PHONOLOGY-SYNTAX INTERLEAVING IN GUÉBIE FOCUS FRONTING

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ABSTRACT.   In Guébie (Kru, ISO 639-3: gie), a focus-fronted verbal particle shows ATR harmony with the verbal root if the verbal root is clause-final (PartSAuxOV), but not if it has moved out of the VP (PartSVO). When the fronted particle harmonizes with the clause-final verbal root, Discontinuous Vowel Harmony (DVH) arises.

To account for the Guébie DVH facts, we propose a novel model of the phonology-syntax interface, where a subpart of previously spelled-out and phonologically evaluated material can undergo movement. In Guébie, the spell-out of VoiceP follows head movement, but precedes focus fronting (Ā-movement), which can target a subpart of the previously spelled-out VceP. Thus, we show that in order to account for Discontinuous Vowel Harmony in Guébie there must be cyclic spell-out and the strict Phase Impenetrability Condition (PIC) must be abandoned.

1 INTRODUCTION

- In Guébie (Kru, ɪsᴏ 639-3: `gie`), a focus-fronted verbal particle shows:
    - ATR harmony with the verbal root if the verbal root is clause-final (PartSAuxOV)
    - no ATR harmony with the verbal root if the verbal root has moved out of the VP (PartSVO)

- Dɪsᴄᴏɴᴛɪɴᴜᴏᴜs Vᴏᴡᴇʟ Hᴀʀᴍᴏɴʏ (DVH)

- We propose a novel model of the phonology-syntax interface, where a subpart of previously spelled-out (phonologically evaluated) material can undergo movement.
    - head movement $<$ spell-out of VceP $<$ focus fronting ($\bar{\text{A}}$-movement)
    - focus fronting may target a subpart of spelled-out VceP

- 👎 strict Phase Impenetrability Condition (PIC)

- Section 2 give background on the language. Section 3 presents the focus fronting data. Section 4 considers and rejects alternative accounts. Section 5 puts forth a novel theoretical proposal. Section 6 concludes.

2 LANGUAGE BACKGROUND

- Guébie: Eastern Kru, ɪsᴏ 639-3: `gie`
    - spoken in the Gagnoa region of Côte d'Ivoire by about 7,000
    - data collected primarily in Gnagbodougnoa

- Vowels contrast in $\pm$ATR. Vowel harmony will be the focus of our talk.

+ATR	ə	e	i	o	u
−ATR	a	ɛ	ɪ	ɔ	ʊ

Table 1: Guébie vowel inventory (Sande, 2017).

- Data collected by Hannah between 2013–2021 (Bodji and Sande, 2014).

3 GUÉBIE WORD ORDER FACTS

3.1 *Basic word order*

- Clausal word orders:

  – SAuxOV if there is Aux (1a)

  – SVO if there is no Aux (1b)[1]

(1) a. S   Aux O   V
       $\jmath a^{23} ci^1$ $ji^3{}_T$ $su^2\text{-}wa^2$ $gba^2 la^4$
       Djatchi FUT   tree-DEF climb
       "Djatchi will climb the tree."

    b. S   V   O
       $\jmath a^{23} ci^1$ $gba^2 la^4{}_T$ $su^2\text{-}wa^2$
       Djatchi climb.PFV tree-DEF
       "Djatchi climbed the tree."

- Previous work has shown that the post-subject position is T, rather than C, with evidence from topics, focus, and WH-questions for a higher C-position (Sande, 2017).

- Analysis of basic word order distinctions:

  – if Aux is present, Aux occupies T

  – in the absence of Aux, V moves to T (see Koopman, 1984 for a similar analysis of word order in the related language Vata)

3.2 *Particle verbs*

- Guébie has a class of particle verbs, composed of an adposition-like particle and a verbal root (Sande, 2017, 2021; Sande and Clem, 2021).

- In SAuxOV contexts, the particle and the verbal root appear in the clause final position (2a-b).

