A Late-insertion-based Exoskeletal Approach to Creoles
Keio Linguistic Colloquium

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October 1, 2022

1 Introduction: The goal/summary of this presentation

- The goal of this presentation: To show that functional features in Creole Grammars are recombined (*feature recombination*, cf. Aboh 2015).
- In order to show this, I adopt a late-insertion-based exoskeletal model to Creole Grammars, based on language mixing literature (Grimstad et al. 2018, Riksem et al. 2019).

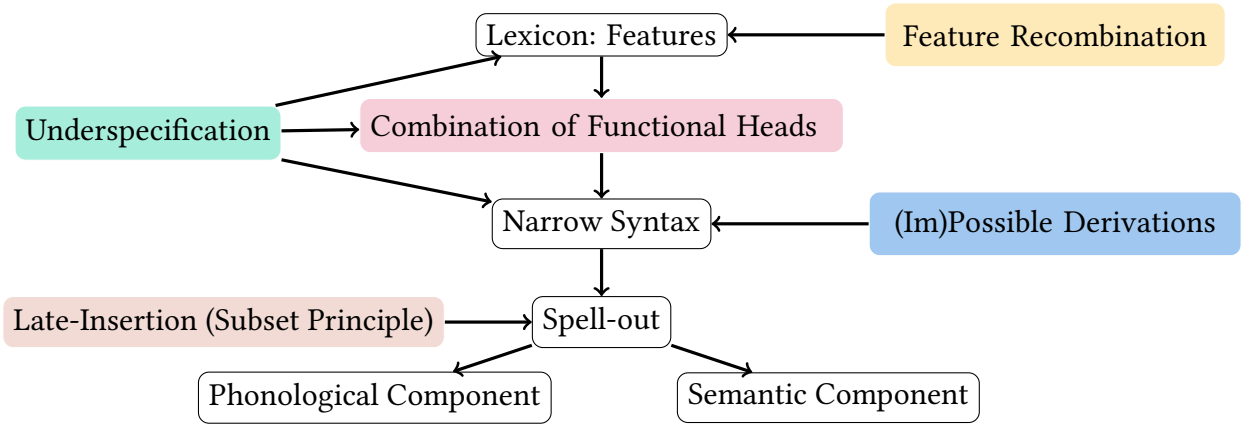


Figure 1: A proposed grammatical model in Sugimoto (2022)

- This model captures some types of linguistic variation as well as language mixing, and Creole grammars.[1]

The flow of this presentation

1. A framework
2. Linguistic Variation
3. Creole Genesis
4. Competition and Selection Model
5. Feature Recombination
6. A late-insertion-based exoskeletal model

(a) Novel Features in Creoles
   i. Anterior marker *-ba* in CVC
   ii. Nominal Structures in Scramaccan
   iii. A complementizer *ki* in CVC

(b) Theoretical Implications
   i. Feature Recombination
   ii. Underspecification and Linguistic Variation
   iii. A Null Theory Approach/ Against Exceptionalism

[1] Part of this presentation is based on Sugimoto (2022). See also Sugimoto and Baptista (2022).

2 A Framework

2.1 Genuine Explanation: A Framework (Chomsky 2021)

- The depth of explanation drives from simplicity of assumptions

Explanation for language

1. For individual languages
   Explanation provided by a generative grammar
2. For faculty of language (FL)
   Explanation provided by Universal Grammar (UG)
3. Simplicity of UG
   UG has to satisfy crucial empirical conditions
4. Clarifying Merge (Chomsky 2021)

- UG must satisfy the following conditions

Three Conditions on UG

1. Learnability: Structure Dependency suggests that there is no learning.
   → The hierarchical structure formed by Merge is not learnable.
2. Evolvability: "... the basic structure of language should be quite simple. The result of some small rewiring of the brain that took place once and has not changed in the brief since." (Chomsky 2021)
   → UG includes a structure building operation (i.e., Merge).
3. Universality: "The variety of languages might be localized in peripheral aspects of lexicon and in externalization; perhaps completely, we might someday learn." (Chomsky 2021:11-12)[a]

[a] There is also another condition on UG, namely neural codability. See (Chomsky 2021:8, fn.8) for details.

(1) Uniformity Thesis (Chomsky 2001:2,(1))
In the absence of compelling evidence to the contrary, assume languages to be uniform, with variety restricted to easily detectable properties of utterances.

2.2 The Source of Linguistic Variation

The locus of linguistic variation

1. Chomsky-Borer Conjuncture: "All parameters of variation are attributable to differences in the features of particular items (e.g., the functional heads) in the lexicon." (Baker 2008)
2. Berwick-Chomsky Conjecture: Linguistic variation comes from sources after the narrow syntax (i.e., externalization) (Berwick and Chomsky 2011, 2016)

2.3 Third Factor Principle Approaches to Parametric Variation

- Three factors for language design

(2) a. Genetic endowment
b. Experience
c. Principles not specific to the faculty of language (Chomsky 2005:6)

- Biberauer (2017), Biberauer and Roberts (2015), Roberts (2019)

(3) Parameters are emergent properties of the interaction of the three factors.

(Roberts 2019:7, (8))

(4) The third factor effect/learning process (Biberauer and Roberts 2015:7,(6))
a. Feature Economy (FE): Postulate as few formal features as possible to account for the input
b. Input Generalisation (IG): If a functional head F sets parameter P_j to value v_i then there is a preference for all functional heads to set P_j to value v_i (cf. Boeckx's (2011) Superset bias)

(5) UG + input + Maximise Minimal Means (MMM) → Adult Grammar

(Biberauer 2019:213, (3))

No (macro-)parameter approaches (Richards 2008, Boeckx 2011, 2014, 2016, Obata et al. 2015, Epstein et al. 2018)

1. Underspecification of rule ordering in narrow syntax (Obata et al. 2015, Epstein et al. 2018) Agree-Move, Move-Agree order (e.g., T-subject agreement vs. T-object agreement)
2. Merge of Heads (Blümel et al. 2022)
3. Combining formal features → this presentation

3 Issues of Creole Genesis

3.1 Creole Genesis

- "Creole languages are natural languages that typically emerge in a multilingual setting in which speakers of distinct native languages come into contact with each other, ultimately contributing to the formation of a new language." (Baptista 2020:160)

Languages that contribute to creole languages

1. Superstrate/lexifier: Dominant language (Adstrates: Coexisting languages)
2. Substrate: The language comparatively less dominant

- "While the general consensus is that the lexicon of a given Creole mostly originates from its superstrate (typically a European language), there is much debate regarding the source of its grammatical features." (Baptista 2020:160)

→ Where do Creoles come from?

3.2 Various Approaches to Creole Genesis

1. The language bioprogram

   > "[Creoles were produced] by the operation of innate faculties genetically programmed to provide at least the basis for an adequate human language"
   > (Bickerton 1984:41)

2. The Creole Prototype theory (McWhorter 2002, 2011)
   (a) phonological: little or no use of tone to distinguish monosyllables or grammatical categories
   (b) morphosyntactic: little or no inflectional morphology
   (c) semantic: little or no noncompositional combinations of derivational markers and roots (McWhorter 2011:6)

3. Relexification (Lefebvre 1998, Muysken 1981)

   > "Given the concept of lexical entry, relexification can be defined as the process of vocabulary substitution in which the only information adopted from the target language in the lexical entry is the phonological representation (Muysken 1981:61)."

