When a wh-word refuses to stay in-situ

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1. Introduction

Richards (2010, 2016) suggests that a language’s choice with respect to choosing the wh-movement option or the wh-in-situ option is made on the basis of language-specific prosodic properties that determine whether or not a prosodic wh-domain containing both the interrogative C and the wh-phrase can be established. A wh-domain in this sense roughly corresponds to a piece of prosodic structure in which these two key elements are separated by as few intervening prosodic boundaries as possible, ideally zero. Prosodic boundaries demarcate structural units of the sentence, known as Minor or Intermediate Phrases (henceforth MiPs) that may trivially or non-trivially correspond to syntactic constituents. (Nespor and Vogel 1986, Selkirk 1986, 2011, among others). Richards proposes the following algorithm of constructing larger MiPs in wh-questions (see also Szendrői 2001, 2003):

1. For one end of the larger Minor Phrase, use a Minor Phrase boundary that was introduced by a wh-phrase.
   a. For the other end of the larger Minor Phrase, use any existing Minor Phrase boundary.

2. Given a wh-phrase $\alpha$ and a complementizer C where $\alpha$ takes scope, $\alpha$ and C must be separated by as few Minor Phrase boundaries as possible, for some level of Minor Phrasing. [Richards 2010:151, ex. (13)]

Richards further claims that directionality of interrogative C and language-specific prosodic edge-marking must be contra-lateral in a language, in order for a congruous wh-domain to be formed. For instance, if C is on the left, and MiPs including the wh-phrase are prosodically
marked at right edges, the algorithm in (1) allows for (recursively) extending the wh-domain beginning at the right-edge of the wh-word leftwards, as shown in (3):

(3) a. C [DP ] [whP] [DP ]
   b. ( ) ( ) ( )
   c. ( ) ( )

[Richards 2010:154, ex. (17)]

Much of subsequent empirical work inspired by Richards’ proposal has been devoted to validating it on the basis of various languages, while exploring its advantages as well as deficiencies (cf. Yasin 2012, Mathieu 2016, Kandybowicz and Torrence 2015). But there is one other aspect of (1) whose empirical consequences, to our knowledge, have not so far been explored. This aspect stems from the presupposition in (1a) that a wh-phrase itself has a status of at least a prosodic word, the smallest unit capable of introducing an MiP boundary (Selkirk 2011). Prosodically weak monosyllabic wh-phrases, sometimes referred to as wh-clitics in the literature, are not capable of introducing a MiP end boundary, largely by definition. Hence, a wh-domain cannot be established in these cases. We show that empirically, only the wh-movement option is available for wh-clitics, even in languages that can otherwise be classified as wh-in-situ languages. It seems, therefore, that insofar as in this case a prosodic wh-domain cannot be identified on the side of the wh-word, the choice of the wh-movement option cannot be made on the basis of (1) and (2) only. We support our argument with new evidence from Lebanese Arabic, as well as data from French and the North Italian dialects reported in the literature, and suggest a possible way to reconcile this evidence with the prosodic-based framework.

2. Lebanese Arabic: ُن

Lebanese Arabic (LA) is generally an optional wh-in-situ language. Argument and adjunct wh-phrases are typically left in situ in matrix, embedded and long-distance wh-questions:
(4) a. ḟef-t-o **min** be-ddekkan?
saw.2.PL who in-the-shop
‘Who(m) did you see in the shop?’
b. **Min** ḟef-t-o be-ddekkan?
who saw.2.PL in-the-shop
‘Who(m) did you see in the shop?’

(5) a. Ba-ʕrif ḟef-t-o **min** be-ddekkan
1SG.know saw.2.PL who in-the-shop
‘I know who(m) you saw in the shop’
b. Ba-ʕrif **min** ḟef-t-o be-ddekkan
1SG.know who saw.2.PL in-the-shop
‘I know who(m) you saw in the shop’

(6) a. Bte-ftektr-o **kif** fi-na n-rooh ḡa-l-maṭar?
2.think.PL how can.1.PL 1PL.go to-the airport
‘How do you think we can go to the airport?’
b. **Kif** bte-ftektr-o fi-na n-rooh ḡa-l-maṭar?
how 2.think.PL can.1.PL 1PL.go to-the airport
‘How do you think we can go to the airport?’

