

UTTERING AND INTERPRETING TREES

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This article first selectively overviews the discussion on the interaction of phonology and syntax offered in Richards (2010), then pursues the same project from a different angle. Pointing out that both *wh*-in-situ and overt *wh*-movement express sound-meaning correlations by appealing to some physical marking at surface level, we propose that both should be regarded as instances of overt syntax. Accordingly, the notion ‘overt syntax’ is redefined as the grammatical procedure that synchronizes PF- and LF-effects. We then argue that the synchronized PF-LF effects of overt syntax can be captured if feature complexes that induce the legibility of linguistic expressions at PF and at LF are encoded into lexical items.*

Keywords: *Wh-questions, prosody, Wh-movement, Wh-in-situ, PF-LF synchronization, legibility*

1. Introduction

Syntacticians have long known that the acceptability and interpretation of a sentence depends on the prosodic pattern assigned to it. Such observations, however, have often been made only in passing, left behind as unsolved mysteries or as matters irrelevant to grammar, typically mentioned in footnotes. Even when consistent correlations between prosody and semantic interpretation are discovered, they are often presented merely as descriptive observations without elucidating how the grammar makes such correla-

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tions possible, let alone addressing what the exact role of syntax is. In this regard, Norvin Richards' recent monograph *Uttering Trees* (Richards (2010)) is a rare and innovative piece of work. It attempts to substantiate the view that some of properties of syntax are determined by its interface with phonology. In Section 2 of this article, we first provide a selective overview of this monograph. Then in Section 3, we explore an approach distinct from the one proposed and argued for in the monograph, concentrating our discussion on the materials presented in Chapter 3 of the book.

2. Richards on Pronunciation and Syntax

The two main chapters of Richards (2010), Chapter 2 and Chapter 3, both discuss the relation between pronunciation and syntax. Beyond this general commonality, however, they are largely distinct and independent chapters and there is little connection between the two. Below, we overview the two chapters one by one, starting with Chapter 2.

2.1. Distinctness in Linearization

This chapter first advocates the view that grammar universally demands two linguistic expressions to be different when they are pronounced in sequence, then attempts to find out how exactly such a constraint should be formalized. The investigation starts with multiple ellipsis remnants in English as in (1) and (2) below (Richards' (6) and (7) with his acceptability judgments indicated).

- (1) a. *Every man admired every woman, *except* [_{DP} **John**] [_{DP} **Mary**]
 b. *I know everyone insulted someone, but I don't know [_{DP} **who**] [_{DP} **whom**]
- (2) a. Every man danced with every woman, *except* [_{DP} **John**] [_{PP} **with Mary**]
 b. I know everyone danced with someone, but I don't know [_{DP} **who**] [_{PP} **with whom**]

Richards claims that the contrast here follows from the formal constraint being proposed, which bans two remnant DPs from being pronounced in sequence in (1a, b). On the other hand, no such violation arises in (2a, b) since the ellipsis-remnants are of two distinct types (DP and PP).

The proposal made in this chapter involves the background assumptions as listed in (3).

- (3) a. The linear order of syntactic nodes and lexical items is de-

terminated when Spell-Out applies in accordance with the Linear Correspondence Axiom.

Linear Correspondence Axiom (LCA: Kayne (1994: 33))

Let X , Y be nonterminals and x , y terminals such that X dominates x and Y dominates y .

Then if X asymmetrically c -commands Y , x precedes y .

- b. Spell-Out applies cyclically each time a strong phase is created. Strong phases include CP, transitive (not intransitive) v P, PP and KP (Chomsky (2000), Chomsky (2001)).
- c. Lexical heads are merged through ‘Early Insertion’ as complete lexical items. In contrast, functional heads are merged without their phonological information. Their phonological information is introduced post-syntactically by ‘Late Insertion,’ as argued for in Distributed Morphology (Halle and Marantz (1993), Embick and Noyer (2001), et al.).
- d. Linearization is ordered before Late Insertion, hence the phonological features of functional heads have no effect on linearization. Linearization treats overt and covert functional heads on par.