- In SVO contexts, the verbal root occupies the immediate post-subject position (i. e. T), and the particle is left behind (2c).

- The particle may not move with the verb (2d).

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[1] The following glossing abbreviations are used: 1 = first person, 2 = second person, 3 = third person, ACC = accusative, DEF = definite, FUT = future, IPFV = imperfective, IRR = irrealis, N = nominalizer, NEG = negative, PART = particle, PFV = perfective, POSS = possessive, PQ = polar question, Q = question particle, REFL = reflexive, SG = singular, WH = content interrogative.

(2) a.
S	Aux	O	Part	V
e^4	$ji^3{}_T$	$\textrm{\textipa{j}}a^{23}ci^1$	$jo^2ku^3\text{-}$	ni^4
1SG FUT		Djatchi	PART-	visit

"I will visit Djatchi."

b.
S	Aux	O		Part	V
$\textrm{\textipa{j}}a^{23}ci^1$	ji^3	$\textrm{\textipa{O}}^3n\varepsilon^3$	$gb\textrm{\textipa{O}}^2g\textrm{\textipa{O}}^2$	$j\textrm{\textipa{O}}^2ku^3\text{-}$	$\eta^w\textrm{\textipa{O}}^3sa^1$
Djatchi	FUT	3SG.POSS	leg	PART-	scrape

"Djatchi will scrape his leg."

c.
S	V	O	Part
e^4	$ni^4{}_T$	$\textrm{\textipa{j}}a^{23}ci^1$	$j\textrm{\textipa{O}}^2ku^3$
1SG	visit.PFV	Djatchi	PART

"I visited Djatchi."

d.
S	Part	V	O
$*e^4$	$jo^2ku^3\text{-}$	$ni^4{}_T$	$\textrm{\textipa{j}}a^{23}ci^1$
1SG	PART-	visit.PFV	Djatchi

intended: "I visited Djatchi."

- The particle and the verbal root show ATR harmony when syntactically adjacent (2a-b), but not when the verb occupies the post-subject position (2c).

- Root-controlled, word-internal ATR harmony is a regular process in the language, which holds between roots and affixes, but not clitics (Sande, 2017, 2019).

3.3 *Focus fronting*

- A focused constituent surfaces left of the subject (3).

(3) a. OBJECT FOCUS
$\textrm{DO}_{Foc}$	S	V	IO	Part
$ba^3gw\varepsilon^1$	$\textrm{\textipa{O}}^3$	pa^{23}	$\text{=}\textrm{\textipa{O}}^2$	ko^3
book	3SG	send.PFV	=3SG.ACC	PART

"He sent him [a book.]$_{Foc}$"

b. ADJUNCT FOCUS
$\textrm{Mod}_{Foc}$	S	V	O
$s\textrm{\textipa{O}}^4k\textrm{\textipa{O}}^2$	$m\varepsilon^3$	$\textrm{\textipa{O}}^3$	$pa^3{}_T$	$\text{=}a^2$
hole	in	3SG	throw.PFV	=3SG.ACC

"She threw it [into a hole.]$_{Foc}$"

- Focusing a simple verb (no particle) is realized with doubling (4).

(4) a. SVO VERB FOCUS

    V_{Foc} S   V
    gba²la⁴ ɔ³ gba²la⁴
    climb 3SG climb

    "He [climbed.]$_{Foc}$"

  b. SAuxOV VERB FOCUS

    V_{Foc} S   Aux O   V
    gba²la⁴ ɔ³ jɨ³ᴛ su² gba²la⁴
    climb 3SG FUT tree climb

    "He will [climb]$_{Foc}$ a tree."

- Focusing a particle verb is realized with particle-fronting (5a) and no doubling (5b).