4. The founder principle (Mufwene 1996)

   > "[t]he vernaculars spoken by the settlers of the new colony would establish themselves as the targeted norm (Velupillai 2015:181),"

5. Conflation/convergence (Kihm 1990, Baptista 2006)

   > "Given that a fortuitous formal similarity of really or apparently comparable elements from possibly very different languages is an attested and, after all, inevitable fact, one may expect spontaneous learners of a second language to grab at such elements and conflate them in their minds, by virtue of this principle [...] that you more easily learn what you think you already know (Kihm 1990:113)."

Principles/Approaches	Main influences	References
The language bioprogram	biologically universal properties	Bickerton (1981)
Relexification	Substrate	Lefebvre (1998)
The founder principle	Superstrate	Mufwene (1996)
Conflation/convergence	Substrate/superstrate	Kihm (1990), Baptista (2020)
Creativity	Innovation	Baker (1994)
Second Language Acquisition	SLA process	Kouwenberg (2006), Siegel (2006)
Competition and selection	Substrate/superstrate	Mufwene (2001), Aboh (2009, 2015)

Table 1: Various Approaches to Creole Genesis

3.3 Competition and Selection Model

(6) a. "what makes the new varieties restructured is not only the particular combinations of features selected, often from different sources, into the new language varieties, but also the way in which the features themselves have been modified, 'exapted', to fit into the new systems." (Mufwene 2001:5)

i. Feature pool: features from competing languages (e.g., substrate, superstrate, other contributing languages)

ii. How the linguistic system picks up only one linguistic feature, not the others from the feature pool?

b. "The 'contact' happens in the mind of the speakers via the feature pool which presents the learner with the input on which learning hypotheses are made." (Aboh 2015:116)

c. "The recombination of (morpho)-syntactic features is free (i.e. not subject to external ecological factors)."(Aboh 2015:136, (14))

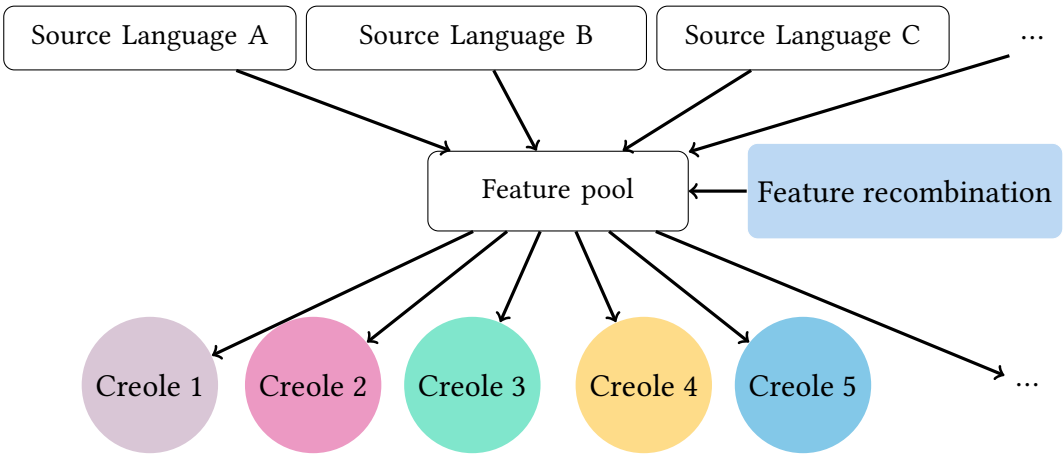


Figure 2: A competition and selection model

3.3.1 Feature Recombination in Saramaccan (Aboh 2009, 2015)

- Saramaccan
  1. Subsrtate: Gunbge
  2. Superstrate: English
- Inherent complement verb (ICV) in Gungbe "requires an object in their citation form" (Aboh 2009:328).

(7) a. Kòfí ɖó gbàdó
Kofi plant corn
'Kofi planted corn.'

b. *Kòfí ɖó ...
Kofi plant
'Kofi planted corn'
(Aboh 2009:328-329, (8b)-(8c))

- "ICV's mainly consist of light verbs whose semantics also depends on that of the noun phrase that they select for." (Aboh 2009:329)
- The meaning of the verb ɖù 'eat' depends on the meaning of the object as well as the basic meaning of ingest or consume.

(8) Gungbe

a. Tà ɖù mì
Head eat 1SG
'I have a headache'

b. Kòfí ɖù kwɛ́ cè
Kofi eat my money
'Kofi spent my money'
(Aboh 2009:329)

- The verb *njan* 'eat' in Saramaccan has inherited hybrid features from both Gungbe and English.

(9) Saramaccan

Amato njan di bakuba
Amato eat DET banana

'Amato ate banana.' (Aboh 2009:332, (13))

(10) Saramaccan

a. I njan kaa no?
2SG 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, 1SG eat something
'*Yes, I ate (something [non-specific]).'
'Yes, I ate something [specific]'
(Aboh 2009:332, (13)-(14))

d. Hédi tá njan mí
head Prog eat 1sg
'I'm having a headache.'
(Aboh 2009:333, (15a))

– Notice that in Gungbe, "example (11a) only denotes the semantics of 'to eat' not 'to eat thing' while (9b) can only mean 'to eat meat'."(Aboh 2009:329)

(11) Gungbe

a. Kòfí ɖù nú
Kofi eat thing
'Kofi ate'

b. Kòfí ɖù làn
Kofi eat thing
'Kofi ate meat'

c. *Kòfí ɖù…
Kofi eat
'Kofi eat' (Aboh 2009:329, (9))

- "Saramaccan *njan* maps the semantic properties of English and Gbe 'eat' onto the syntax of English." (Aboh 2009:334)

Lexical features of 'eat' in Saramaccan	
phonological features	*njan*
syntactic features	English
semantic features	English + Gungbe

Table 2: The 'hybrid' grammar in Saramaccan

3.3.2 Aboh (2020)

1. **S-learners**:
   - Aboh (2020) adopts the generative approach as a formal linguistic theory, which assumes that the knowledge of language is in our mind/brain and the internal system in our mind/brain is called I-language (Chomsky 1986).
   - He extends this notion to the speakers/signers who have multilingual background (i.e., **S-learner**).

     > "every S-learner is formally multilingual because s/he entertains several mental grammars ranging from registers, dialects of the same language to typologically and genetically different languages."
     >
     > "... the languages of multilinguals affect each other, and a prevalent practice in multilingual communities is code-mixing: a behavior which does not match with the ideal of a 'perfect' S-learner assumed in traditional approaches." (p2)

2. **Recombination**:
   - Aboh (2020) argues that when code-mixing happens, the process of **"recombination"** takes place in S-learner's language faculty, which allows the input from more than one languages (hybrid grammar, Aboh 2015).
   - Aboh (2020) argues that the process of *recombination* is **an innate capacity**.

