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Information Structure: A Cartographic Perspective

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Abstract and Keywords

This chapter discusses the cartographic approach to clause structure according to which information structure directly relates to syntactic heads that project within the clausal left periphery. This view is supported by data from languages in which information-structure-sensitive notions (e.g. topic, focus) are encoded by means of discourse markers that trigger various constituent displacement rules. Such empirical facts are compatible with the cartographic view in which lexical choices condition information packaging and clause structure. Put together, the cross-linguistic data presented in this chapter indicate that [FOCUS], [TOPIC], and [INTERROGATIVE] represent formal features that are properties of lexical elements and may sometimes trigger generalized-piping and snowballing movement.

Keywords: topic, focus, interrogative, cartography, generalized pied-piping, snowballing movement

8.1 Introduction

A question that is central to modern comparative syntax is whether there could be direct relations between information structure packaging and structure building (e.g. Chomsky 1971; Jackendoff 1972; Gundel 1974; Valduví 1990). Within the Minimalism framework, for instance, Chomsky (1995: 220) briefly addressed this question suggesting that surface effects (e.g. commonly associated with Topic-Focus articulation) ‘involve some additional level or levels internal to the phonology component, postmorphology but prephonetic, accessed at the interface along with PF and LF’. This view restates Chomsky’s (1971) original conclusion that information-structure-sensitive word order variations derive from PF (Phonological Form) and LF (Logical Form) interface properties.

Section 8.1.2 briefly presents some recent proposals that adopt (some version of) this view. Zubizarreta (1998, 2010, this volume), for instance, argues that information-structure-sensitive surface rearrangements derive from the interaction between checking operations involving purely formal features, and phonologically conditioned movement operations (i.e. P-movement). Under this view, the interaction between information structure

and clause structure is mediated by p-features. Szendrői (2001) and Fanselow (2006, 2007) adopt a more radical view in which surface manifestations strictly derive from syntax-PF interface phenomena that relate to information structure only indirectly.

Alternatively, the cartographic approach, discussed in Sections 8.1.3 and 8.1.4, postulates that information structure directly relates to syntactic heads that project within the clausal left periphery (Rizzi 1997). This view is supported by data from cross-linguistic data (e.g. Romance, Germanic, Kwa, Bantu, Chadic, Gur, Sign Languages). In (p. 148) some of these languages, information-structure-sensitive notions (e.g. topic, focus) are encoded by means of discourse markers that trigger various constituent displacement rules. Such empirical facts are compatible with the cartographic view in which lexical choices condition information packaging and clause structure. Section 8.1.5 concludes the chapter.

8.2 Information structure: a syntax-PF interaction

Studies on stress assignment and focus meaning in English (e.g. Chomsky 1971, 1977; Jackendoff 1972; Selkirk 1984, 1995; Zubizarreta 1998, 2010, this volume) show that:

- (i) There is a correlation between stress assignment and focus interpretation.
- (ii) Stress assignment rules make reference to syntactic notions (e.g. c-command).
- (iii) Stress assignment rules correlate with prosody-driven movement (e.g. scrambling).
- (iv) Prosody-driven word order alternations affect meaning.

In accounting for these four interrelated observations, Zubizarreta (1998) argues for a syntactic model that postulates two types of features: f(ormal)-features, involved in checking operations, and p(honological)-features, relevant for P-movement. f-features and p-features enter the computation at different points: the computation of p-features occurs after f-features have been 'checked' or 'valued'. A converging sentence is therefore one for which both formal operations converge. Because Zubizarreta's (1998, 2010) analysis in terms of P-movement involves the syntactic component, this view does not exclude the possibility that some languages (e.g. Bantu, Kwa) can display discourse marking functional items that may encode discourse-related f-features responsible for rearrangement rules. The question then remains how P-movement is parametrized.

Fanselow (2006, 2007), Szendrői (2001, 2003) and much related work argue for a 'pure' syntax and seek to exclude discourse-related features from the syntactic component altogether. Under such views, the relation between clause peripheral phenomena and information structure is indirect. Szendrői (2003: 44, 47), for instance, claims that movement of the focused constituent to sentence-initial position in Hungarian results from an interaction between Hungarian stress rule, a stress-focus correspondence principle, and a stress-driven movement rule. Assuming that topics are adjoined, Szendrői (2001, 2003)

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argues that the constituent *a kalapját* 'her cap' in (1a) raises to the position left-adjacent to the verb in the clausal left periphery in order to bear the main stress rather than to check the focus feature in a focus phrase (as originally proposed by Brody 1990, 1995). An adaptation of Szendrői's (2001: 42) representation is given in (1b). (p. 149)

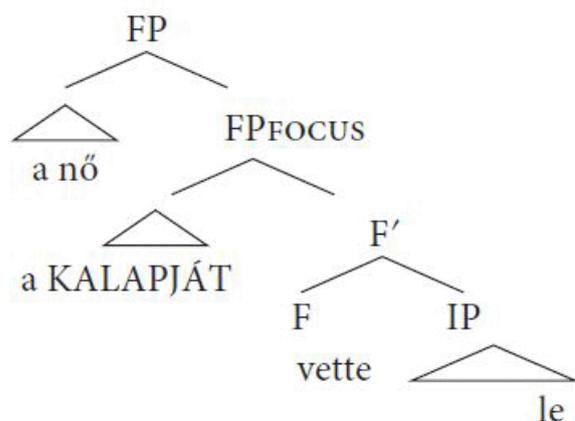
(1)

- a. [FP [DP *A női*] [FP [DP *a KALAPJÁTj*]] vette [VP [v le tv] tDP tDP]].
the woman her cap-ACC took off

(Szendrői 2003: 48)

'It was her hat that the woman took off (not her scarf).'

b.



In this representation, the topic *a nő* 'the woman' is adjoined to FP containing the focus element. FP is a mere label for the Functional Projection hosting the fronted constituent. Although representation (1b) derives the right word order, a number of questions arise with regard to the structural and licensing properties of FP/FPFOCUS. One also wonders whether the heads of these projections can be morphologically expressed.

8.3 Mapping the clausal left periphery

Rizzi (1997) addresses these questions showing that a unitary approach to the complementizer system (CP) coupled with a free adjunction rule, as in (1b), cannot account for the following sentences.