(5) PARTICLE FOCUS

  a. Part$_{Foc}$ S   V   O
    jɔ²kʊ³ ɔ³ ni⁴ᴛ =ɔ²
    PART   3SG visit.PFV =3SG.ACC

    "He [visited]$_{Foc}$ him."

  b. (Part$_{Foc}$) V   S V   O   (Part)
    *(jo²kʋ³-) ni⁴ ɔ³ ni⁴ᴛ =ɔ²   (jɔ²kʋ³)
    PART-   visit 3SG visit.PFV =3SG.ACC PART

    intended: "He [visited]$_{Foc}$ him."

- The meaning of verb doubling (4) and particle fronting (5) is the same: the verb is focused.

- The difference is purely morphosyntactic: regular verbs double under focus, while particles front in particle verb focus.

- We use the term *predicate fronting* to refer to the verb doubling and particle fronting focus constructions, following work on verb doubling constructions in related languages (Koopman, 1997).

- KEY DATUM
  Fronted particles harmonize with the root in PartSAuxOV (6a), but not in PartSVO constructions (6b).

(6) a. Part   S Aux O   V
    jo²kṵ³ ɔ³ jɨ³ᴛ ɟa²³ci¹ ni⁴
    PART   3SG FUT Djatchi visit

    "He will [visit]$_{Foc}$ Djatchi."

b. Part   S   V   O
  $jɔ^2kʊ^3$ $ɔ^3$ $ni^4{}_T$ $=ɔ^2$
  PART   3SG visit.PFV =3SG.ACC
  "He [visited]$_{Foc}$ him."

- Examples like those in (6a) show what we refer to as *discontinuous harmony*, where material intervenes between harmonizing constituents.

- Other than Guébie, we know of one additional case of attested discontinuous harmony, in Wolof noun phrases and relative clauses (Sy, 2005).[2]

- The existence of discontinuous harmony is unexpected from a phonological perspective:

  - Harmony is typically assumed to be motivated by co-articulation.

  - When the particle and verb surface on opposite ends of the clause and show harmony, but intervening material is not subject to harmony, a co-articulation account is untenable.

4 CONSIDERING EXISTING ANALYSES OF PREDICATE FRONTING

- Two specific aspects of the Guébie facts prove challenging for previous analyses of predicate fronting and verb doubling (Sande and Clem, 2021):

  - The verb doubles when no particle is present, but not when there is a particle.

  - Fronted particles harmonize with verb roots in PartSAuxOV contexts (when the particle and verb surface on opposite ends of the clause), but not in PartSVO contexts.

- We assume that focus in Guébie involves movement and focused constituents are not base-generated at the left edge (cf. Cable, 2004), see the appendix (Section A.2) for evidence.

- We show that existing accounts of predicate fronting as movement are not sufficient to model the Guébie facts.

- Specifically, Koopman (1997) presents an analysis of verb doubling in Vata, which resembles the verb doubling pattern in Guébie, as involving remnant VP movement.

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2 In addition, Martinović (2019) provides morphological evidence that in Wolof, a spell-out does not prevent a phase from being accessed by higher heads.

– Crucially, particle verb focus in Vata does not result in particle fronting, which differentiates it from the Guébie pattern.

- BASICS OF THE PATTERN

    – Koopman argues that objects are required to vacate the VP.

    – The verb head-moves to T in SVO contexts.

    – The remnant VP moves to Spec,FocP.

    – The copy of V in T is pronounced as the head of a movement chain.

    – The verb in Spec,FocP is also pronounced in order for focus movement to be recoverable.

- EXTENDING THE ANALYSIS TO GUÉBIE

    – If we assume that the verb head-moves to Voice (v) even in SAuxOV contexts, then verb focus in both SAuxOV and SVO contexts involve two movement chains, allowing for double pronunciation.

    – In verb doubling contexts, as in Vata, the higher copy of the verb would be pronounced for recoverability reasons.

    – Under simple economy principles, since the particle never leaves the VP, when a particle is present in VP focus constructions, it will be pronounced in Spec,FocP and the verb will not double.