Within this framework, the constraint in (4) is proposed to be a formal condition imposed on linearization.

(4) Distinctness (Richards’ (5))

If a linearization statement $\langle \alpha, \alpha \rangle$ is generated, the derivation crashes.

This condition rejects trees in which two nodes of type α are to be linearized in the same “Spell-Out domain,” defined as the complement (and, hence, the sister) of the phase head (Nissenbaum (2000)). It is also claimed that what counts as distinct types of α in (4) may vary cross-linguistically. For instance, Richards argues that this is defined by syntactic category in English, by case in Japanese, and by properties like gender and animacy in other languages.

With this proposal, Richards examines various phenomena that, at first glance, do not appear to have anything to do with the notion ‘distinctness.’ He invites the reader, often in an amusing way, to analyze these phenomena in accordance with the insightful mechanisms offered by his approach. He also makes maximal use of his rich knowledge of typologically diverse languages in the pursuit of this project. The diversity of languages and empirical phenomena covered in this chapter is quite impressive, and the analyses and generalizations offered therein are highly enlightening. The

work presents itself as an exemplary research project based on an innovative idea pursued under a tightly-knit formal system of grammar.

Since an attempt to discuss all of the topics and empirical phenomena covered in this chapter would be too reckless, I will only point out in this section some apparent misanalyses of the data and theoretical concerns that arise in the proposed approach, concentrating on the languages that permit me to offer reasonably detailed and deliberate analyses.

First, the impressive diversity of empirical coverage in this monograph in itself might actually have produced the adverse effect of overextending the limits of his analysis. More specifically, some of the empirical phenomena claimed to involve Distinctness violations may in fact not involve such violations at all. For instance, the contrast between (5a) and (5b) below (Richards' (89a, b)) is presented as supporting evidence that the Distinctness effect is sensitive to case in Japanese.

- (5) a. [Sensee-o hihansita] gakusee-ga koko-ni ooze*e* iru-kedo,
 teacher-Acc criticized student-Nom here-at many exist-but
dare-ga dare-o-ka oboeteinai
 who-Nom who-Acc-Comp_{Wh} remember-Neg
 (literally) 'There are lots of students here who criticized
 teachers, but I don't remember who who.'
- b. *[Sensee-ga sukina] gakusee-ga koko-ni ooze*e* iru-kedo,
 teacher-Nom like student-Nom here-at many exist-but
dare-ga dare-ga-ka oboeteinai
 who-Nom who-Nom-Comp_{Wh} remember-Neg
 (literally) 'There are lots of students here who like teachers,
 but I don't remember who who.'

Richards reports that, while multiple sluicing in Japanese generally allows multiple DP remnants marked by distinct case particles, as in (5a), those marked by the same case, as in (5b), are not permitted. He also reports that acceptability judgments are significantly improved in sentences involving identical case marking but a difference in animacy, as in (6) below, implying that an animacy feature may also play a partial role in the definition of distinctness in Japanese.

- (6) [Doobutu-ga sukina] hito-ga koko-ni ooze*e* iru-kedo,
 animal-Nom like person-Nom here-at many exist-but
dare-ga nani-ga-ka oboeteinai
 who-Nom what-Nom-Comp_{Wh} remember-Neg
 (literally) 'There are lots of people here who like animals, but I
 don't remember who what.'

However, the source of the awkwardness that arises in (5b) (at least in its first round of parsing) may be independent of a Distinctness violation. To begin with, (5b) is handicapped by involving a subject NP in the antecedent clause that is ambiguously analyzable, as indicated in (7a, b).