(2)

- a. She thinks that [_{Top} under no circumstances] [should] one start one's own business.

(McCloskey 1992: 16, 18)

- b. A Teeja a pensa che, a torta, STASELA che nu-a
the Teresa SCL thinks that, the cake, tonight that not-it
mangia nisciun, nu duman.
eat nobody, NEG tomorrow

'Teresa thinks that nobody would eat the cake TONIGHT, not tomorrow.'

(Paoli 2001: 276).

- c. Credo [_{Top} a Gianni], [_{Foc} QUESTO], [_{Top} domani], gli dovremmo dire.
'I believe that to Gianni, THIS, tomorrow we should say'

(Rizzi 1997: 295–296)

(p. 150) Sentence (2a) indicates that there are structural positions between the complementizer and the subject that license the fronted negative constituent *under no circumstances* and the inverted modal *should*. Similar data led Rizzi (1997) to conclude that the clausal left periphery (CP) involves a complex structure. Rizzi's conclusion is compatible with the Italian examples (2b), which instantiates two complementizers *che* (Paoli 2001), and (2c) which indicate that the space between the two complementizers can host a rigid sequence of topics and focus represented in structure (3).

(3) [_{ForceP} ... [_{TopP*} ... [_{FocP} ... [_{TopP*} ... [_{FinP} ... [_{TP} ...]]]]]]]

ForceP is the interface between the propositional content expressed by TP and the superordinate structure (i.e. the main clause or the discourse). It encodes clause-typing. TopP and FocP on the other hand license topicalized and focalized constituents, respectively. Rizzi (1997: 288) argues that:

the topic-focus system is present in a structure only if needed, i.e., when a constituent bears topic or focus features to be sanctioned by a spec-head criterion. If the topic focus field is activated, it will inevitably be sandwiched in between force and finiteness, as the two specifications must terminate the C system upward and downward, in order to meet the different selectional requirements and properly insert the C system in the structure.

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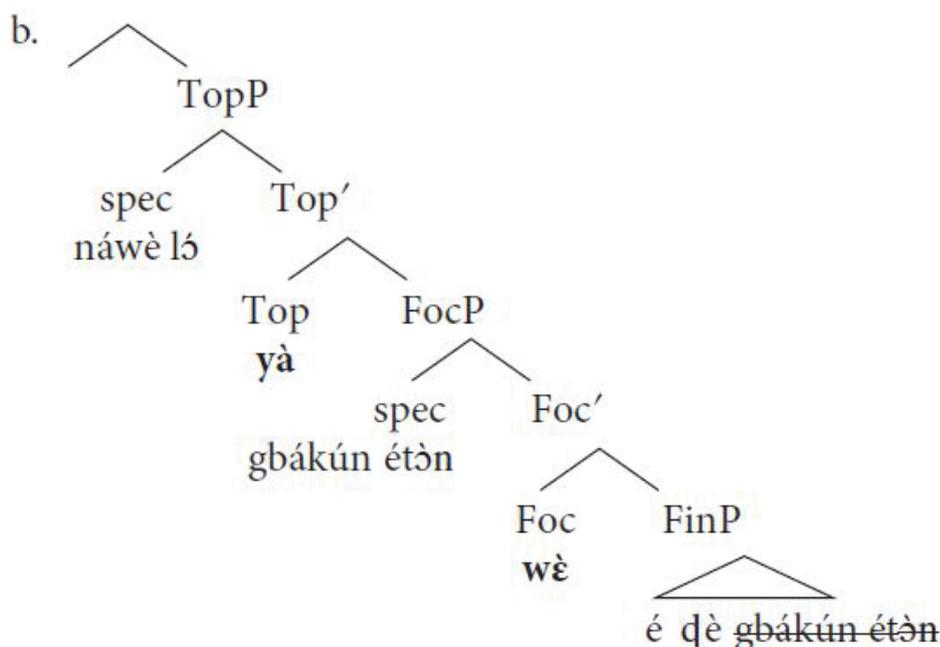
FinP expresses tense and modal specifications that match with those of the TP domain. It represents the interface between the proposition and the complementizer system.

Since Rizzi's seminal paper, there has been a wealth of literature in support of the cartography approach to the clausal left periphery and its relation to information structure (cf. Haegeman 1995, 2003, 2012; Rizzi 1996, 1997, 2001; Belletti and Rizzi 1996; Belletti 1999, 2001, 2002, 2004, 2009; Poletto 2000; Frascarelli 2000; Benincà 2001; Aboh 2004a, 2004b; Aboh et al. 2007; Cinque and Rizzi 2008; Aboh and Pfau 2011; Benincà and Munaro 2011; Biloa 2013; among others). In terms of these studies, prosodic phenomena such as those discussed in Szendrői (2001, 2003), Fanselow (2006, 2007), are analysed as properties of the clausal left periphery. In the following paragraphs, I illustrate these views based on data from the Gbe languages, a subgroup of the Kwa family. Unlike the Romance and Germanic languages mostly discussed in the literature, these languages offer the empirical advantage that they express the functional heads in (3) by means of segmental and supra-segmental material.

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Indeed, studies on information structure that treat discourse-related constituent displacements as PF phenomena do not usually take into account the fact that what is seen as mere intonational pattern may sometimes be related to underlying morphemic specifications. This can be shown by the fact that some languages display segmental material in the contexts where other languages apparently make use of prosody.¹ The Gungbe sentence in (4a) is comparable to the Hungarian example (1a). Yet, this example differs from the Hungarian (p. 151) one only to the extent that, aside from using the clause initial position as Hungarian does, Gungbe exhibits a topic and a focus marker where Hungarian relies on intonation.

- (4)
a. Návè ló yà gbákún étòn wè é dè. [Gungbe]
woman DET TOP hat her FOC she remove
'As for the woman, she took off HER HAT.'



Likewise, fronted constituents in Hungarian and Gungbe tend to respect a hierarchy in which topics precede focus, as in (1b) and (4b). Given these representations, the only difference between the Hungarian structure in (1b) and the Gungbe one in (4b) is that the latter involves FocP and TopP which host the focused and topicalized constituents attracted by the focus and topic heads.