The only exception from this pattern concerns the wh-word **fiu** ‘what’, whose syntactic behavior is restricted to wh-movement:

(7) a. **fiu** ḟtrii-t-o mne-l-mahall?
what bought.2.PL from-the store
‘What did you buy from the store?’
b. *ḟtrii-t-o **fiu** mne-l-mahall?
bought.2.PL what from-the store
‘What did you buy from the store?’
Aoun and Choueiri (1999) and Aoun, Benmamoun and Choueiri (2010) suggest that the source of the asymmetry has to do with d-linking in the sense of Pesetsky (1987): wh-phrases in-situ in LA are d-linked by default, whereas fu is not; as a result, it must move. Razaq (2011) demonstrates, however, that fu as well as other wh-phrases can be used in d-linked as well as non-d-linked contexts, rendering d-linking largely irrelevant to the option of wh-movement in LA. Razaq (2011) himself attributes the anomaly to a composite, clausal, source of fu (roughly meaning “which thing is it”) which enforces a pseudocleft-like structure of the corresponding wh-question. Under this view, fu is regarded categorically as a C(omplementizer) P(hrase), and has to be wh-fronted for reasons related to interpretation. This analysis is also not unproblematic. It predicts that fu is possible in situ in syntactic positions in which CP is selected / subcategorized for, e.g. complement of propositional attitude verbs like know or believe. While Razaq reports respective examples as in (10) as acceptable, the native LA speakers we consulted generally agree that such examples are
rather deviant, or at best acceptable with irrelevant interpretations (as echo-questions, exclamative-like or rhetorical devices requiring a continuation of the discourse). Another concern for this type of proposal emerges given that ŋu can be modified by (selected) prepositions, which is not typical for CPs in LA, cf. below:

(10) *bta-ʕrf-o ŋu?  
    2.know.PL what

(11) ʕan ŋu ʕam te-hke?  
    ‘You know what?’

‘What are you talking about?’

    talked.3FEM.SG -us about  that.3FEM. SG. was.3FEM.SG happy.3FEM.SG

    'She told us that she was happy.'

b. Hakye-t-na (*ʕan) ŋu ʕtar-it mne-l-mahall  
    talked.3FEM.SG -us about what bought.3FEM.SG from-the-store

    ‘She told us what she bought from the store.’ (cf. 8a)

Consider now the prosodic perspective. Chahal and Hellmuth (2014) (see also Chahal 2001) discuss a number of prosodic properties of LA, including i) the presence of special phrase accents delimiting the right edge of the phrase, ii) domain span phenomena of pitch accent distribution and relative prominence relations, as well as iii) boundary strength effects. Concerning i), MiPs, or for these authors, “intermediate phrases”, are tonally marked in LA with one of three possible accent types: L-, H-, or !H- (similarly to Hungarian, Greek and other languages, cf. Grice et al 2000). Crucially, this marking occurs at the right edges of MiPs. With respect to ii), if more than one pitch accent occurs within a MiP, they display relative prominence relations such that the rightmost pitch accent is the most prominent (the so accented word serves as a nuclear head of the phrase). In addition, phrase-final lengthening effects were observed for LA such that a boundary-final accented syllable had a longer duration than its non-boundary-final counterpart (see Chahal and Hellmuth 2014 for details). It thus appears that LA generally conforms to the pattern of consistent right-edge
marking of MiPs predicted by Richards to be typical for wh-in-situ languages. In fact, with
the exception of ʃu, LA seems to be prosodically similar to Egyptian Arabic, another Arabic
wh-in-situ dialect in which MiPs are phonologically marked at the right edge, but different
from Jordanian Arabic which is a wh-movement language with a strong tendency to mark its
MiPs at the left edge (Yasin 2012, cf. also Hellmuth 2006, 2007).

A notable property of ʃu that (to our knowledge) has not been in the focus in the
syntactic literature on LA so far, but, we believe, provides an important clue with respect to
the contrasts in (7)-(9) is that it is a prosodically weak element. As such, it demonstrates two
main prosodic properties typical for clitics. First, clause-initial ʃu does not receive lexical
stress, in contrast to the other wh-words in LA (in which, otherwise, words generally bear a
lexical stress). Rather, stress falls on the next adjacent prosodic element. This contrast
between ʃu and other wh-words, in turn, determines intonational differences between the
corresponding questions, as (13) demonstrates:

(13) a. Min bidd-u ye-kol?

who want-3MASC.SG 3MASC.SG.eat

‘Who wants to eat?’

b. ʃu bidd-u ye-kol?

what want-3MASC.SG 3MASC.SG.eat
‘What does he want to eat?’