- (7) a. [NP [TP Sensee-ga **pro**₁ sukina] gakusee₁]
 teacher-Nom like student
 ‘the student(s) whom the teacher(s) like(s)’
- b. [NP [TP **pro**₁ Sensee-ga sukina] gakusee₁]
 teacher-Nom like student
 ‘the student(s) who like(s) the teacher(s)’ (= *Intended interpretation in (5b)*)

The antecedent clause in (5b) therefore makes it difficult for language users (i.e. listeners and readers) to determine how the multiple *wh*-questions fit into specific word order and indicate a ‘sorting key’ (Kuno (1982)). This troublesome situation is only made worse by the multiple remnants of *wh*-phrases with identical case marking. While the subject NP in (6) is ambiguous between ‘people who like animals’ and ‘people whom animals like’ and therefore has the same potential problem, the former is the more pragmatically (and discoursally) likely interpretation, with *doobutu-ga* ‘animal-NOM’ analyzed as the object. More generally, this means that an animacy distinction within multiple remnants encourages the language user utilize pragmatic likelihood, thus making it easy to determine how the remnants fit into default word order in sentences like (6). In fact, if we reduce the likelihood of ambiguity in the subject NP of the antecedent clause, as in (8) below, greatly improved acceptability can be obtained, even though the multiple remnants have the same case and the same animacy.

- (8) [Aidoru-kasyu-ga sukida-tteyuu] tiineezyaa-ga sonoba-ni nanninka
 idol-singer-Nom like-saying teenager-Nom there-at some
 itakedo, dono-ko-**ga** dono-kasyu-**ga**(-datta)-ka(-wa)
 existed-but which-*kid*-Nom which-*singer*-Nom-was-Comp_{Wh}-Top
 oboeteinai.
 remember-Neg
 (literally) ‘There were several teenagers there who said they love
 idol singers, but I don’t remember which kid which singer.’

This result brings to question the relevance of Distinctness (defined in terms of case or animacy) to the acceptability difference in (5).

Next, responding to a reviewer’s observation, Richards also concludes that “multiple clefts in Japanese are generally allowed, but not when the clefted phrases are DPs with the same case, as in (9b) (Richards’ (92b)).” (p. 45)

- (9) a. [Sukina-no]-wa *Taroo-ga Hanako-o* da
 like-that.which-Top Taroo-Nom Hanako-Acc Cop
 (literally) ‘It is Taroo Hanako that likes.’
 b.??[Sukina-no]-wa *Taroo-ga Hanako-ga* da
 like-that.which-Top Taroo-Nom Hanako-Nom Cop
 (literally) ‘It is Taroo Hanako that likes.’

The same interpretive problems just pointed out for (5b) arise here again for (9b), perhaps even more gravely since neither subject nor object is overtly expressed in the antecedent clause ([*pro pro sukina-no*]). Moreover, multiple clefts must be interpreted as a set of ‘paired contrastive foci’ (“*Taro’s liking Hanako, Hiroshi’s liking Mayumi,*” etc.), yet an appropriate pragmatic context is not too easy to imagine for (9b). A discourse like (10) below perhaps provides such a context, and the multiple clefts involving identically case-marked animate NPs in (10B) become noticeably easier to interpret.

- (10) A: Tasikani oya-wa *saisyō-no-ko-ga* itiban
 certainly parent-Top first.child-Nom most
kawaii-toka, *sinkon-danseewa yomesan-ga*
 feel.affectionate.to-and newly.wed-man-Top wife-Nom
kawaikute-tamaranai-toka yuu-kedo,
 irresistibly.affectionate-and said-but
 ‘It’s certainly true that they say parents feel most affectionate
 toward their first child and newlywed men feel irresistibly
 affectionate toward their wives, ...’
 B: [tonikaku *muzyoookende saikooni*
 at.any.rate unconditionally maximally
kawaii-tteyuu-no]-wa [*ziityan-baatyan-ga*
 feel.affectionate.to-said-that.which-Top grandpa-grandma-Nom
magō-ga]-desyoo.
grand.child-Nom-Cop
 (literally) ‘At any rate, it is grandparents grandchildren who
 feel unconditionally and maximally affectionate toward.’