    – On this account, the correct elements can be derived as surfacing in the correct positions in each of the four relevant cases:
    1. VSVO   2. VSAuxOV   3. PartSVO   4. PartSAuxOV

(7)   a. VSAuxOV/PartSAuxOV   b. VSVO/PartSVO
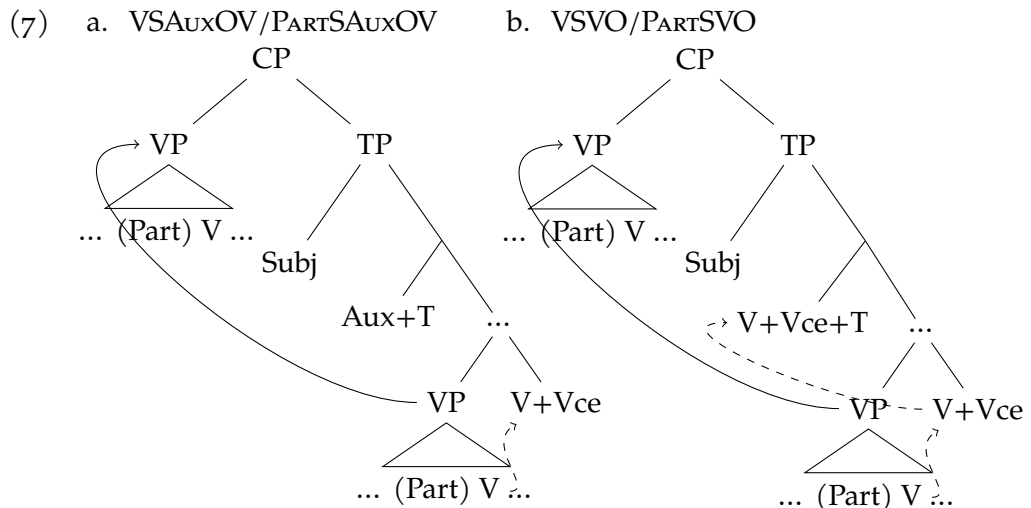
- PROBLEMS FOR THE ANALYSIS

  - The major problem for a Koopman-style analysis is that it cannot derive the harmony facts: We see harmony in PartSAuxOV but not PartSVO contexts.

    * Harmony between the fronted particle and verb cannot be local, between the particle and silent V, because this overpredicts that harmony should also appear in PartSVO contexts.

    * There is no way to get a silent fronted V in PartSAuxOV but not PartSVO contexts without disrupting the analysis of verb doubling.

- Also note that V focus (the construction presented here) is distinct from VP focus in Guébie, which involves a nominalized fronted verb and do-support in the main clause.

- Accounting for *both* verb doubling in non-particle verb focus and the harmony facts in particle verb focus presents a challenge for existing accounts.[3]

5 NOVEL ANALYSIS

- Our alternative:

  - the particle harmonizes with the verb while both are low: SAuxOPartV, but not in SVOPart where the verb has moved to T

  - fronting happens after the harmonization: PartSAuxOV, cf. PartSVO

- Vowel harmony obtains at the level of the prosodic word (Sande, 2017). In SAuxOV contexts, the particle + verb are one word.[4]

- Novel piece: the particle is still able to move for focus reasons, after having already been spelled-out and subject to harmony.

- Unexpected in Phase Theory where the Phase Impenetrability Condition (PIC) is at play (Chomsky, 2000, 2001), but necessary for Guébie.

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3 (Sande and Clem, 2021) also rule out V-fronting accounts, as well as post-syntactic head-movement to T followed by narrow-syntactic focus movement.

4 Alternatively, one could analyze the Voice phase as the domain of vowel harmony (Sande, 2019). Under this analysis, everything that is still inside of the phase when it is spelled out is subject to root-controlled harmony. This includes the particle and voice suffixes, but not the object, which obligatorily moves out, and also not a verb that has moved out of VceP before the phase is spelled out.