Clause-initial /ʃu/ tends to form a single prosodic unit with the right-adjacent item. In colloquial speech, vowel reduction may take place, often approaching simply /ʃ/- depending on a particular phonetic context (e.g. the initial CV syllable as in (13)). A CCV onset of the adjacent item (as in, e.g., bta-ʃref ‘2SG.know’) triggers phonetic cross-boundary effects such as resyllabification of the kind CV.CCV → CVC.CV.

The syntactic behavior of /ʃu/ confirms its prosodically reduced status. For instance, it cannot be coordinated with other wh-phrases.

(14) a. *ʃu w min bta-ʃref b-hal-balad?

what and who 2SG.know in-this-country

‘What and who do you know in this country?’

cf. b. Amta w kif ʃam t-rooh-o ʃa-l-masbah?

when and how PROG. 2.going.PL to-the-swimming-pool

‘When and how are you going to the swimming pool?’

Elements adjacent to /ʃu/ can be of any syntactic category, similarly to Wackernagel or second-position clitics (and in contrast with the French que which is a verbal clitic, cf. Section 3):
Nevertheless, $\textit{fu}$ cannot quite be put on a par with full-fledged clitics. In particular, as (11) shows, it can itself be modified by a preposition (cf. Abels 2003). In this case, the preposition supplies a prosodic “host” to $\textit{fu}$ rendering the complex a full-fledged phonological word with the stress now falling on $\textit{fu}$, rather than on the preposition:

(16) $\text{Bi-}\textit{fu w bi-min kæ-ne-t ʕam t-fakker?}$

in.\textit{what and in.\textit{who was.3FEM.SG PROG 3FEM.SG.thinking?}}

‘What and who was she thinking about?’

Interestingly, with the $\textit{fu} + \text{preposition}$ complex, the acceptability of corresponding wh-in-situ questions improves substantially, in contrast with (10) and the b. examples in (7)-(9):

(17) a. (?)fakkar-te bi-\textit{fu}? b. (?)stafsar-t-o men baba ðan fu?

thought.2FEM.SG in.\textit{what asked.2.PL from dad about what}

‘What did you think about?’ ‘What did you ask Dad about?’

The properties mentioned above illustrate the deficient prosodic status of $\textit{fu}$, in particular, that it is not an independent prosodic unit such as a phonological word. Consequently, it is by itself unable to supply one of the end boundaries of the respective MiP, in Richards’ sense. Therefore, in sentences such as (7)-(9), the algorithm in (1) extending a wh-domain to include the complementizer will fail to apply, because this end boundary is undefined. This is the case either from the point of view of the wh-phrase (the initial MiP is undefined) or from the point of view of the complementizer (the expansion stops when reaches $\textit{fu}$). Either way, a congruous wh-domain containing both the complementizer and the wh-phrase cannot be established, the result being the unavailability of the wh-in-situ option. In Richards’ or similar prosodic domain-based theories making use of end boundaries, this is the desired result.
3. French *que*

It is well known that French is an optional wh-movement language as far as matrix questions are concerned (see, e.g. Boškovic 2000 for syntactic restrictions on other question types). Similarly to LA, wh-phrases may occur in situ, or move, with the exception of *que* which only occurs in the moved position (the *wh*-in-situ option is realized with the phonetically heavier, “strong form” counterpart *quoi*):

\[(18)\]  
\[\begin{align*}  
\text{a. } & \text{Qui} \text{ vois-tu?} & \text{b. cf. } & \text{Tu vois qui?} \\
& \text{who saw you} & & \text{you saw who} \\
& \text{‘Who do you see?’} 
\end{align*}\]

\[(19)\]  
\[\begin{align*}  
\text{a. } & \text{Que} \text{ fais-tu?} & \text{b. cf. } & \text{*Tu fais que?} & \text{c. } & \text{Tu fais quoi?} \\
& \text{what do you} & & \text{You do what} & & \text{You do what} \\
& \text{‘What are you doing?’} 
\end{align*}\]