     > "... the Human Language Capacity in which recombination is fully automated, while selection of vocabulary items for spell-out purpose is mediated through **executive functions**." (p4)

3. **The executive functions**:
   - The *executive functions* is "a cover term for various cognitive processes involving attention control, behavioral inhibition and working memory, all necessary for the deliberate control of goal orientated actions." (p6)

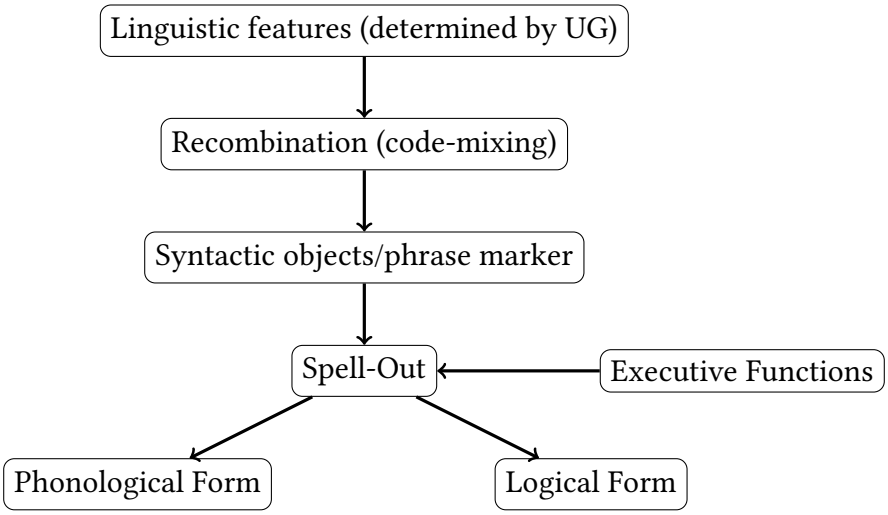


Figure 3: Aboh's (2020) model

- Aboh's (2020) proopsal

> "During the language acquisition, recombination allows S-learners to select relevant linguistic features from the heterogenerous inputs they are exposed to, and recombine them into pieces of mental grammars whose extensions represent individual idiolects. . . "
>
> "This model is compatible with the view that some surface phenomena (e.g., affix reordering) are post-syntactic (as commonly assumed in Distributed Morphology"
>
> "If code-mixing is innate and drives acquisition but is subject to the executive functions for vocabulary insertion, then the cognitive process which produces code-mixing, that is, recombination, must precede vocabulary selection. Executive functions are necessary for selection/learning of a specific lexicon or vocabulary, but they must be deployed after syntactic computation." (p6)

Questions

- It seems that the executive functions can insert the vocabulary later in the derivation after narrow syntax (i.e., Spell-out), which does not seem to follow the subset principle (see more details in §5).
- Are the feature recombination and the executive functions compatible?

3.3.3 Feature Recombination in CVC

- Cabo Verdean Creole
  1. Substrates: Manjako, etc
  2. Superstrates: Portuguese
- Verbal Domain (Tense-Aspect-Mood (TAM) domain)

(12) *-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 eat katxupa when you arrive
'Paulo was eating katxupa when you arrived' (Baptista 2020:171,(13))

d. N kanta
I sing
'I sang'

e. N staba ta kanta
I sta-ba ta sing
'I was singing'

(13) *-va* in Portuguese

a. Eu cantava
I sing-va
'I would sing, I used to sing'

b. Eu estava a cantar.
'I was singing.'

(14) *ba* in Manjako

a-reala ba

'He finished eating' (Kihm 1994:103)

	-va in Portuguese	*ba* in Manjako	*-ba* in CVC
simple past			✓
past habitual	✓		
imperfective with an auxiliary	✓		✓
completion		✓	✓
pluperfect			✓

Table 3: Summary of relevant items

Summary of CVC *-ba*

The traditional feature recombination analysis (cf. Aboh 2015) does not account for the pluperfect reading of *-ba* when modifying the non-stative verb like *kume*, 'to eat' , a reading that is genuinely innovative in that it does not obtain in its source languages.

4 Language Mixing and the Minimalist Program

- In this section, an issue of language mixing is introduced.

(15) Language mixing

a. "to describe a situation where a speaker produces linguistic outcomes constituted by a mixture of elements from two or more languages."(Lohndal 2013:216, fn1)

b. "we use the general (and neutral) term *language mixing*, whereas a lot of the literature we will rely on uses *code-switching*. Code-switching is typically understood in a narrow sense as bilingual 'online' mixing..." (Riksem et al. 2019:192)

4.1 Lexicalist Minimalist Syntax and Language Mixing

4.1.1 English-Spanish

- According to Moro (2014), when a determiner is employed from Spanish it is grammatical, whereas when the determiner is from English, it is ungrammatical.[2]

(16) Spanish-English mixing

a. el employer
the employer
'the employer'

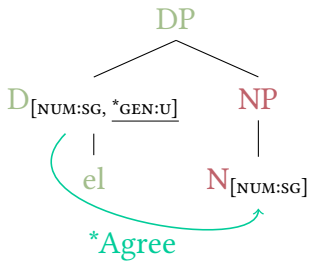
b. *the casa
the house
'the house' (cf. Moro 2014)

[2]But, see Liceras et al. (2008) regarding the grammatical judgment of this expression.

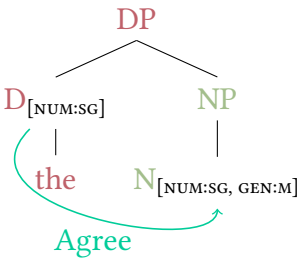
- In (17a), the gender-feature remains unvalaud, whereas there is no valuation problem in (17b) if we assume Agree-system (e.g., Chomsky 2000). This wrongly predicts that (17a) is ungrammatical and (17b) is grammatical.

(17) Spanish-English Mixing

a.



b.



- (17a): Moro (2014) claims that "... the unvalued features number and gender in the Spanish determiner can be valued via Agree with the English noun because the former bears the full set of these features (number and gender) (Moro 2014:223)."
- (17b): Moro (2014) claims that "[o]n the contrary, the derivation crashes in the case of the English determiner and the Spanish noun because the feature set of the English determiner is incomplete (it lacks the gender feature) (Moro 2014:223)."

4.1.2 American Norwegian

- In similar vein, Moro's (2014) approach cannot explain American-Norwegian mixing.
- Norwegian has number-gender agreement.

(18) Norwegian: grammatical gender language

a. dette hus-et
this.SG.N house-SG.DEF.N
'this house'

b. *denne hus-et
this.SG.M/F house-SG.DEF.N
'this house'

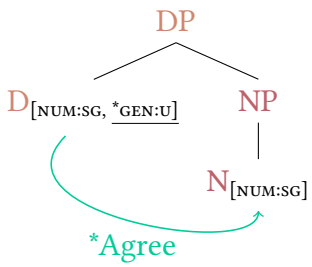
c. *dette hus-a
this.SG.N house-PL.DEF.N
'this houses'

(19) American-Norwegian

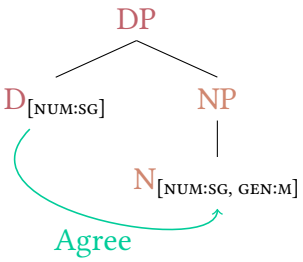
a. en blanket
a.M blanket
'a blanket'

b. the by
the city.SG
'the city'

(20) a.



b.



- In (20a), the unvalued gender feature is unvalued, though the sentence is grammatical.

5 A late-insertion-based Exoskeletal Model

5.1 Assumptions

- It is important to note that although the model I assume here is a combination of Borer's (2003, 2005a, 2005b, 2013, 2017) exoskeletal model and of tenets from Distributed Morphology (Halle and Marantz 1993, among others), I do not necessarily adopt all assumptions underlying these two approaches.