- We adopt the standard analysis of focus movement as involving Ā-movement to Spec,FocP (Brody, 1990; É. Kiss, 1987; Ortiz de Urbina, 1986) (3b′).

(3b′) $s\sigma^4k\sigma^2\ m\varepsilon^3$ _{Foc} $\sigma^3\ pa^3$ _T $\text{=}a^2$ $s\vartheta^4k\vartheta^2\ m\varepsilon^3$
     hole in   3SG throw.PFV =3SG.ACC hole in

- We assume that verbal roots ($\sqrt{}$) are complements to the category head v and head-move to v (Embick, 2010, 2015).

- Verb particles are phrasal (PartP) and introduced as complements to roots (8).

(8) $[\ [\ jo^2ku^3$ _{PartP} $n\mathbf{i}^4$ _{$\sqrt{}$} $]$ _{$\sqrt{}$P} $n\mathbf{i}^4$ _{v} $]$ _{vP}
      PART   visit   visit

- We assume the target of verb focus is vP, which coincides with the interpretation of verb focus.[5]

5.1 Verb doubling

- We assume that v moves to the agent-introducing head Vce.

- Thus, when focused, the verb participates in two movement chains (Kandybowicz, 2007; Koopman, 1997):

  – head movement v-to-Vce (sometimes followed by Vce-to-T)

  – focus fronting vP-to-Spec,FocP

- In each chain the highest copy is pronounced, resulting in doubling in verb focus contexts (4b′).

(4b′) gba^2la^4 _{Foc} $\sigma^3\ ji^3$ _T $su^2\ gba^2la^4$ _{v(P)} gba^2la^4 _{Vce}
     climb   3SG FUT tree climb   climb

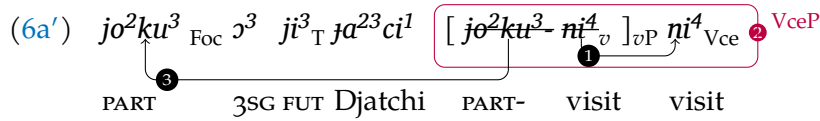- We adopt a WYSIWYG model of movement: when a particle verb is focused, only the particle moves.

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5 Verb focus is distinct from VP focus, which involves a nominalized fronted VP and *do*-support (i).

   (i) li^3 =$li^2\ b\varepsilon^2\ ja^{23}ci^1\ n$ =σ^2 $gba^1\ \sigma^3\ no^2$
       eat=N thing Djatchi say.PFV =3SG.ACC that 3SG do.PFV

       "It's [eating something]_{Foc} that Djatchi told him that he did.'

- We model this as anti-pied-piping, whereby only the leftmost subconstituent of the logically focused phrase fronts (Branan and Erlewine, 2020).

- Crucially, we propose that the difference in ATR harmony between PartSAuxOV (6a) and PartSVO (6b) results from the interleaving of movement and spell-out.
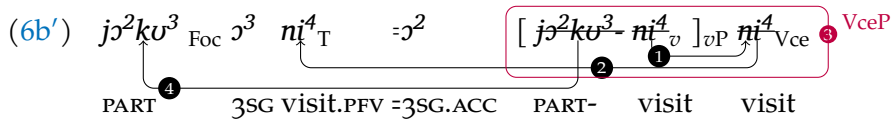
5.2 *PartSAuxOV*

- In PartSAuxOV constructions, the verbal particle harmonizes with the verbal root (6a′).

(6a′) jo^2ku^3 $_\text{Foc}$ $ɔ^3$ ji^3 $_\text{T}$ $ɟa^{23}ci^1$ $[\ jo^2ku^3\text{-}\ ni^4_v\ ]_{vP}\ ni^4$ $_\text{Vce}$ ❷ $^\text{VceP}$

        ❸   ❶

PART   3SG FUT Djatchi   PART-   visit   visit

- First, v moves to Vce (❶).