The relevance of prosodic attributes in relation to *wh*-in-situ and *wh*-movement has become prominent in the literature on French interrogatives (see, e.g. Baunaz and Patin 2009, Cheng and Rooryck 2000, Hamlaoui 2008, Reglero 2004, and the references there).\(^1\) French prosodic phrase boundaries can be marked with final (pre-boundary) lengthening, manipulation of pitch range, pauses as well as liaison (Selkirk 1974, Jun and Fougeron 2002, Stepanov et al 2018), typical markers of right-edge boundaries (e.g. Vaissière 1983, Hayes 1995). But French also manifests phenomena such as articulatory strengthening at the onsets of MiPs, which could reasonably be seen as their left-edge marking (Fougeron & Keating 1997, Stepanov et al 2018). This state of affairs a priori appears consistent with the observed syntactic optionality of *wh*-movement, although we leave a comprehensive assessment of French *wh*-questions with respect to the directionality of their prosodic edge marking for future work.

A growing body of literature suggests that *que* is a verbal clitic sharing most or all of
its distributional properties with its pronominal counterparts such as \textit{le} or \textit{me} (Bouchard and Hirschbuhler 1987, Friedemann 1990, Poletto and Pollock 2004). Poletto and Pollock (2004) coin the term \textit{wh-clitic} for this type of \textit{wh}-items. In particular, unlike other \textit{wh}-phrases, \textit{que} cannot be separated from the verb, coordinated or modified by a preposition:\textsuperscript{2}

\begin{align*}
(20) \quad & \text{a.} \quad \ast \text{Que, } \text{d’aprè} \text{s toi, vu } \text{Jean?} \\
& \quad \quad \text{what according you saw Jean} \\
& \quad \quad \text{‘What, according to you, has Jean seen?’} \\
& \quad \text{\textsuperscript{b.} \ast Que et qui a-t-elle vu?} \quad \text{\textsuperscript{c.} \ast À que elle pense?} \\
& \quad \quad \text{what and who has she seen?} \quad \text{to what she thinks} \\
& \quad \quad \text{‘What and who has she seen?’} \quad \text{‘What is she thinking of?’}
\end{align*}

[Adapted from Polletto and Pollock 2004:245, ex. (7)]

Bouchard and Hirschbuhler (1987) further observe that the complementary distribution of \textit{que} and \textit{quoi} in \textit{wh}-movement and \textit{wh-in-situ} contexts in (19) parallels that observed with pronominal clitics, along the dimension of prosodic strength vs. weakness (e.g. \textit{me/moi}, \textit{te/toi} etc). To that, we may add relative easiness of \textit{que} to form phonological clusters with other prosodically weak elements, e.g. auxiliary \textit{a} ‘have-past’ (cf. \textit{qu’a}) or \textit{est} ‘be-pres’ (cf. \textit{qu’est}), which is reminiscent of the LA case discussed in Section 1, and generally typical for clitics.\textsuperscript{3} These considerations suggest a straightforward interpretation of the contrast in (18) in terms of prosodically-based \textit{wh}-domains. While strong forms can arguably be considered phonological words, thus capable of introducing a terminal MiP boundary, weak forms cannot. Consequently, \textit{quoi} enters the creation of a coherent \textit{wh}-domain with the complementizer, while \textit{que} does not. This, again, is the pattern predicted by the condition in (2).

Of course, the distribution of \textit{wh}-clitics and pronominal clitics is not, strictly speaking, identical. \textit{Que}, in particular, can undergo long-distance \textit{wh}-movement of potentially unbounded length, across any number of finite or infinitival clauses, while

\[\text{10}\]
pronominal clitics can do so at best in infinitival contexts only, in the context of “clitic climbing” and verbal “restructuring” (on the latter, see, e.g. Wurmbrand 2002). Following the above authors, we attribute this discrepancy between the two types of clitics to the inherent differences in their configurational properties: while pronominal clitics are elements in the A-domain, their mobility is restricted within the argumental system. In contrast, wh-clitics are A’-elements, and so are forced to travel through various A’-slots such as (intermediate) specifier(s) of CP.