1. A exoskeletal approach (Borer 2003, 2005a,b, 2013, 2017):
   (a) "all aspects of the computation emerge from properties of structure, rather than properties of (substantive) listemes" (Borer 2005a:21)
   (b) "The burden of the computation is shouldered by the properties of functional items" (Borer 2005a:21)
2. Distributed Morphology (Halle and Marantz 1993, 1994)[3]

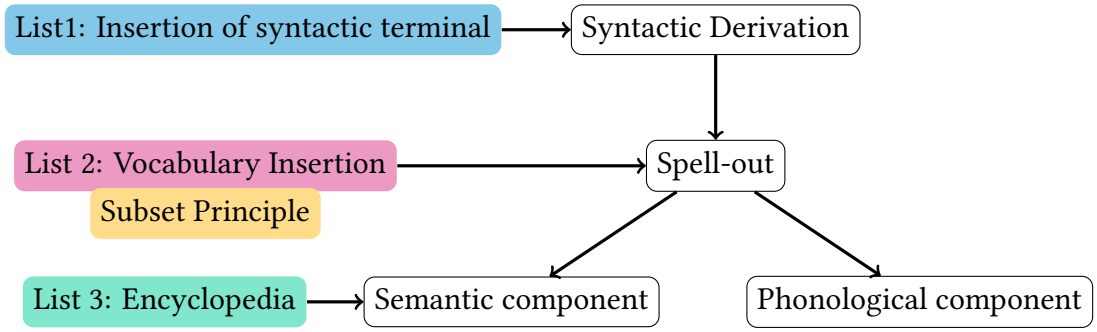


Figure 4: The grammatical model in Distributed Morphology (Embick and Noyer 2007)

(a) Abstract morphemes (functional features), Roots and categorization
   i. "Abstract morphemes: These are composed exclusively of non-phonetic features, such as [Past] or [pl], or features that make up the determiner node D of the English definite article eventuating as *the*."
   ii. "Roots: These include items such as $\sqrt{CAT}$, $\sqrt{OX}$, or $\sqrt{SIT}$, which are sequences of complexes of phonological features, along with, in some cases, non-phonological diacritic features. As a working hypothesis, we assume that the Roots do not contain or possess grammatical (syntactico-semantic) features." (Embick and Noyer 2007:295)
   iii. Categorization Assumption (Embick and Noyer 2007: 296, cf. Marantz 1997; Arad 2005;Embick and Marantz 2008 among others)
   "Roots cannot appear without being categorized; Roots are categorized by combining with category-defining functional heads."

(b) Late Insertion
"The terminal nodes that are organized into the familiar hierarchical structures by the principles and operations of the syntax proper are complexes of semantic and syntactic features but systematically lack all phonological features. The phonological features are supplied –

[3]See Oseki (2022) for a comprehensive view of the DM framework.

after the syntax – by the insertion of Vocabulary Items into the terminal nodes. Vocabulary Insertion (VI) adds phonological features to the terminal nodes, but it does not add to the semantic/syntactic features making up the terminal nodes." (Halle and Marantz 1994:275-276)

(21) The subset principle
"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 1997:428)

(c) Underspecification
"In order for a Vocabulary Item to be inserted in a terminal node, the identifying features of the Vocabulary Item must be a subset of the features at the terminal node. Insertion may not take place if the Item has identifying features that do not appear at the node. The Item need not match every feature specified in the node; rather Vocabulary Items are characteristically underspecified with respect to the features of the nodes into which they are inserted."(Halle and Marantz 1994:276)

(d) Syntactic Hierarchical Structure All the Way Down, cf., Single Engine Hypothesis (Marantz 1997, Arad 2003)
". . . all computation, whether of small (words) or large elements (phrases and sentences), is syntactic, performed by the computational system." (Arad 2003:738)

5.2 American Norwegian

5.2.1 Nominal Domains

- Norwegian has double definiteness.

(22) Norwegian: double definiteness (Julien 2003, 2005)

a. den gaml-e maskin-a
the.DF.SG.F old-DF.SG.F machine-DF.SG.F
'the old machine'

b. $[_{DP}$ D $[_{\alpha P}$ α $[_{FP}$ F $[_{NP}$ N . . .]]]]

(23) Nominals in American Norwegian

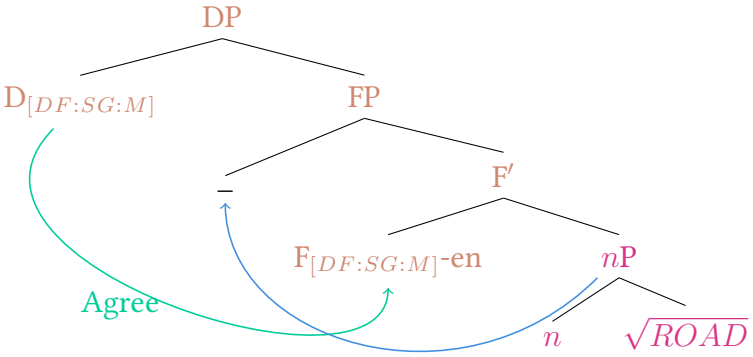
denne heritage tour-en
this-M heritage tour-SC.DEF.M

'This heritage tour' (Grimstad et al. 2018:200,(13b))

- In (24a) and (25a), the functional projection comes from Norwegian.

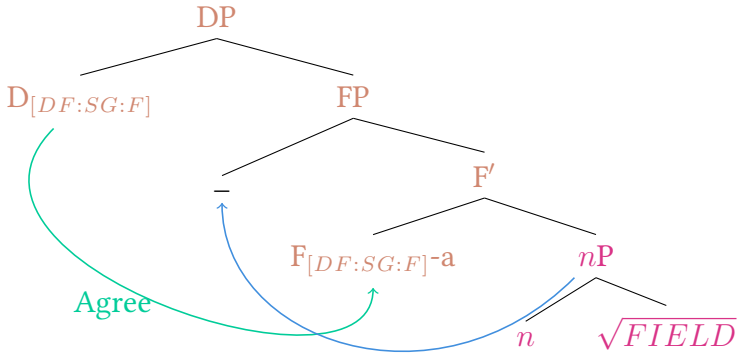
(24) a. road-en
road-DEF.SG.M
'the road'

b. (Riksem 2018:505,(19))



(25) a. den field-a
that.DF.SG.F field-DEF.SG.F
'that field'

b. (Riksem 2018:508,(22a))

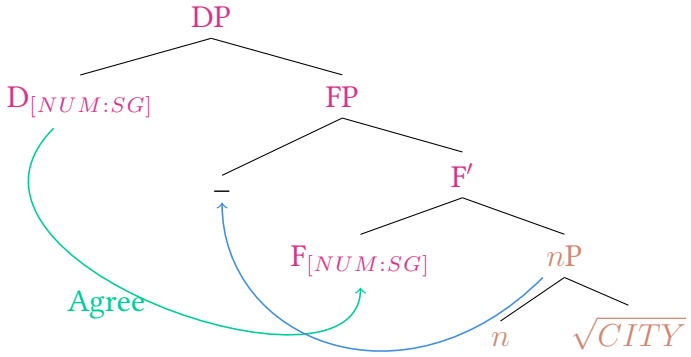


DP in American Norwegian in (24a) and (25a)		
	FP	stem
Functional Exponent	Norwegian	
Functional Feature	Norwegian	
Phonological Exponent		English

Table 4: A summary of the DP structures of American-Norwegian 1

- Another pattern shows that the functional projection comes from English.

(26) a. the by
the city
'the city'

b. 