- Second, VceP is spelled out and undergoes phonological evaluation (❷). Since the verbal root is in VceP at spell-out, the particle can harmonize with it.

- Third, vP-focus anti-pied-pipes the verbal particle to Spec,FocP, resulting in discontinuous harmony (❸).

5.3 *PartSVO*

- In PartSVO constructions, the verbal particle does not harmonize with the verbal root (6b′).

(6b′) $jɔ^2kʊ^3$ $_\text{Foc}$ $ɔ^3$ ni^4 $_\text{T}$ $\text{=}ɔ^2$ $[\ jɔ^2kʊ^3\text{-}\ ni^4_v\ ]_{vP}\ ni^4$ $_\text{Vce}$ ❸ $^\text{VceP}$

        ❹   ❷   ❶

PART   3SG visit.PFV =3SG.ACC   PART-   visit   visit

- First, v moves to Vce (❶).

- Second, Vce moves to T (❷).

- Third, VceP undergoes phonological evaluation (❸). Since the verbal root has left VceP before spell-out, there is nothing for the particle to harmonize with, and the particle surfaces with its underlying vowel quality.

- Fourth, vP-focus anti-pied-pipes the particle to Spec,FocP (❹).

5.4   *Discussion of the model*

- Our model (Figure 1): cyclicity of syntax and phonology, following Chomsky (2001), Kastner (2019), Pak (2008), Samuels (2012), and Sande, Jenks, and Inkelas (2020), and others
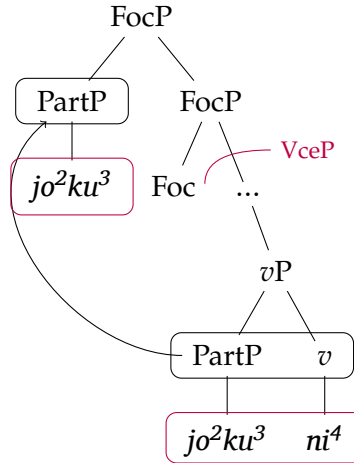

Figure 1: Movement of spelled-out [*jo²ku³*].

- Departure from previous models: abandoning a strong version of PIC; compatible with d'Alessandro and Scheer's (2015) modular PIC.

- Some syntactic information must be preserved after spell-out and phonological evaluation, following Gribanova and Harizanov (2015), Sande (2018), and Winchester (2016), and others; contra Bobaljik (2000)

- Syntax does not refer to phonology (phonology-free syntax, as per Pullum and Zwicky, 1988) and that phonology does not refer to syntactic structure (e. g. bracket erasure):

    - morphosyntactic nodes (black boxes in Figure 1) are associated (with vertical lines) to phonological nodes (purple boxes)

    - neither module has access to the representational pieces of the other

- E. g., focus fronting may target the syntactic node PartP:

    - PartP is associated with the previously spelled out (VceP) phonological node [*jo²ku³*]

    - [*jo²ku³*] moves to Spec,FocP along with with PartP.

    - syntactic focus fronting only refers to "PartP;" it does not refer to any phonological information

- When the particle and the verb root /$j\mathfrak{o}^2ku^3\ ni^4$/ are evaluated together at VceP spell-out (yielding [$j\mathfrak{o}^2\underset{\smile}{ku^3}\ ni^4$]), no phonological rule or constraint refers directly to syntactic information.

6   CONCLUSIONS

- Guébie focus fronting shows Discontinuous Vowel Harmony (DVH).

- We propose a novel model of the phonology-syntax interface where once-spelled-out elements can undergo further movement.

- head movement $\prec$ spell-out of VceP $\prec$ focus fronting (Ā-movement)

- The Guébie (and Wolof) data require a rethinking of the syntax-phonology interface, and specifically a need to abandon the strict Phase Impenetrability Condition.