4. North-Eastern Italian dialects

Poletto and Pollock (2004) extend the notion of wh-clitics to certain local varieties of Italian, in particular Illasi (Verona) and Monno (Brescia). Wh-questions formed in these dialects exhibit so called *wh-doubling* whereby a full wh-phrase (excluding the che ‘what’+NP type and parche ‘why’) appears in-situ together with their own prosodically weak version in the fronted position, but not vice versa:

(21) a. S’a-lo fat che?
    what has-he done what
    ‘What has he done?’

    b. Ndo e-lo ndat endoe?4
    where is-he gone where
    ‘Where has he gone?’

[Illasi, Poletto and Pollock (2004: 242), ex.(1a), (1b)]

According to the authors, when only one of these forms is lexically realized, it must be in the same position as in the doubling structures. Thus the full wh-phrase cannot be fronted; the reduced version must be, as shown in (21). This also implies that the wh-in-situ version of (22a) is acceptable, while that of (22b) is not (we take this for granted, although the authors do not provide relevant examples). Thus, the North Italian dialects can also be seen as optional wh-movement languages, with an additional option of wh-doubling.

(22) a. *Che a-lo fato?  b. S’ a-lo fato?
    what has-he done  what has-he done
'What has he done?'

Poletto and Pollock propose an analysis of wh-doubling in which both full and reduced versions of the wh-item are merged together in what they refer to as Clitic Phrase (ClP; cf. Kayne 1991, Uriagereka 1996):

(23)   a. \[\text{ClP Che s’ }\]
   b. \[\text{ClP Endoe ndo }\]^5

Although additional data are needed in order to determine the interaction of both C-wh interaction options with respect to directionality of marking MiP boundaries in these dialects, the analysis in (23) can be restated in broader prosodic terms. ClP constitutes a coherent intonational unit equal or larger than phonological word; subsequent movement of the weak wh-item, while leaving the strong wh-item in situ, leaves this prosodic status of ClP intact. ClP can then project a terminal MiP boundary thus enacting the wh-in-situ scenario with respect to the strong wh-form. Conversely, if the strong wh-form were to undergo wh-movement, what would remain of the ClP is the weak wh-item which cannot instantiate a terminal MiP boundary, similarly to the cases considered in Sections 2 and 3. This accounts for the pattern in (21). As for (22), assuming, together with Poletto and Pollock, that in cases when no wh-doubling is present, one of the items in (23) is phonetically (and prosodically) zero, we predict, correctly, that only the strong form capable of instantiating a MiP boundary, will be able to remain in-situ, whereas the weak form will not."^6

5. Discussion and conclusions

The ClP analysis mentioned in the previous section suggests a way to make use of the clitic status of the wh-phrase and view the relationship between the latter and the interrogative complementizer, but in a slightly different way than depicted in (23). Rather, in a prosodic-based system like Richards’, prosodically connecting the wh-word with the respective complementizer via wh-movement may be seen as the need to satisfy the basic syntactic as
well as prosodic requirement of clitics, that of attaching to a suitable available host, in this case an interrogative C with which a wh-clitic shares formal features such as [+Q,+wh]. In this sense, wh-clitics can be viewed informally as “interrogative C clitics”, alongside other clitic types determined by the kind of the host they attach to, such as verbal clitics or second-position clitics. This need not be stated as an additional proviso to (1) and (2), but must be recognized as an independent regulator of the wh-movement option, over and above the algorithm operating on prosodic wh-domains. This view emphasizes the important role of prosody in restricting syntactic choices at the interface (see Bošković 2001 for a similar view of the syntax-phonology interface in which syntactic operations corroborate prosodic processes by virtue of filtering out syntactic outputs that do not conform to prosodic requirements). The feature-based triggering perspective also restricts the target of cliticization to the left-peripheral C, but not, for instance, to the closest/adjacent prosodically strong element such as verb (with which the wh-clitic does not share the relevant features). To the extent this regulator itself has a prosodic nature (see, e.g Halpern 1995, Boškovic 2001), we believe it can be readily incorporated in a prosodic framework based on wh-domains. One possible direction of such incorporation can be sketched as follows.