Because these functional heads are obligatorily expressed in Gungbe topic and focus constructions and exhibit a particular syntax cross-linguistically (cf. Aboh et al. 2007; Biloa 2013), one cannot argue that they are mere equivalents of phonological prominence in Hungarian (pace Eilam 2011). Instead, Gungbe-type languages suggest that cross-linguistic surface manifestations, sometimes analysed as mere PF phenomena, could be expressions of tonemes functioning as discourse markers. This requires a change of perspective: information structure is primarily expressed by morphemes that may be segmental or

tonemic. Due to their syntactic properties, these morphemes may trigger rearrangement operations which in turn may affect intonation (Aboh 2010a). Although this view may look a bold statement while analysing Indo-European languages, it is compatible with the following pieces of data from Fongbe and French.

8.3.1 Tonemes as functional heads

Yes-no questions in Gungbe and Fongbe (two closely related tone languages) are marked by a sentence-final particle. The particle is a floating low tone (i.e. a supra-segmental element) in Gungbe, but a full segment in Fongbe. Sentence (5a) is a declarative in both Gungbe and Fongbe. Note that the verb *wá* 'come/arrive' bears a high tone. In the yes-no (p. 152) questions (5b vs 5c), this verb is realized with an additional low tone (i.e. *wâ*) in Gungbe (5b), unlike in Fongbe in which a yes-no question includes the final marker *à* (5c).

- a. Kòfí wá. [Gungbe/Fongbe]
Kofi come
'Kofi came.'
- (5) b. Kòfí wâ? [Gungbe]
Kofi come.Q
- c. Kòfí wá à? [Fongbe]
Kofi come Q
'Has Kofi come?'

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Aboh (2004a, 2010a) accounts for the contrast between (5b) and (5c) arguing that the clause-final floating low tone represents the Gungbe question marker. This toneme has a syntax comparable to that of the Fongbe segmental question marker *à*: it occurs clause-finally, and when it co-occurs with other discourse markers it occurs to the right edge from where it attaches to the proposition. In this regard, Aboh (2004a, 2004b, 2004c, 2010a) reports that even though the topic and focus markers realize the clausal left periphery in (4a) they can also mark the clause as a whole. In such contexts, these markers may cluster clause-finally together with the interrogative marker. This is instantiated by the Gungbe example in (6a) and its Fongbe equivalent in (6b). These sentences are felicitous in a context where a speaker being exasperated by the cries of the child asks whether she has not yet eaten as planned. In the Gungbe example, the floating tone attaches to the last particle in the sequence, yielding the form *wè* with an extra low tone (6a). This contrasts with Fongbe in which the same focus marker retains its original low tone and precedes the question particle *à* (6b).²

(6)
a. *Ví lò má d̀ù nú wè?* [Gungbe]
child DET NEG eat thing FOC.INTER
'HAS THE CHILD NOT EATEN (YET)?'

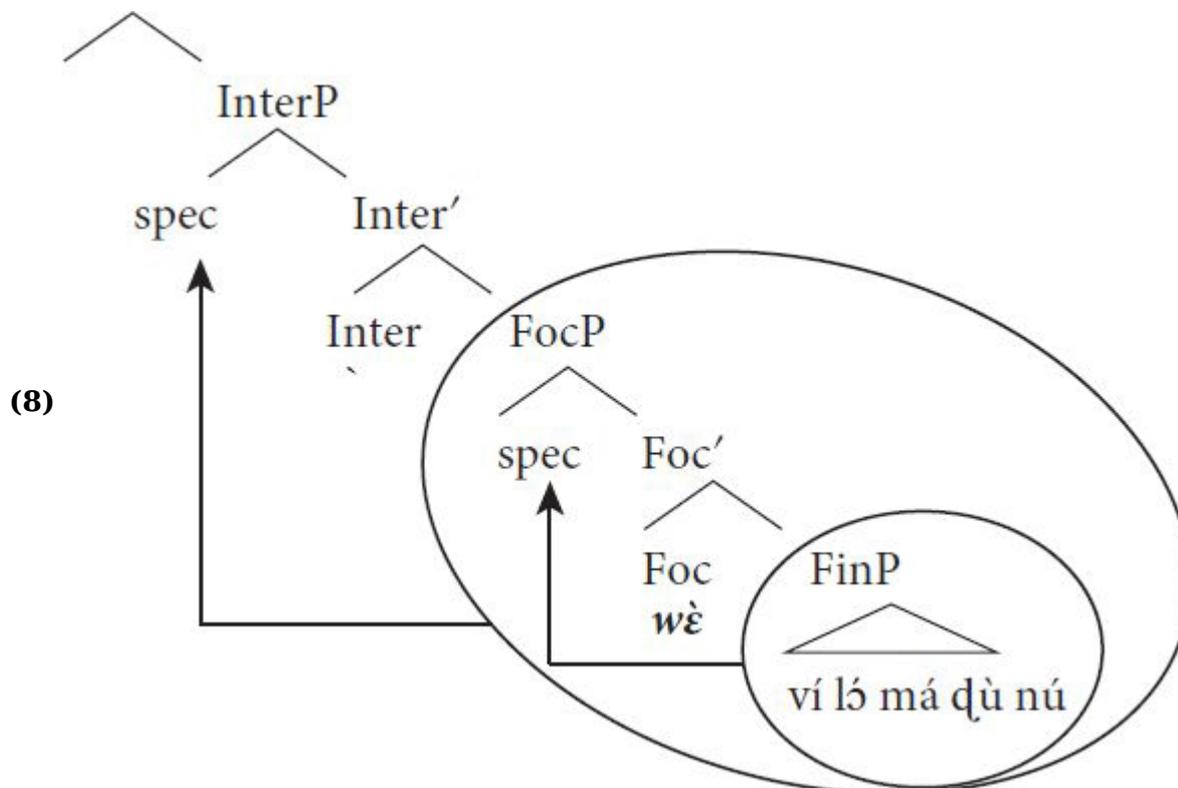
b. *Ví ò d̀ù nú ǎ wè à?* [Fongbe]
child DET eat thing NEG FOC INTER
'IS IT NOT THE CASE THAT THE CHILD HAS EATEN (AS EXPECTED)?'

In accounting for the distribution of these discourse markers in relation to the expression of negation in Gbe, Aboh (2010b) argues that the Gungbe example in (6a) results from snowballing movement of the proposition (i.e. represented here by FinP) into (p. 153) [spec FocP], forming the sequence *ví ló má d̀ù nú wè!* 'THE CHILD HAS NOT EATEN' in (7). This sentence would be felicitous in a context where the speaker is exasperated by a repetitive question of an interlocutor about why the child is crying.