We thus are led to consider that distinctness in terms of case may not play a major role in the awkwardness detected in (9b) either.

The above observations lead us to a more general potential theoretical problem. Among the numerous examples reported to involve Distinctness violations, quite a few are only relatively less acceptable rather than completely unacceptable. Yet if Distinctness violations represent a grammatical problem caused by the crash of a derivation as prescribed by the Distinctness Condition (4), they should be much more clearly unacceptable

due to their ungrammaticality. The multiple clefts in (9b) in Japanese, for instance, involve only some amount of awkwardness and are not judged totally unacceptable. Likewise, the Distinctness violation claimed to arise from consecutive *a*-marked DPs in Spanish seems to be merely “not perfectly well-formed” (p. 31) relative to their improvement in DPs avoiding such a violation through movement, heaviness, and a prosodic break (Richards’ ??(60) versus (61a–c)). In Kinande, the optionality and dispreference of a ‘linker’ for the VP-internal multiple DPs (Richards’ (203) and (204)) may present another similar case. If a linker is *v*_C and creates a strong phrase, it should either exist or not exist—that is, the derivation should either converge or crash.

The situation is similar for multiple *wh*-fronting in Serbo-Croatian, where Distinctness is discussed in terms of case and gender. The crucial contrasts do not involve any clear ungrammaticality (e.g. Richards’ ??(107a), ?(109) versus (108)). My informants also confirm that the sentence allegedly involving the failure of distinctness in terms of case and masculine as in (11a) below (Richards’ (111)) improves greatly when we replace *which man* and *which boy* with *which father* and *which son*, respectively, as in (11b).

- (11) a. ??**Kojeg je čovjeka kojeg dječaka sram?**
 which.Gen Aux man.Gen which.Gen boy.Gen ashamed
 ‘Which man is ashamed of which boy?’
 b. **Kojeg je oca kojeg sina sram?**
 which.Gen Aux father.Gen which.Gen son.Gen ashamed
 ‘Which father is ashamed of which son?’

We did not alter any case or gender marking between the two sentences in (11). All we did in (11b) was to provide the arguments that presumably make it easy to imagine a pragmatic context in which a pair-list interpretation of “X being ashamed of Y” makes sense.

Thus, some cases alleged to involve a Distinctness violation exhibit only a somewhat lowered acceptability, and even this lowered acceptability can often be improved with an appropriate pragmatic context. These observations suggest that the nature of these problems is extra-grammatical rather than grammatical. We thus are led to consider that at least some of the empirical phenomena dealt with in Chapter 2 reside outside the realm of the notion ‘Distinctness violation’ being advocated there. It perhaps is not impossible to treat such gradient judgments by appealing to an optimality-theoretic approach, possibly limiting its range of application to the phonology-syntax interface as in Pesetsky (1998). That is not, however, what is being pursued in Richards’ monograph, and such an account of the observed

phenomena probably cannot be put forth too easily in his approach without threatening the integrity of the notion ‘grammar.’

Some fundamental questions also remain unanswered. First, why must Linearization be ordered before Late Insertion (cf. (3d))? Such an assumption effectively makes phonetic content irrelevant to linearization, yet it is generally considered that the goal of linearization is to make phonetic content pronounceable and abstract features perhaps need no linearization to begin with. It therefore strikes us as quite strange that the linearization of phonetically null and hence unpronounced functional categories like *v*'s must be constrained. Second, it is also unclear why a feature like animacy, which is semantic in nature, plays a role in the determination of Distinctness. Third, it is argued with an example like (12) below (Richards' (64)) that what matters in the determination of Distinctness is whether or not a pair of nodes in a linearization statement $\langle \alpha, \alpha \rangle$ are located within the same Spell-Out domain rather than their string adjacency. A Distinctness violation not involving string adjacency as in this case makes us wonder whether Distinctness defined in the monograph really has anything at all to do with the linearization of phonetic content.