It might be hypothesized that at some (suprasegmental) level the complementizer and the wh-word must enter a relation that we might provisionally view as a prosodic counterpart of the syntactic phenomenon of agreement. An agreeing element can be prosodically autonomous (e.g. ‘be.present’ realized as *is* in *John is tall*), or it can be affixal (as, e.g. the ‘be.past’ feature on Infl realised as the verbal ending –*ed*, in many transformational analyses of English verbal morphology; cf., e.g. Lasnik et al 2000 for review). In the first case, syntactic agreement can be structurally local (cf. ‘spec-head’ or ‘head-head’ agreement), or long-distance, via local controllers across potentially unbounded domains (cf. Chomsky 2008). These two possibilities would be analogous to the wh-movement and wh-in-situ options, respectively, in the prosodic-based framework, also suggesting that an algorithm
such as (1) and (2) may be relevant, or even underlying, at some level, what is known as the syntactic ‘EPP’ requirement operating over a well-defined wh-domain and triggering overt wh-movement (see also McFadden and Sundaresan 2015 and Richards 2016 for discussion of prosodic aspects of EPP). In the second case, agreement is necessarily realized via some sort of displacement driven to satisfy the affixal properties. This can also sit well in the prosodic framework, as the affixal properties we argued by many to be triggered by the PF interface requirements (e.g. Bobaljik 1995). These suggested parallels bear on important aspects of the syntax-phonology interface that are currently being explored and made formally precise (see the references above).  

7 To summarize, the intra-language variability in the choice of the wh-movement or the wh-in-situ option, which may, at first sight, appear problematic for the prosodic approach in Richards (2010, 2016), on closer look can be reconciled with the latter. It also underscores the non-trivial nature of the determination of the prosodic end boundaries, suggesting that this approach must be made sensitive to the prosodic constituent properties of not only the intervening MiPs, as originally proposed, but also the the wh-word itself. This conclusion further implies that the algorithm in (1) operates derivationally, rather than as a parametric choice fixed once and for all for a given language.

References
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Notes
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1 Richards (2010: 156) briefly discusses French and Egyptian Arabic, pointing out that his prosodic proposal does not exclude such optionality, as long as movement improves a prosodic structure of the question, similarly to the wh-in-situ option. See also Yasin (2012).

2 No intonational differences between *que* and *qui* of the type discussed in Section 1 can be observed in (18), since, unlike LA, French does not have lexical stress (e.g. Delais-Roussarie et. al. 2015)

3 However, (20c) contrasts with (16) in LA in that *que* is unable to combine with the preposition. We attribute this inability, again, to the highly restricted possibilities of French to form phonological clusters in the absence of the option to assign lexical stress to these clusters.

4 The LA and French facts discussed above appear to suggest that the prosodically deficient wh-element is always one meaning *what*. However, the Italian dialect data discussed by Poletto and Pollock suggest that the relevant inventory may also include wh-clitics meaning *where* (*ndo* in Illasi, *ngo* in Monno; full versions are *endoe* and *ngont*, respectively), as well as *who* (*ci* in Illasi; cf. (17) in their work). This raises an interesting issue as whether there
exists some sort of an implicational hierarchy here (e.g. 'if a language has a wh-clitic for who, it has one for what but not vice versa'), which should be explored in further work. We thank the Editors for drawing our attention to this aspect.

5 Given that clitics are often considered to have a dual, head and phrasal, status in the minimalist framework (e.g. Chomsky 1995), the precise structural make-up of this wh-CIP is not quite obvious, but also not particularly relevant at this point.

6 As an LI reviewer correctly points out, the logic of our present proposal suggests the possibility that a language could have the prosodic properties that ought to allow wh-in-situ, but be forced to move its wh-phrases if all of its wh-words are clitic-like in the relevant sense. Whether such a language exists is an interesting question that should be further investigated. Relevant to this point, Richards (2016: Chapter 6) mentions (standard) Italian as a language that ought to allow wh-in-situ on prosodic grounds but which, nevertheless, does not.

7 We believe this possibility is also reminiscent of Richards' (2016) Contiguity-theoretic approach to forming prosodic domains on the basis of syntactic constituents via interface operations such as Grouping and Contiguity-adjunction (see Richards 2016: Ch.3), as part of the general strategy for alignment or 'match' between syntactic and phonological domains (see also Selkirk 2011, among others). Even though Richards (2016) no longer directly relies on the idea of a prosodic boundary introduced by a wh-phrase, as in Richards (2010) assumed here, it nevertheless maintains the underlying important insight concerning a tight relationship between syntactic and prosodic boundary/edge phenomena.