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A   APPENDIX

A.1   *Particle verbs*

- Some particles derived from/homophonous to postpositions (9).

(9)   a. e^4 me^3 $da^4ba^4ra^4$ $\underline{ko^3}$
         1SG go.PFV market   to
         "I went to the market."
      b. $ɔ^{24}$ $\underline{ko^3}$- $wə^4ri^4$
         3SG.NEG PART- be heavy
         "He is not heavy."

- Particles are distinct from postpositions:
    - they show distinct phonological and morphosyntactic behavior.
    - the meanings of verb root + particle are noncompositional (10-11)
    - some particles do not correspond to any postpositions (12)

(10) $mɛ^3$ 'in'
a. $mɛ^3$-$tɛ^2$	b. $mɛ^3$-$trɔ^3$	c. me^3-nu^2
be strong	be long	undestand (from nu^2 'hear')

(11) $kɔ^3$ 'at,' 'to'
a. ko^3-$si^3li^3je^1$	b. $kɔ^3$-$trɔ^3$	c. $kɔ^3$-$pu^4rʋ^2$
straighten	be tall	hurry (from $pʋ^4rʋ^2$ 'be fast')

(12) $da^2kɔ^3$ '?'
a. $da^2kɔ^3$-$gbɔ^2$	b. $da^2kɔ^3$-wa^3
move	hide

A.2   *Focus involves movement*

- There are three key pieces of evidence that suggest that focus in Guébie involves narrow syntactic movement.
    1. There is evidence of successive cyclicity (13).
    2. A doubled verb or fronted particle out of an island is judged as ungrammatical or very odd (14).

3. Verb doubling and particle fronting (all focus movement) creates an island for movement (15).

(13) SUCCESSIVE CYCLIC MOVEMENT IN PARTICLE FRONTING

a. *e⁴ wa²   gba¹ jo²ku⁴ e⁴ ka³ ɟa²³ci¹ ni⁴*
     1SG want.IPFV that PART 1SG IRR Djatchi visit
     "I want to [visit]_Foc Djatchi."

b. *jo²ku³ e⁴ wa²   gba¹ (jo²ku⁴) e⁴ ka³ ɟa²³ci¹ ni⁴*
     PART   1SG want.IPFV that PART   1SG IRR Djatchi visit
     "I want to [visit]_Foc Djatchi."

(14) PARTICLE FRONTING IS ISLAND SENSITIVE

a. *ɟa²³ci¹ jɛ²ra³ ɔ²-ji³   gba¹ to¹u¹ri³ ni⁴   =ɔ²   jɔ²kʊ³*
     Djatchi ask.PFV 3SG-REFL that Touri   visit.PFV =3SG.ACC PART
     "Djatchi wonders whether Touri visited him."

b. **jɔ²kʊ³ ɟa²³ci¹ jɛ²ra³ ɔ²-ji³   gba¹ (jɔ²kʊ³) to¹u¹ri³ ni⁴   =ɔ²*
     PART   Djatchi ask.PFV 3SG-REFL that (PART)   Touri   visit.PFV =3SG.ACC
     intended: "Djatchi wonders whether Touri [visited]_Foc him."

(15) PARTICLE FRONTING CREATES AN ISLAND FOR MOVEMENT

a. *bɛ³ba¹_i e² ji²   =se⁴ [gba¹ to¹u¹ri³ ni⁴   t_i jɔ²kʊ³] na²*
     what   2SG know.IPFV =PQ   that Touri   visit.PFV PART   Q
     "What do you know that Touri visited?"

b. **bɛ³ba¹_i e² ji²   =se⁴ [gba¹ jɔ²kʊ³ to¹u¹ri³ ni⁴   t_i] na²*
     what   2SG know.IPFV =PQ   that PART   Touri   visit.PFV   Q
     intended: "What do you know that Touri [visited]_Foc?"

- Given these facts, we assume that Guébie focus constructions involve movement, and specifically narrow syntactic movement.