(7) *Ví ló má d̀ù nú wè ...!*
Child DET NEG eat thing FOC
'THE CHILD HAS NOT EATEN (YET) ...'

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In the context of a yes-no question like (6a), the sequence in (7) further pied-pipes to [spec InterP], whose head Inter is expressed by the floating low tone ‘̀’, thus generating the final *wè* now represented in (8).



This analysis extends to the Fongbe sentence (6b) in which the question marker *à* realizes Inter. Note that while negation is systematically expressed by the preverbal morpheme *má* in Gungbe, it may be encoded by the sentence-final particle *ǎ* in Fongbe (cf. Lefebvre and Brousseau 2002). In discussing this marker, Aboh (2010b) concluded that right-edge negative elements in Gbe are better analysed as modal elements belonging to the complementizer system where they encode (negative) evidentiality.³ Accordingly, the Fongbe negative particle is analysed on a par with left-peripheral markers (e.g. topic, focus, inter) which, as we saw already, occur to the right edge when they mark the proposition as a whole. In this analysis the complementizer system involves a negative phrase $\text{Neg}^\circ[\text{C}]$ that projects below the focus phrase. Neg° attracts the proposition in its specifier thus forming the negative sequence in (9a). This sequence can be further marked for focus, as in (9b) which is equivalent to the Gungbe example in (7). (p. 154)

(9)

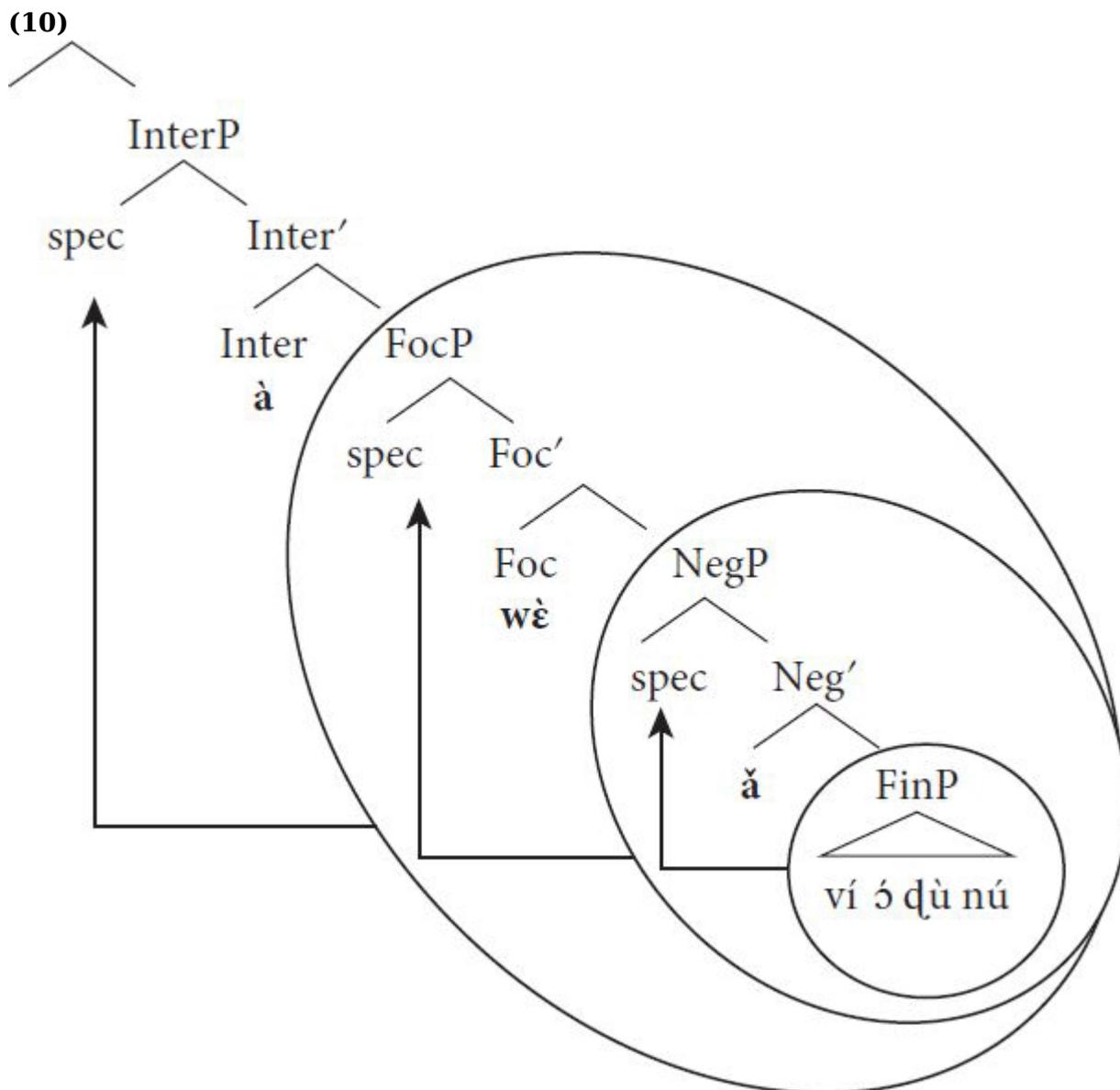
a. É d̀ù nú ǎ.
 3SG eat thing NEG

‘It is not the case that s/he has eaten.’ [Not: s/he has not eaten.]

b. É d̀ù nú ǎ wè.
 3SG eat thing NEG FOC

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The sequence in (9b) may be subsequently questioned, for instance, in a context where a participant in the discourse doubts the utterance in (9b) and asks for confirmation as in the English sentence ‘Are you saying that it’s not the case that s/he has eaten?’ In Fongbe, such a sequence will be rendered as in our preceding example (6b). What is remarkable in this example is that the question particle *à* marks the sequence in (9b) which includes both the evidential negative marker and the focus marker, *ǎ* and *wɛ̀*, respectively. Following the rationale in (8), the Fongbe facts suggest that a sentence like (6b) derives from snowballing movement of the proposition to [spec NegP] within the left periphery, followed by pied-piping of NegP to [spec FocP], and pied-piping of FocP to [spec InterP] as illustrated in (10).