(12) *‘‘It’s cold,’’ [_{vc} told] [_{vP} [**John**] *sadly* [**Mary**]]

Fourth and finally, as discussed above with examples from Japanese, there may also exist some phenomena that have an independent source of awkwardness whose adverse effect is only enhanced by a sequence of semantically non-distinct elements. In fact, even the examples similar to (13a, b) below (Richards' (2a, b)), which are presented in this monograph as clear-cut ungrammatical sentences, are reported not to be uniformly rejected (Lasnik (2011)):

(13) a. *I know everyone insulted someone, but I don’t know [_{DP} **who**] [_{DP} **whom**]

b. *I know every man insulted a woman, but

I don’t know [_{DP} **which man**] [_{DP} **which woman**]

Among the sixteen informants I consulted with, only four straightforwardly rejected both of (13a, b). All other speakers found (13b) noticeably better, if a little strange, especially after it was pointed out that the intended interpretation of the multiple *wh*-phrases is a pair-list reading. Two speakers told me that both of (13a, b) become acceptable when they assign an emphatic stress to both *wh*-phrases. As such, the situation is somewhat similar to that of the Japanese examples above. This type of variance among speakers and/or sentences appears to indicate the involvement of one or more extra-grammatical sources of awkwardness.

$$(17) \quad [\text{wh C } [_{\text{MiP}}] [_{\text{MiP}}] [_{\text{SMiP}} \rightarrow \text{wh}]]$$

In other words, how a *wh*-question is syntactically represented in a given language depends on whether the SMiP boundary and Comp are located on one same side of the base-generated *wh*-phrase (resulting in overt movement), as in (17), or on the opposite sides of the *wh*-phrase (resulting in *wh*-in-situ), as in (16). In a nutshell, the proposed system “permits overt *wh*-movement just in case it improves the prosodic structure of the *wh*-question” (p. 155). Richards emphasizes throughout Chapter 3 (pp. 148, 155, 185, 190) that his approach is concerned only with phonological representations and not with their phonetic implementation, hence *wh*-domains need not be associated with any (particular) phonetic effect. In other words, all he is concerned with is whether or not MiP boundaries intervene between a *wh*-phrase and its associated Comp, whatever phonetic effects this may have.

(18) and (19) below are the grammatical devices Richards adopts in this approach.

- (18) Algorithm for prosodic *wh*-domain formation (Richards’ (10))
- a. For one end of the larger Minor Phrase (= SMiP [YK]), use a Minor Phrase boundary that was introduced by a *wh*-phrase.
 - b. For the other end of the larger Minor Phrase (= SMiP [YK]), use any existing Minor Phrase boundary.
- (19) Condition on prosodic *wh*-domains (Richards’ (13))
- Given a *wh*-phrase α and a complementizer C where α takes scope, α and C must be separated by as few Minor Phrase boundaries as possible, for some level of Minor Phrasing (= SMiP [YK]).¹

This approach predicts the existence of four types of languages, as summarized in (20) below (Richards’ (76) with some reorganization). Richards attempts to verify this prediction by examining each of the languages listed here (and a few others) as representative examples.

¹ Note that this seems to be based on the assumption that the original MiP boundaries in (15) are eliminated in the formation of a *wh*-domain rather than recursively represented.