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

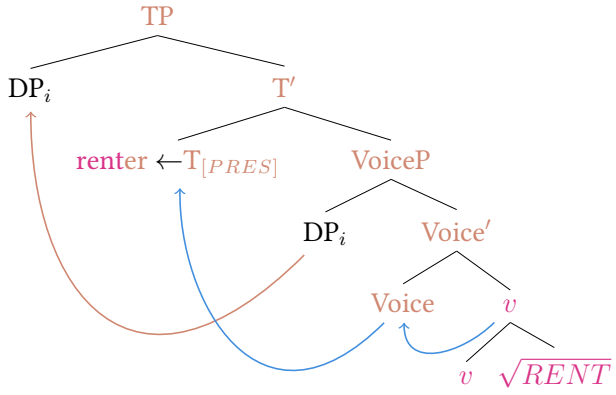
DP in American Norwegian in (26a)		
	FP	stem
Functional Exponent	English	
Functional Feature	English	
Phonological Exponent		Norwegian

Table 5: A summary of the DP structure of American-Norwegian 2

5.2.2 Verbal Domains

(27) American-Norwegian

a. rent-er
rent-PRES
'rent(s)'

b. 

(Riksem et al. 2019:201,(8))

TP in American Norwegian in (27a)		
	FP	stem
Functional Exponent	Norwegian	
Functional Feature	Norwegian	
Phonological Exponent		English

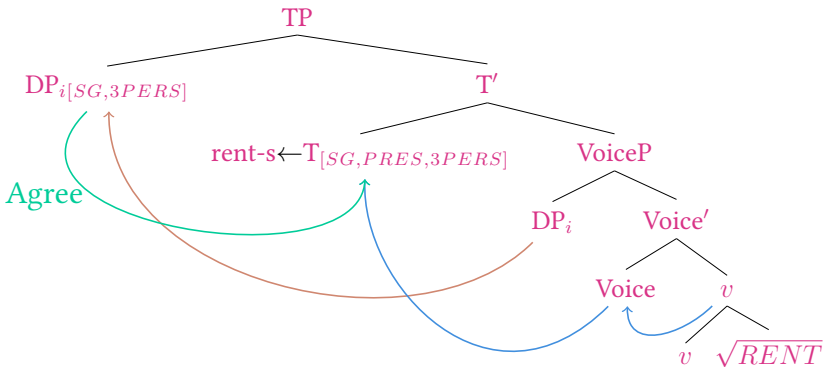
Table 6: A summary of the vP-TP structure of American Norwegian

- If the functional features are from English, T has valued tense, unvalued number, and unvalued person features.

(28) English

a. she rents

b.



5.3 Dakkhini

- Dakkhini: a language that is the outcome of long-term contact between Hindi/Urdu and Telugu (Åfarli and Subbarao 2019)

(29) Hindi/Urdu: *ki* as Initial complementizer (IC)

Mujhe kyā patā [$_S$ **ki** rām kab āyega]?
I+DAT what known [$_S$ IC Ram when will-come]

'How do I know when Ram will come' (Åfarli and Subbarao 2019:32,(3))

(30) Dakkhini: *ki* as Final Complementizer (FC)

[$_S$ rām kab ātāē **ki**] mere ku kyā mālum?
[$_S$ ram when comes FC] I+DAT what known

'How do I know when Ram will come' (Åfarli and Subbarao 2019:32,(4))

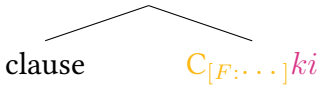
(31) Telugu: *o:* as FC

[$_S$ rāmuDu yeppuDu ostāD **-o:**] nā.ku yēmi telusu?
[$_S$ Ram when comes FC] +DAT what known

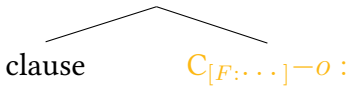
'How do I know when Ram will come?' (Åfarli and Subbarao 2019:32,(5))

(32) Hindi/Urdu

(33) Dakkhini



(34) Telugu



- Åfarli and Subbarao (2019) suggest that in embedded questions, the complementizer *ki* in Dakkhini is reconstituted to become a head-final complementizer and to match the functional feature of the complementizer *-o:* in Telugu.

Dakkhini complementizer *ki*	
Functional Exponent	from Hindi/Urdu *ki* (reconstitution)
Functional Features	from Telugu (final complementizer)

Table 7: The complementizer *ki* in Dakkhini

- Another pattern: a new functional exponent is inserted with new insertion criteria of the Subset Principle.

(35) Hindi/Urdu: *ki* as IC

Mujhe nahi: patā [$_S$ **ki** si:tā gã:v cali: gayi: hai].
I+DAT NEG known [$_S$ IC Sita village has gone is]

'I did not know that Sita has gone to the village' (Åfarli and Subbarao 2019:32,(6))

(36) Dakkhini: *bol ke* as FC

[$_S$ si:tā g=a gã:v ku cale gayi: **bol ke**] mere ku mālum nai:
[$_S$ sita village DAT went away FC] I+DAT known not

'I didn't know that Sita had gone to the village' (Åfarli and Subbarao 2019:32,(7))

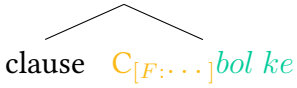
(37) Telugu: *ani* as FC

[$_S$ sīta u:ri ki wellindi **-ani**] nāku teliyadu.
[$_S$ Sita village DAT went FC] I+DAT not known

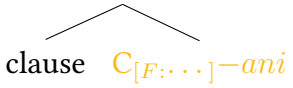
'I did not know that Sita had gone to the village' (Åfarli and Subbarao 2019:33,(8))

(38) Hindi/Urdu

(39) Dakkhini



(40) Telugu



- In *that*-clauses, the functional exponent for the Dakkhini complementizer *bol ke* in (36) is neither from the functional exponent of the complementizer of Hindi/Urdu (*ki* in (35) nor Telugu (*ani* in (37)). Thus, the functional exponent is novel.[4]

bol ke in Dakkhini	
Functional Exponent	*bol ke* (a novel exponent)
Functional Features	from Telugu (final complementizer)

Table 8: The complementizer *bol ke* in Dakkhini

Summary

1. Pattern 1: FP comes from L1 and the stem comes from L2 (e.g., American Norwegian)
2. Pattern 2: FP comes from L1 and its functional exponent comes from L2 where the functional exponent is reconstituted due to a long-term language contact (e.g., the complementizer *ki* in Dakkhini)
3. Pattern 3: FP comes from L1 and its functional exponent is novel, which has new insertion criteria (e.g., the complementizer *bol ke* in Dakkhini)

An unexplored pattern

- Pattern 4: functional features of FP is novel (due to feature recombination), therefore, their functional exponent is also novel.
  → I will propose that this is the case in Creoles.

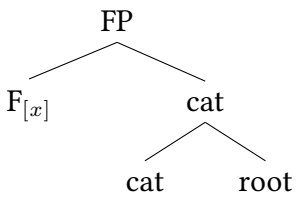
6 A Proposal

(41) A claim/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 re-combined as "hybrid functional categories."

(42) Schema of the syntactic structure

a. $[_{FP}\ F_{[x]}$ [cat root]]] (where cat is a categorizer)

b.



[4] Åfarli and Subbarao (2019:44) point out that *bol ke* is a calque from Telugu.

Functional Features	
phonological features	late insertion
functional features	(i) substrate, (ii) superstrate, (iii) recombination
semantic features	late insertion

Table 9: Functional features under the proposed model

7 Analysis

7.1 Anterior Marker -ba in CVC

(43) (=(12a))

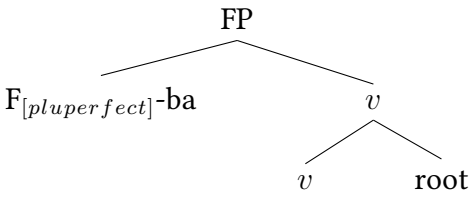
Paulo kumeba katxupa.
Paulo eat+ba katxupa

'Paulo had eaten katxupa.'