(p. 155) There is ample data from Niger-Congo and other languages which support this analysis. Nkemji (1995), Koopman (2000) and Biloa (2013) for instance, present a detailed discussion of various (Grassfield) Bantu languages, where generalized pied-piping of the type discussed here licenses interrogative mood, aspect, negation, and focus. Similarly,

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Aboh et al. (2005) and Aboh and Pfau (2011) argue that Indian Sign Language and Sign Language of the Netherlands (NGT), respectively display interrogative structures where the proposition must raise leftward to the specifier of the question particle that realizes Inter. Given these cross-linguistic facts, I conclude that (i) Discourse markers responsible for information structure packaging can take the form of (supra)-segmental material that encodes context independent meaning (e.g. topic, focus); and (ii) discourse markers expressing the features [TOPIC], [FOCUS] must be treated on a par with markers expressing the features [NEGATIVE], [INTERROGATIVE] together with which they realize the clausal left periphery. These markers trigger morphosyntactic operations that affect word order (see Section 8.1.4 for further discussion). The following section on French yes-no questions is compatible with the proposed cartographic approach to grammatical tonemes.

8.3.2 A toneme in French yes-no questions

French yes-no questions come in three forms that can be contrasted with the declarative sentence in (11a). Such a declarative sentence typically displays an SVO order and a final falling contour. Accordingly, example (11a) forms a minimal pair with the yes-no question in (11b) which is pronounced with a final rising contour (cf. Post 2000).⁵

- (11)
- a. Pierre est venu.
Peter is come
'Peter has come.'
- b. Pierre est venu?
Peter is come
'Has Peter come?'

The examples in (12a,b) illustrate two additional strategies in French yes-no questions: (12a) involves complex inversion (cf. Kayne 1972; Kayne and Pollock 2001), while (12b) includes the 'question marker' *est-ce que* in initial position (cf. Munaro and Pollock 2005).

(p. 156)

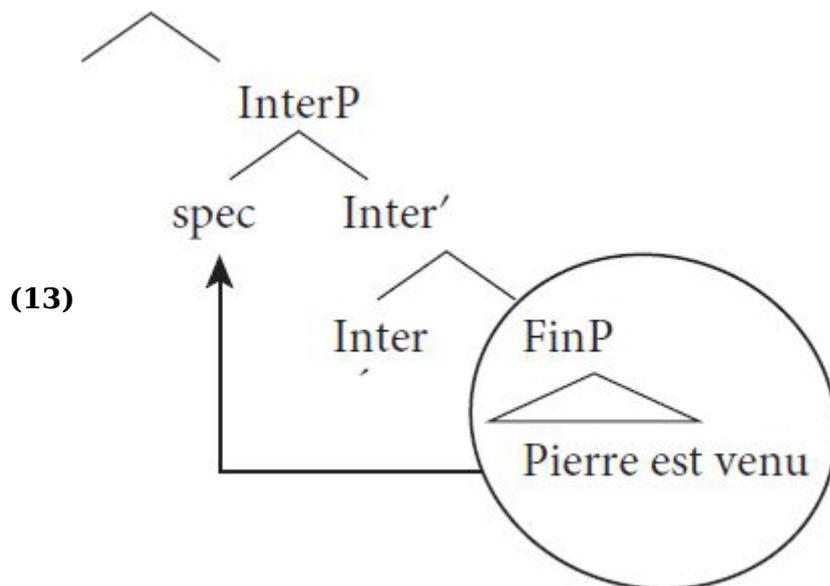
- (12)
- a. Pierre a-t-il mangé?
Peter has.3SG eaten
'Has Peter eaten?'
- b. Est-ce que Pierre a mangé?
is-DEM COMP Peter has eaten
'Has Peter eaten?'

Setting aside complex aspects of French intonation, a common denominator to the yes-no questions in (11b) and (12) is the use of a final rise (cf. Di Cristo 1998: 202). Even though example (12) illustrates questions which are marked by a syntactic or lexical device, these strategies do not exclude the final rise typical of French yes-no questions.

Looking at these examples from a Gbe perspective, a natural explanation for French yes-no questions would be to propose that examples (11b) and (12a,b) involve a yes-no question particle: a toneme that determines the final rising intonation. As in Gbe, this question morpheme expresses interrogative force. This would also mean that the syntactic strategies in (12) are not primarily motivated by the feature [INTERROGATIVE] even though they may be conditioned by its syntax. Keeping to the same rationale, I therefore propose

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that the French question particle realizes Inter and attracts the proposition as a whole into its specifier position [Spec InterP]. Example (11b) can therefore be described as in (13) in which Inter contains a null morpheme indicated by a high tone ‘‘ for expository reasons (irrelevant projections are ignored).



Thus, data from Fongbe, Gungbe, and French support the cartographic view of the clausal left periphery.

While it is traditionally accepted that Inter involves a formal feature [INTERROGATIVE] associated with interrogative grammatical items, the status of focus markers as grammatical elements with the formal feature [FOCUS] is still much debated. Looking at the distribution of the feature [FOCUS] and its interaction with generalized pied-piping, (p. 157) the following section argues that [FOCUS] must be analysed on a par with ordinary formal features.

8.4 The feature [FOCUS] and generalized pied-piping in Gungbe

The preceding section showed that Gbe languages involve discourse markers such as illustrated by the question–answer pair in (14). In the question (14a) the sentence-final floating low tone affects the last word: the determiner *lô*. In the answer (14b), however, the focus marker *wè* attaches to the focused phrase *àvún ló* ‘the dog’, while the topic marker *yà* attaches to the topic phrase *àsé ló* ‘the cat’. Note that in this case, the determiner marking the cat displays a high tone contrary to the example (14a) in which it bears an additional low tone expressing INTERROGATIVE.⁶

(14)

a. *Mì m̀̀n àsé lô?*
 2PL see cat DET.INTER

‘Did you see the cat?’

b. *Àsé ló yà àvún ló wè nyàn-èn sòn xwégbè!*
 cat DET TOP dog DET FOC chase-3SG from house

‘As for the cat, THE DOG chased it out of the house!’