(20)	C to right of TP	C to left of TP
Prosodic boundaries to left of XPs	(i) Japanese (<i>wh</i> -in-situ)	(iii) Tagalog (<i>wh</i> -move, L)
Prosodic boundaries to right of XPs	(ii) Basque (<i>wh</i> -move, R)	(iv) Chicheŵa (<i>wh</i> -in-situ)

- (20i) <_{SMiP}→ **wh** C> *wh*-in-situ Japanese
- (20ii) < ...**wh** ←_{SMiP}> ... C *wh*-move to right² Basque
- (20iii) C ... <_{SMiP}→ **wh** ...> *wh*-move to left Tagalog
- (20iv) <C**wh** ←_{SMiP}> *wh*-in-situ Chicheŵa

Richards is careful to acknowledge a potential theoretical problem involved in this approach, beginning his investigation by stating, “throughout this chapter I will make very unorthodox assumptions about the interaction between the syntax and the phonology; ... the idea will be that the syntactic operation of overt *wh*-movement takes place just in case the prosody requires it. The approach therefore involves a straightforward type of look-ahead.” (pp. 145–146) Referring to a similar look-ahead problem involving Quantifier Raising, he also remarks, “Taken together, the look-ahead problems suggest that our understanding of the interfaces is flawed in some way.” (p. 215, fn. 1)

Richards’ proposal is highly valuable and meritorious in several respects. To begin with, it seriously examines the interaction of prosody and syntax, a topic which has long been regarded as important but has not been too actively investigated in the study of generative syntax. Even more admirable is that this topic is being pursued in a typological framework, a highly ambitious project to say the least.

The proposal is also valuable in more concrete terms because of the relatively high degree of falsifiability it offers. The typological predictions made in the proposed approach are directly testable since all languages are expected to involve a clear and simple correlation between the directionality of the Comp head and the placement of MiP boundaries on the one hand, and the way *wh*-questions are realized in syntax on the other.

Another respect in which I find the proposed approach praiseworthy is

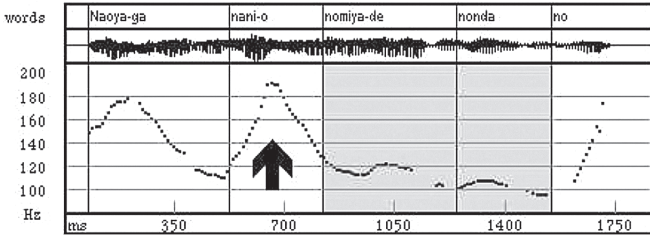
² Basque, in fact, does not behave this way, and Richards adopts the scrambling of a non-*wh*-phrase to achieve a similar effect. (p. 164)

that it clearly acknowledges the limitation of the existing syntactic mechanisms that force overt movement by appealing to ‘strong features’ (or ‘EPP features’), characterizing them as mere stipulations (p. 143). In fact, Richards directly rejects the use of such mechanisms as a potential solution to the look-ahead problem, pointing out that this would offer “no way of explaining the absence of complementizer-final languages with obligatory overt *wh*-movement to the left periphery of the clause” (p. 155).

For the proposed approach to gain firm support within the minimalist program, two essential tasks must be fulfilled. First, the approach must be demonstrated to be empirically plausible by evaluating its predictions with data from as many languages as possible. Second, the look-ahead problem must be solved somehow, presumably either by revising the model of the language faculty itself or by devising a way to solve the problem within the current model. This certainly is too serious and fundamental a problem to be left unsolved.

Richards’ empirical investigation to confirm the typological predictions made by the proposed approach begins with the examination of Japanese, a relatively well-studied language with *wh*-in-situ and clause-final Comp, cf. (20i). For Japanese, he points out the following: (i) many authors have posited left boundary placement in the prosodic phonology (e.g. Selkirk and Tateishi (1988, 1991)), (ii) it has long been pointed out that prosodic *wh*-domains are phonetically distinctive (e.g. Pierrehumbert and Beckman (1988) and Maekawa (1991)), and (iii) several authors have argued for a grammatical encoding of the correlation between the prosodic *wh*-domain and the scope domain of *wh*-focus (e.g. Deguchi and Kitagawa (2002), Ishihara (2003)). In (21) below, the prosodic *wh*-domain typically realized in Tokyo Japanese is indicated on the example sentence as follows: the *wh*-focus is enclosed by a box and its pitch prominence is indicated by bold-face, the pitch-range compression by “post-focal reduction” is indicated by the underlined reduced fonts (up to the associated Comp), and the utterance-final interrogative rise is indicated by a question mark. The moras that are associated with high tones are indicated by upper case letters, whether their pitch ranges are reduced or not. This coding scheme will be used throughout Section 3 later on. The example sentence and its pitch track in (21) are from Ishihara (2003: 53) (Richards’ (2b)).