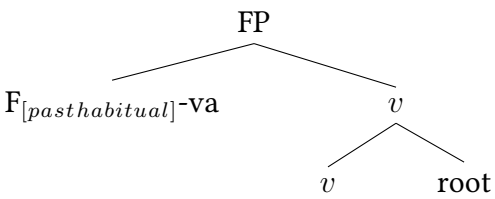
	-va in Portuguese	*ba* in Manjako	*-ba* in CVC
simple past			✓
past habitual	✓		
imperfective with an auxiliary	✓		✓
completion		✓	✓
pluperfect			✓

Summary of relevant items (=Table 3)

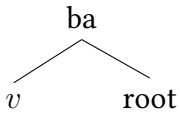
(44) The structure for *-ba* in CVC



(45) The structure for *-va* in Portuguese



(46) The structure for *ba* in Manjako



- As a result of feature recombination of functional features, *-ba* in CVC has a novel functional projection.
- I assume here that a new exponent could be inserted here since the insertion restriction (i.e., the Subset Principle) becomes new due to the recombined functional feature of *-ba* (pluperfect).

-ba in CVC	
Functional Exponent	*-ba* (a novel exponent)
Functional Features	*pluperfect* (a novel feature)

Table 10: The anterior marker *-ba* in CVC

7.2 Nominal Structures in Saramaccan

- Saramaccan's lexifiers are English and Portuguese, and one of the substrates is Fongbe.
- Lefebvre (2013, 2015) argue that the Fongbe nominal structure and that of Saramaccan display similar properties except for word order.

(47) a. Fongbe
àsɔ́n [nyɛ̀ tɔ̀n] élɔ́ ɔ́ lɛ́
crab [me GEN] DEM DEF PL
'these/those crabs of mine'
(Lefebvre 2015:19,(2))

b. Saramaccan
déé/dí físi [u mí] akí
PL/DEF fish [CASE me] DEM
'these/this fish(es) of mine'
(Lefebvre 2015:19,(3))

(48) English
*the my these crabs (Lefebvre 2015:19,(4))

(49) word order in nominal structures
a. Fongbe: PossP NOUN PossP DEM DEF PL
b. Saramaccan: PL DEF PossP NOUN PossP DEM
c. English: {DEF, Poss, DEM} NOUN(.PL) PossP (Lefebvre 2015:61,(81))

(50) a. Fongbe
àsɔ́n ɔ́ lɛ́
crab DEF PL
'the crabs'

b. Saramaccan
déé / dí físi
PL / DEF fish
'the fish(es)' (Lefebvre 2013:45,(31)-(32))

- In Saramaccan, the morpheme *déé* is a plural definite determiner (McWhorter and Good 2012).

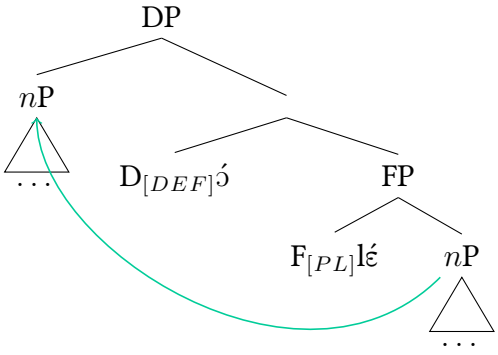
(51) a. Dí dí mɛ́site tá léi, hɛ́ déé míi tá woóko gó dóu
when DEF teacher IMF reading, then DEF.PL child IMF work go arrive
'While the teacher was reading, the children continued working'
(McWhorter and Good 2012:77,(11))

b. A léi mi déé fóótóo.
3s show 1s DEF.PL photo
'He showed me the photographs.' (McWhorter and Good 2012:77,(14))

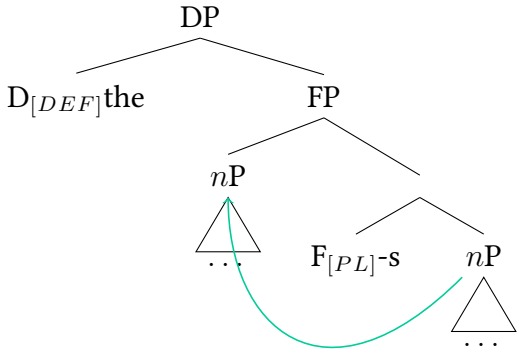
	Fongbe	English	Saramaccan
Definite determiner	✓	✓	✓
Plural determiner			✓
Separate projections (determiner and plural)	✓	✓	
Free morpheme (PL)	✓		✓
DEF >noun (word order)		✓	✓

Table 11: A summary of the properties of nominal structures in Fongbe, English, and Saramaccan

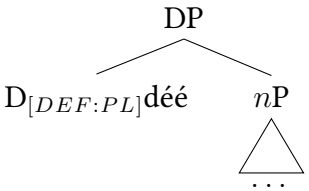
(52) a. Fongbe (cf. Aboh 2019)



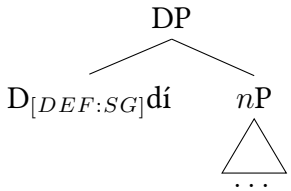
b. English



(53) a. Saramaccan: definite + plural



b. Saramaccan: definite + singular



- In Saramaccan, the definite determiner (sg) is realized as *dí*, while the definite determiner (pl) is realized as *déé*. Accordingly, the functional exponents of these functional features become novel.

7.3 A COMPLEMENTIZER KI IN CVC

- In this subsection, I explore the complementizer *ki* in CVC, its substrate Wolof, and its superstrate European Portuguese.

7.3.1 Wolof

- In Wolof, there are no complementizer markers that are exclusively used in declarative sentences. In embedded, non-interrogative sentences, *ne* is realized as a force complementizer.

(54) Defe-na-a ne macc-na-ñu màngo b-i.
think-FIN-1SC that suck-FIN-3SG mango CL-DEF.PROX
'I think that they sucked the mango' (Torrence 2013:77,(43))

- According to Torrence (2013), *ne* is homophonous with the verb *say* or *tell*.

(55) Ma ne Ayda (*ne) macc-na-a màngo b-i.
1SG say ayda that suck-FIN-1SG mango CL-DEF.PROX
'I told Ayda that I sucked the mango.' (Torrence 2013:78,(44))

- In Wolof, wh-expressions consist of a noun class consonant (a class marker, CL will be used for this marker in glosses) and the wh-element *-an* (Torrence 2013).

(56) wh-forms in Wolof
a. k-an 'who'
b. f-an 'where'
c. l-an 'what'
d. . . . (Torrence 2013:90,(85))

- Wolof has wh-movement with an optional Q-particle.

(57) An interrogative sentence in Wolof

(An-a/i) l-an l-a Isaa lekk?
Q_{wh}-DET CL-*an* XPL-COP isaa eat

'What is it that Isaa ate?' (Torrence 2013:91,(87a))

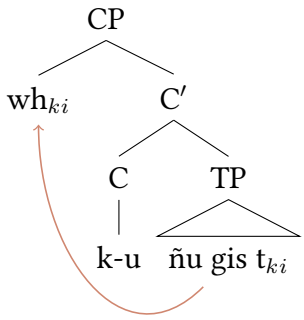
- Torrence (2013) also proposes the existence of a null wh-expression that agrees with the complementizer *k-u* in (58).