The description of these examples as compared to similar markers in other languages led me to conclude that discourse markers (e.g. focus, topic) as well as speech modality markers (e.g. interrogative) are expressed cross-linguistically by (supra)-segmental material and therefore project in syntax where they trigger specific rearrangement rules (i.e. Internal Merge). Given this stance, it must be the case that the discourse features [TOPIC], [FOCUS] are visible to the computational system similarly to other commonly assumed formal features.⁷ This would mean that [TOPIC] and [FOCUS] are context independent features that enter probe-goal relations whenever they are present in the derivation (Rizzi 1997). This view predicts that in addition to entering probe-goal relations, [TOPIC] and [FOCUS] can trigger other phenomena contingent on chain formation. A case in point is generalized pied-piping as discussed below.

(p. 158) 8.4.1 FOCUS, snowballing movement, and generalized pied-piping

In terms of Aboh (2004a, 2004b, 2004c), snowballing movement, illustrated in (8), (9), (10), and (13) is an instance of generalized pied-piping in which the probe (e.g. Inter, Top, Foc) attracts the event head expressed by the verb. Consequently, FinP (or TP) as a whole, is fronted to the specifier of the relevant probe. Interestingly, however, this kind of pied-piping can also happen when the probe attracts a focused argument that cannot be extracted, as shown by the example in (15). Here, the wh-phrase *été* is attracted to the focus position, but the whole bracketed OV sequence containing the wh-phrase and the verb phrase is pied-piped to the left of the focus marker *wè*. Note that this example is in-

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terpreted as an object wh-question even though the wh-phrase is embedded in a larger constituent.

- (15) [été dà ná Alúkù] wè Súrù tè?
what cook to Aluku.PCL FOC Suru PROG

‘What is Suru cooking for Aluku?’

In order to understand this example, we need to step back and consider wh-questions in Gungbe. In Gbe languages, the wh-phrase must occur to the left of a focus marker (16) (cf. Ameka 1992, 2010; Lefebvre and Brousseau 2002; Aboh 2004a, 2004b, 2004c, 2006a, 2006b, 2007a, 2010a; Fiedler and Schwarz 2007). These examples briefly illustrate subject (16a), object (16b) and time adjunct (16c) wh-questions in Gungbe. Example (16d) shows that *in-situ* questions are excluded in Gungbe.

(16)

- a. Ménù wè dà lési ná Àlúkú sò?
who FOC cook rice to Aluku yesterday

‘Who cooked rice for Aluku yesterday?’

- b. été wè Súrù dà ná Àlúkú sò?
what FOC Suru cook to Aluku yesterday

‘What did Suru cook for Aluku yesterday?’

- c. Hwèténù wè Súrù dà lési ná Àlúkú?
when foc Suru cook rice to Aluku

‘When did Suru cook rice for Aluku?’

- d. *wè ménù dà lési ná Àlúkú sò?
FOC who cook rice to Aluku yesterday

‘Who cooked rice for Aluku yesterday?’

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(p. 159) Aboh and Pfau's (2011) cross-linguistic study demonstrates that in *wh*-questions, the *wh*-phrase does not raise to license a *wh*-feature as usually assumed in the literature, but in order to check the focus feature under *Foc* (expressed here by the marker *wè*), see also Bošković (2001, 2002) for discussion. This view is fully supported by example (16) as well as the following indirect questions.

(17)

a. Ûn kànbíʒ ɖʒ [[Súru ɖà lési lɔ] yà]?
1SG ask that Suru cook rice DET TOP.INTER

'I asked whether Suru cooked the rice (as expected).'

b. Ûn kànbíʒ ɖʒ [[[FocP Súru wè] ɖà lési lɔ] yà]?
1SG ask that Suru FOC cook rice DET TOP.INTER

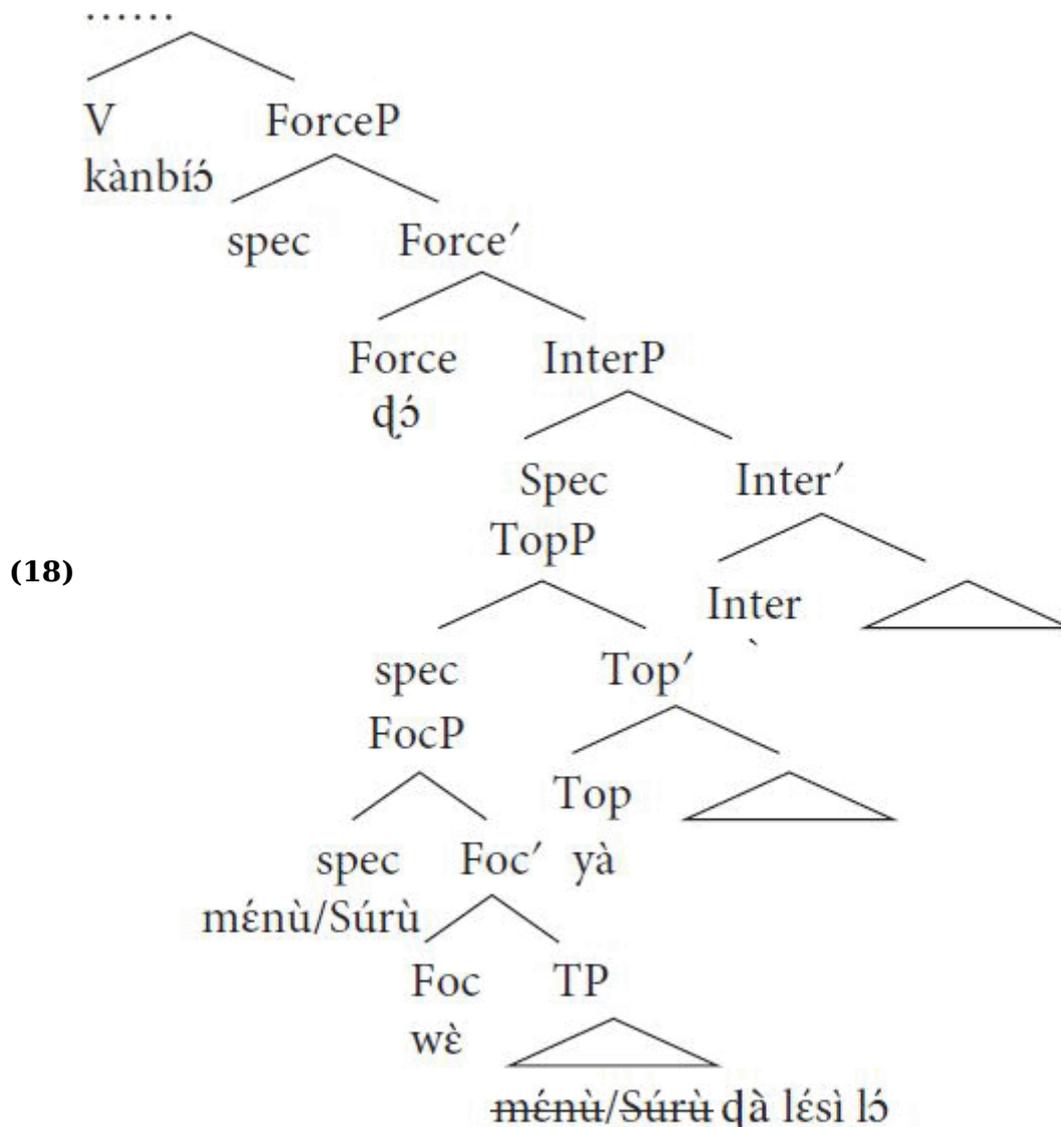
'I asked whether SURU cooked the rice (as expected).'