- (21) NAoya-ga NAmi-o noMlya-de NOnda-no?
 Naoya-Nom what-Acc bar-at drank-Comp_{wh}
 ‘What did Naoya drink at the bar?’



Richards claims that Japanese verifies the existence of a language of the type in (20i), exemplifying a *wh*-in-situ language involving left boundary placement ((i) above) and Comp-finality.

(20i) <SMiP→ **wh** **C**> *wh*-in-situ Japanese

Japanese indeed presents a very clear case demonstrating the correlation between *wh*-in-situ and prosody with its distinctive prosodic *wh*-domain ranging from the *wh*-word to the Comp, which also correlates with the scope domain of *wh*-focus ((ii) and (iii) above). Thus, the evaluation of the typological predictions in (20) appears to be off to a good start.

The prosodic structure postulated for (20i) in Japanese, however, is not without problems. It has been repeatedly noted in the literature that the LHL contour involved in the reduced items in (21) (*noMiya-de* ‘bar-at’ and *NOnda* ‘drank’) is compressed but has not entirely disappeared, as can be observed in the pitch-track diagram in (21) (Maekawa (1994), Kitagawa (2005), Ishihara (2011)). Since the initial rise (LH) is observed in these prosodic words, their MiP boundaries must have been retained, contrary to the prosodic structure assumed for (20i).

The other three typological varieties in (20ii–iv), in fact, are not as cleanly attested. First, (Ondarroa) Basque is proposed as a language of the type in (20ii).

(20ii) <...**wh** ←SMiP ... **C**> *wh*-move to right Basque

Based upon previous research, it is concluded that a MiP boundary in this language is placed at the right edge of a phrase (though only under specific circumstances). Being a head-final language, it is also assumed that Comp is located to the right of the clause in Basque (though is phonetically ‘invisible’). It is therefore predicted that Basque should permit rightward *wh*-movement to Comp, as in (20ii). In reality, however, a *wh*-phrase in this language appears immediately before a verb as in (22) below, rather than in its base-generated position as in (23a) or in the landing site of rightward *wh*-movement to Comp as in (23b).

- (22) Jon **señek** _{SMiP>} **ikusi** rau-C?
 Jon-abs **who**-erg **see**-prf aux.pr
 ‘Who saw Jon?’ (Richards’ (29a))
- (23) a. ***Señek** _{SMiP>} Jon _{MiP>} **ikusi** rau-C?
 who-erg Jon-abs **see**-prf aux.pr
 b. ***Señek** _{SMiP>} Jon _{MiP>} **ikusi** rau-C **Señek**?
 who-erg Jon-abs **see**-prf aux.pr **who**-erg

Richards follows Arregi (2002) in assuming that (22) is derived by “altruistic” scrambling of the non-*wh*-phrase as in (24).

- (24) Jon **señek** ~~SMiP>~~ **ikusi** rau?
 Jon-abs **who**-erg **see**-prf aux.pr
 ↑

Note that only one MiP boundary intervenes between the *wh* and Comp in (22) as opposed to two in (23a), achieving improvement in prosodic structure, although both sentences involve *wh*-in-situ rather than *wh*-movement. With this analysis, Richards concludes that “the condition on prosody will thus have to be stated as an economy condition, requiring the grammar to ‘do its best’ to minimize the number of Minor Phrase boundaries between the *wh*-phrase and the complementizer; ...” (p. 164).