(58) K-u ñu gis?
CL-*u* 3PL see
'who did they see' (Torrence 2013:164,(2a))

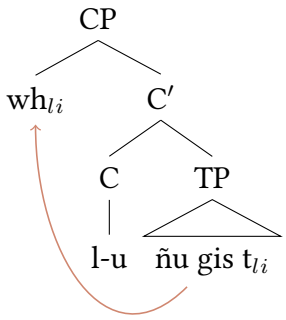
- The *u*-form of the complementizer depends on what it agrees with. In (58), it is realized as *k-u*; in this case, the question is asking about a single person. When the question is asking about a thing, the complementizer becomes *l-u*.

(59) L-u ñu gis?
CL-*u* 3PL they see
'What did they see' (Torrence 2013:164,(2b))

(60) a.



b.



(Torrence 2013:165,(4))

- The distribution of the *-u* form (complementizer) depends on what kind of wh-phrase it agrees with and where the wh-phrase comes from.

(61) a. subject

k-u togg ceeb bi ak jën wi
CL-u cook rice the and fish the

'who cooked the rice and the fish?'

b. direct object

y-u jieéén ji togg
CL-u woman the cook

'what(pl) did the woman cook?'

c. locative adjunct

f-u jieéén ji togg-e ceeb bi ak jën wi
CL-u woman the cook-LOC rice the and fish the

'where did the woman cook the fish and the rice?'

d. applied object

ñ-u negeen ubbéél bunt bi
CL-u 2PL open-ben door the

'who(pl) did y'all open the door for?'

e. instrumental object

l-u Isaa ubbéé bunt yi
CL-u isaa open-instr door the.PL

'what did Isaa open the doors with' (Torrence 2005:80,(4))

- In the null wh-movement pattern, complementizer agreement is obligatory for the highest CP clause, while agreement in the lower CPs is optional. Recall that *u*-form agrees with the null wh-element (which is represented as wh_{k_i} in the examples below), whereas *l-a* does not.

(62) Optional complementizer agreement in Wolof

a. [wh$_{ki}$ k-u Kumba wax [ne k-u Isaa defe [ne k-u Maryam dóór t$_{ki}$]]]?
[WH CL-*u* kumba say [that CL-*u* isaa think [that CL-*u* Maryam dóór t$_{ki}$]]]

'Who did Kumba say that Isaa thought that Maryam hit?'

b. [wh$_{ki}$ k-u Kumba wax [ne l-a Isaa defe [ne l-a Maryam dóór t$_{ki}$]]]?
[WH CL-*u* kumba say [that XPL-COP isaa think [that XPL-COP Maryam dóór t$_{ki}$]]]

'Who did Kumba say that Isaa thought that Maryam hit?'

c. [wh$_{ki}$ k-u Kumba wax [ne l-a Isaa defe [ne k-u Maryam dóór t$_{ki}$]]]?
[WH CL-*u* kumba say [that XPL-COP isaa think [that CL-*u* Maryam dóór t$_{ki}$]]]

'Who did Kumba say that Isaa thought that Maryam hit?'

d. [wh$_{ki}$ k-u Kumba wax [ne k-u Isaa defe [ne l-a Maryam dóór t$_{ki}$]]]?
[WH CL-*u* kumba say [that CL-*u* isaa think [that XPL-COP Maryam dóór t$_{ki}$]]]

'Who did Kumba say that Isaa thought that Maryam hit?'

(Torrence 2013:258,(66))

7.3.2 CVC

- In CVC, the complementizer *ma* 'that' introduces an embedded declarative clause when illocutionary verbs are involved.

(63) a declarative complementizer in CVC

a. Maria fla [$_{CP}$ ma ses fidju ta bai skola]
Maria say(PFV) [$_{CP}$ that POSS.3PL son IPVF go school]
'Maria said that her sons go to school.'

b. Nu atxa [$_{CP}$ ma mininu ka djuga bola n'es kau]
1PL think(PFV) [$_{CP}$ that boy NEG play(PFV) ball in-DEM place]
'We think that the boys didn't play ball in this place'

c. Djon odja [$_{CP}$ ma Maria kunpra sukrinha]
Djon see(PFV) [$_{CP}$ that Mari buy(PFV) sweet]
'John saw that Mary bought sweets'

d. Ta parse-m [$_{CP}$ ma bu sta mariadu]
IPFV parecer-1SG [$_{CP}$ that 2SG be bored]
'It seems to me that you are bored.' (Alexandre 2012:64)

- *Ma* obligatorily appears after illocutionary verbs, while the other CVC complementizer, *ki* cannot.

(64) João fra-m ma/*ki/*∅ Maria kupra libru.
John told+me C Maria bought book
'John told me Mary bought the book' (Baptista and Obata 2015:171,(32))

- However, when the wh-phrase is fronted, the complementizer is realized as *ki*, not as *ma*.

(65) Kenhi ki fra-m kuze ki/*ma/*∅ Maria kunpra?
who C told+me what C Maria bought
'Who told me what Mary bought?' (Baptista and Obata 2015:171,(33))

- "The complementizer *ma* changes to *ki* iff a wh-phrase is interpreted at its Spec position; in other words, if a wh-phrase is interpreted in the embedded Spec-CP, then *ki* must appear" (Baptista and Obata 2015:172).
- When an overt wh-movement takes places, the embedded complementizer also has to be realized as *ki*.

(66) Kenhi *(ki) odja *(ki) João kai di bisikleta?
who C saw C João fall from bicycle
'Who saw that João fell from the bicycle?'

(67) Kenhi *(ki) bu ubi *(ki) João konbida onti?
who C you hear C João invite yesterday
'Who(m) did you hear that João invited yesterday?'

(Obata et al. 2015:6,(8)-(9))

7.3.3 European Portuguese

- In the case of a *wh*-object sentence (see (68a)), a *wh*-phrase is fronted with a cleft form and the complementizer is realized as *que*. I assume here with Kato (2013) that the *wh*-formation involves a cleft formation, as in (68a).

(68) a. O que é que ele disse?
DEF that is that he said
'What did he say?'

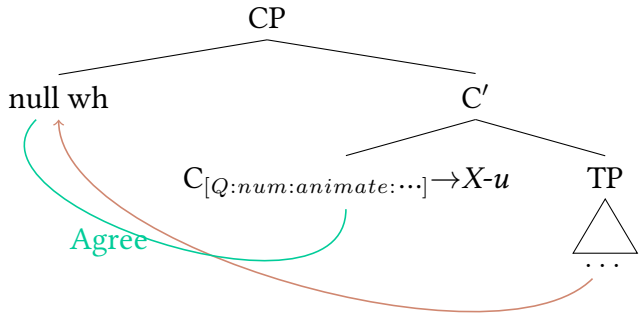
b. Quem viu João
who saw John
'Who saw John?'

