix (e.g., the form for the Portuguese pluperfect involves *tinha* ‘had’), which departs from the behavior of *-ba* in CVC. We thank that reviewer for pointing out this possibility.

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