c. Ûn kànbíʒ ɖʒ [[[FocP Ménù wè] ɖà lési lɔ] yà]?
1SG ask that who FOC cook rice DET TOP.INTER

'I asked who cooked the rice (as expected).'

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In these examples, the verb *kànbíó* ‘to ask’ selects for an interrogative embedded clause, hence the clause-final additional low tone on the topic marker *yà* in (17a). The latter marks the embedded interrogative phrase and therefore occurs last (see Section 8.1.3 for discussion). In addition, the embedded proposition contains a focus phrase (FocP) that attracts focused elements (i.e. DPs and wh-phrases alike, 17b,c), as partially represented below.



(p. 160) In this representation, Inter expressed by the interrogative floating low tone ‘‘ marks TopP headed by the marker *yà*. The latter marks the proposition containing FocP whose specifier is realized by the focused phrase *Suru* or the wh-phrase *ménù* itself marked by the focus marker *wè* under Foc. It appears from this description that the proposition embedding the topic phrase raises to [spec InterP] to license interrogative, while movement of the focused phrase to TopP licenses the topic feature under Top. Finally, movement of the focused constituent or the wh-phrase to [spec FocP] licenses the focus feature under Foc. That full clauses, DPs and wh-phrases are sensitive to movement to [spec FocP] indicates that the relevant feature responsible for this syntactic operation is the feature [FOCUS], rather than [WH]. With this description in mind, let us now go

back and consider object wh-questions in Gungbe OV sequences as illustrated in example (15).

8.4.2 Generalized pied-piping in Gungbe OV sequences

Aboh (2004a, 2004b, 2009), and Aboh and Smith (2012, 2014) and references cited there discuss OV sequences in Gbe in great details. Due to space limitations, I will not repeat this discussion here, but I refer the interested reader to these studies and references therein. For the current discussion, it suffices to remark that Gungbe displays aspectually determined OV sequences of the type in (19). In this example, the construction encodes progressive aspect.

- (19) Súrù tò lésì ló ɖà ná Alúkù.
Suru PROG rice DET cook to Aluku.PCL
'Suru is cooking the rice for Aluku.'

Two observations are in order:

(i) OV sequences are typically introduced by an aspectual particle or verb, here *tò*. The aspectual morpheme *tò* also encodes location and has the property of changing its form into *tè*, when its complement is displaced as indicated by the contrast in (20).

a. *Súrù tò xwégbè.*
Suru BE.LOC house

‘Suru is at home.’

(20)

b. *Xwégbè wè Súrù tè/*tò.*
house FOC Suru BE.LOC

‘Suru is at HOME.’

(p. 161) (ii) OV sequences are typically delimited to the right by a final particle as indicated by the elements *gbé* and *jí* in (21). Example (21a) encodes purposive, while (21b) expresses inceptive.

a. *Súrù wá lési ló dà gbé.*
Suru come rice DET cook PCL

‘Suru came in order to cook the rice.’

(21)

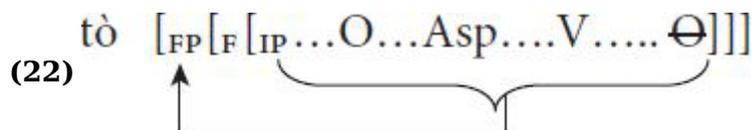
b. *Súrù jè lési ló dà jí.*
Suru start rice DET cook PCL

‘Suru began to cook the rice.’

With regard to example (19), the clause-final particle (glossed as PCL) is a floating low tone that attaches to the last word, hence the high–low tone on the last syllable of *Alúkù* in (19) unlike in (16) where this personal name ends with a high tone (i.e. *Àlúkù*).⁸

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Aboh (2004a, 2004b, 2009) derives OV sequences from an underlying VO structure by suggesting that the sequence to the right of the aspectual verb *tò* in (19), involves a complex structure embedding both an edge FP, headed by the particle that occurs clause-finally and an inflectional domain (IP) headed by an aspect phrase. It is further proposed that the inflectional domain involves an EPP position which is licensed by fronting of the object to a preverb position. Subsequently, IP raises to [spec FP], as a consequence of which the particle typical of OV sequences occurs clause finally. This analysis is described in (22).



An important conclusion reached in Aboh (2009: 13) is that OV sequences form a constituent. In addition, the preverb object position qualifies as an EPP position, that is, a freezing position as defined in Rizzi and Shlonsky (2007). Be it so, object extraction to the clausal periphery for focus purposes cannot transit via this internal EPP position: the language must find a way to circumvent the freezing position. In this regard, Gungbe shows that when the object is extracted for focus or *wh*-question, the verb must reduplicate (23a) unless it is preceded by an aspect marker as in (23b). Example (23c) shows that failure to reduplicate the verb or to insert an aspect marker in the preverb slot leads to ungrammaticality.⁹ (p. 162)

(23)

a. *été wè Súrù tò d̀̀d̀à ná Alúkù*
 what FOC Suru PROG cook.cook to Aluku.PCL

‘What is Suru cooking for Aluku?’

b. *été wè Súrù tò ná (*d̀̀)d̀̀à ná Alúkù*
 what FOC Suru PROG PROSP cook/cook to Aluku.PCL

‘What is Suru about to cook for Aluku?’

c. **été wè Súrù tò d̀̀à ná Alúkù*
 what FOC Suru PROG cook to Aluku.PCL

‘What is Suru cooking for Aluku?’