7.3.4 Summary

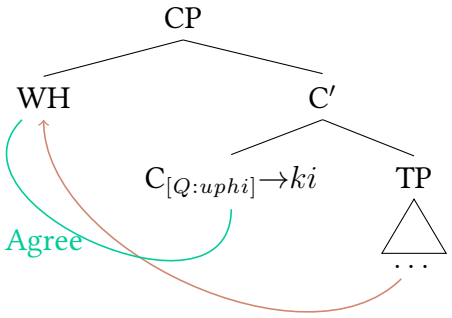
	Wolof	CVC	European Portuguese
Wh-fronting with a cleft form	yes	no	yes
overt Wh-movement and complementizer agreement	no	yes	only for wh-object
An agreed complementizer form	*k-u/l-u*, etc.	*ki*	*que*
Agreement optionality	yes (for embedded clauses)	no	no

Table 12: The summary of the complementizer agreement system in Wolof, CVC, and European Portuguese

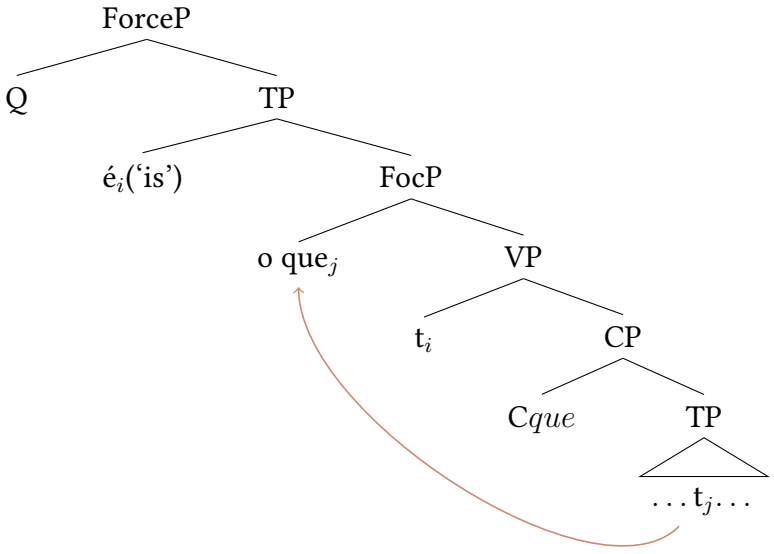
(69) Wolof



(70) CVC



(71) European Portuguese



- The syntactic structures proposed above clearly suggest that the CVC complementizer system does not come from Wolof or European Portuguese.
- I argue that feature recombination takes place on the C head, and CVC develops its own unique complementizer agreement system.

8 Theoretical Implications

8.1 On Feature Recombination

(72) Feature-recombination
The recombination of (morpho)-syntactic features is free (i.e., not subject to external ecological factors). (Aboh 2015:136, (14))

(73) Feature recombination and creolization

a. During acquisition, learners are exposed to heterogeneous inputs from which they learn to master multiple linguistic sub-systems allowing communication in the community.

b. Learning partly results from a basic cognitive process: **recombination**, which enables learners to merge linguistic features selected from the inputs new variants.

c. Recombination feeds on heterogeneous inputs, its outputs are hybrid constructs, hence the emergence of hybrid grammars. (Aboh 2019:294)

(74) Algorithmic principle underlying the emergence of congruent features (Baptista 2020:183)
Algorithm L on a feature and its variants: Given multiple competing tokens to express feature x in the linguistic ecology π, the learner selects the variant y with increasing input p, when y is instantiated in multiple external grammars α, β, and γ via similar form/function mapping and/or syntactic alignment across α, β, and γ.

8.2 Underspecification and Linguistic Variation

The Universal Feature Inventory (Embick 2015)

- UG provides a complete set of functional features
- A specific language is identified based on its selection of features and how these are grouped together in various feature bundles.

- "... even though scholar commonly assume that a universal selection of features is available, there is not yet a comprehensive theory about possible and impossible features. On the one hand, one can argue that this is an empirical question, and that the selection of features is a wide as the attested features found in the languages of the world (Riksem 2018)."

(75) The third factor effect/learning process (Biberauer and Roberts 2015:7,(6))
   a. Feature Economy (FE): Postulate as few formal features as possible to account for the input
   b. Input Generalisation (IG): If a functional head F sets parameter P_j to value v_i then there is a preference for all functional heads to set P_j to value v_i

(76) UG + input + Maximise Minimal Means (MMM) → Adult Grammar

(Biberauer 2019:213, (3))

- I stipulate here that the feature recombination takes place from the universal feature inventory, interacting with Algorithmic principle underlying the emergence of congruent features (Baptista 2020).
   1. the universal feature inventory ← the input of feature recombination
   2. Is a feature F realized?
   3. Bundling multiple features?

8.3 A null theory approach

(77) Creole exceptionalism
"the postulation of exceptional and abnormal characteristics in the diachrony and/or synchrony of Creole languages as a class." (DeGraff 2005:534)[5]

(78) A null theory approach
"an approach that claims that the same theory that accounts for monolingual data should account for language mixing as well. An advantage of this perspective is that language mixing is not something peripheral to the study of the language faculty, but rather, data from language mixing can inform the study of this faculty" (Riksem et al. 2019:194)

(79) A null theory of Creole Formation
"Our null theory does away with any sui generis stipulation that applies to Creole languages only. Instead it is rooted in basic assumptions and findings about UG, that is, assumptions and findings that apply to all languages and to how learners acquire these languages" (Aboh and deGraff 2015)

[5] See also Aboh and deGraff (2015), McWhorter (2018), Baptista et al. (2020) for relevant discussion.

9 Conclusions

- Functional features are recombined in some Creole Languages.
- These recombined functional features are one of the sources of the 'hybrid' nature of Creole grammars
- Creole Grammar can be captured by the proposed model, which is a null theory approach.
  → Creoles are natural languages, not "simplified languages"

Features	
phonological features	late insertion
functional features	recombination
semantic features	late insertion (Encyclopedia)

Table 14: Features under the proposed model

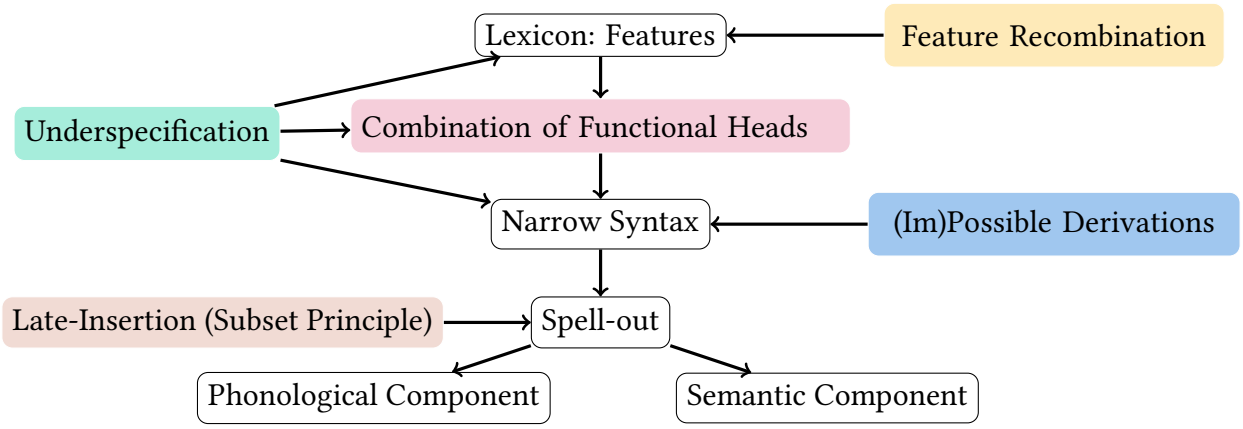


Figure 5: A proposed grammatical model in Sugimoto (2022)

* See Sugimoto (2022) for more details on the discussion of (im)possible derivations and combination of functional heads.

9 References

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