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Under the assumption that reduplication is a form of INFL—comparable to the preverbal aspect—that allows the licensing of a null expletive in the preverbal EPP position, Aboh (2004a, 2007b, 2009) concludes that the focused phrase or the wh-phrase does not transit through the preverbal EPP position on its way to [spec FocP]. If this were the case, the wh-phrase or the focused constituent would be frozen in place leading to the ungrammatical sequence (24), where [spec FocP] remains empty.

- (24) *wè Súrù tò été dǎ ná Alúkù
 FOC Suru PROG what cook to Aluku.PCL

‘What is Suru cooking for Aluku?’

Yet, one possibility that comes to mind is that in contexts where the wh-phrase gets frozen in the EPP position, the language may allow generalized pied-piping of the whole constituent containing the wh-phrase. This is indeed what happens in example (15), which we can now describe as being subsequent to (24) where the wh-phrase is frozen in the EPP position. As a consequence the constituent containing the wh-phrase and the VP raises to [spec FocP] to check the focus feature.

The derivation goes as follows. We first begin with the sequence in (25a) with the wh-phrase in its base position. In (25b), the wh-phrase raises to the preverbal EPP position where it freezes. Then the focus marker merges (25c) and attracts the wh-phrase bearing the focus feature. The latter, however, cannot extract from the EPP position. Consequently, the constituent containing the wh-phrase and the VP is pied-piped to [spec FocP], (25d = 15).

- (25)
- a. Súrù tò [dǎ été ná Alúkù]
 Suru PROG cook what to Aluku.PCL
- b. Súrù tò [été dǎ été ná Alúkù]
 Suru PROG what cook what to Aluku.PCL
- c. wè Súrù tò [été dǎ été ná Alúkù]
 FOC Suru PROG what cook what to Aluku.PCL
- d. [été dǎ été ná Alúkù] wè Súrù tò [été dǎ été ná Alúkù]
 what cook what to Aluku.PCL FOC Suru PROG

(p. 163) The change of the progressive aspect marker from *tò* into *tè* in a similar way to example (20b) provides us with a further piece of evidence that what fronts to [spec FocP] is the complement of *tò*, that is, FP. The focus feature on the *wh*-phrase is therefore responsible for the generalized pied-piping of FP to [spec FocP]. That this is indeed the case can further be shown by the fact that predicate focus in OV sequences also results in the generalized pied-piping of FP to [spec FocP].

(26) [Lési d̩à ná Alúkù] wè Súrù tè!
 rice cook to Aluku.PCL FOC Suru PROG
 ‘Suru is cooking rice for Aluku!’

As discussed in Aboh (2006a, 2010a) and Aboh and Dyakonova (2009), the Gbe languages display an asymmetry between predicate focus in VO structures versus OV structures in that the latter allow generalized pied-piping of the constituent containing VP to [spec FocP], while the former results in doubling structures in which a token of the verb realizes the focus position while a doublet occurs within IP as indicated in (27).¹⁰

(27) d̩à (wè) Súrù d̩à lési ná Alúkù
 cook FOC Suru cook rice to Aluku
 ‘Suru COOKED rice for Aluku.’

The cited references provide very detailed accounts of these structures in Kwa languages and beyond showing that generalized pied-piping is triggered in (26), but not in (27), due to the fact that the verb cannot be extracted from OV structures because it is part of a constituent that is licensed in the specifier of FP as described in (22). This is not the case in VO constructions.

8.5 Conclusion

Put together, the cross-linguistic data presented here indicate that [FOCUS], [TOPIC], and [INTERROGATIVE] represent formal features that are properties of lexical elements (p. 164) and may sometimes trigger generalized pied-piping and snowballing movement. While these phenomena are not unexpected in a probe-goal theory where specific features can be probed over by higher heads and may thus lead to pied-piping of additional material, it seems to me hard to argue that these phenomena can alternatively be classified as mere surface PF manifestations. Note that pied-piping of FinP, FocP, and TopP as illustrated in this chapter is no more spectacular than commonly assumed phrasal movement. Indeed phrasal movement systematically results in generalized pied-piping. For instance, in the sequence, ‘which house did John buy?’ where the phrase [which house] fronts, the *wh*-feature being attracted to the left periphery is not a property of ‘house’ but ‘which’. Yet, what must front in this example is the whole sequence [which house]. Based on this, Chomsky (1995: ch. 4) argues that generalized pied-piping is a fundamental prop-

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erty of syntactic computation and it is contingent on the formation of chains. The latter, we know, only involves formal features. This chapter shows that discourse features [FOCUS] and [TOPIC] can participate in such generalized pied-piping (i.e. chain formation), a piece of evidence that they belong to the set of formal features visible to the syntactic computation.

Notes:

(¹) See Ladd (2008) for discussion.

(²) The Fongbe example is adapted from Lefebvre and Brousseau (2002: 135, 485).

(³) Lefebvre and Brousseau (2002: 128) reports that ‘*ǎ* appears to express the speaker’s disagreement with the content of the proposition.’

(⁴) According to Lefebvre and Brousseau (2002) an English expression like ‘he did not eat’ will be rendered in Fongbe by means of a preverbal negative marker which also happens to be *má* in Fongbe.

	É	má	dù	nú	[Fongbe]
(i)	3SG	NEG	eat	thing	
	‘S/he has not eaten.’				

(⁵) These examples are comparable to the Gungbe sentences in (5a,b).

(⁶) Although I illustrate the focus marker in Gbe on the basis of Gungbe, I would like to stress that all Gbe languages display such a marker. The facts presented here are therefore not isolated.

(⁷) See Chomsky (1995: 235ff) on formal features.

(⁸) This is additional evidence that tonemes can indeed function as grammatical particles in Gbe and arguably in other languages as well.

(⁹) See Aboh (2004a, 2007b, 2009), Aboh and Smith (2012) for discussion on OV sequences and reduplication.

(¹⁰) See Aboh and Dyakonova (2009) for an analysis of these structures in terms of parallel chains.

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