To cope with the problem of there being no rightward *wh*-movement to Comp as in (23b), Richards cites Elordieta’s (1997) observation that the pitch of the postverbal material in Basque is always radically compressed. He ultimately settles on the view that “postverbal material in Basque is already subject to conditions on prosody which might be incompatible with the conditions on *wh*-prosody being explored here” (p. 163). This may indeed turn out to be the reason why rightward *wh*-movement to Comp is not observed in Basque. However, in order for this account to be valid, the incompatibility assumed here must be shown to involve prosodic phrasing. (Recall that the proposed approach concerns only prosodic phrasing and not its phonetic implementation.) Presumably, whatever causes prosodic reduction of the postverbal materials must require the existence of more than one intervening MiP boundary between the moved *wh* and Comp in (23b). What is even more pressingly required of the proposed approach, though, is an account of why rightward overt *wh*-movement is virtually unattested in spoken languages.³ If prosodic boundary place-

³ See Cecchetto et al. (2009) for the claim that *wh*-phrases undergo rightward movement in various sign languages.

ment on the left and Comp-finality are both attested as widely available options, then such a gap in the typology poses a serious problem to the proposed approach. It appears that much work is yet to be done in this area.

Tagalog is proposed as a language of the type in (20iii).

(20iii) C ... <_{SMiP}→ wh ...> wh-move to left Tagalog



Based upon his own pilot study, Richards concludes that MiP boundaries in this language are generally placed at the left edges of KPs (which is claimed to be a phase). Since Tagalog is a Comp-initial language (though Comp is phonetically invisible in matrix clauses), it is predicted to involve obligatory leftward *wh*-movement. This prediction is upheld:

- (25) a. **Kailan** C umuwi si Juan <_{SMiP} **kailan?**
when Nom-went.home Ang Juan **when**
 ‘When did Juan go home?’ (Richards’ (59))
- b.* C Umuwi si Juan <_{SMiP} **kailan?**
 Nom-went.home Ang Juan **when**

A different prediction made under this approach is not borne out, however. Richards notes that the MiP boundary *immediately following the verb* is deleted due to “an overriding requirement that the verb not be in a phrase by itself” (p. 171), hence the lack of a MiP boundary after *umuwi* in (25) above. As such, *wh*-in-situ should be possible in immediately post-verbal position, as in (26).

(26) C V<_{MiP} wh ...

Such a construction, however, is not generally possible. The only exception is when one particular *wh* word *nino* ‘who’ is used, and even this is only marginally permitted (especially when other items follow it). Thus, while Tagalog generally is of type (20iii), the difficulty of *wh*-in-situ in (26) casts a shadow over the integrity of the overall typological predictions.

Chicheŵa is proposed as a language of the type in (20iv).

(20iv) <Cwh ←_{SMiP}> wh-in-situ Chicheŵa

In this language, the vowel in the penultimate syllable of a phonological phrase is lengthened, and an underlying H tone is retracted from the final mora onto this lengthened penultimate mora (e.g. *mlendó* ‘visitor’ → *mleéndo*: Kanerva (1989), Truckenbrodt (1999)), suggesting MiP boundaries in this language are placed at the right edge of phrases. In addition, since Chicheŵa is a head-initial language, Comp falls to the left of the associated clause (though it is phonetically invisible in matrix clauses). Based on these two observations, Chicheŵa is predicted to permit *wh*-in-situ, and indeed, the position of the *wh*-word in (27) below confirms this predic-

tion. (Examples (27) and (28) are Richards' (69) and (70), which are both cited from Downing (2005).)

- (27) <C anaményá **chiyáani** _{SMiP}> ndi mwáálá _{MiP}>
 he.hit what with rock
 'What did he hit with the rock?'

Upon closer examination, however, a phenomenon is observed here that is unexpected under the proposed approach. Typically, a VP in Chicheŵa is mapped onto a single MiP without any internal prosodic boundaries, as is confirmed by a comparison of the underlined vowels in the following example:

- (28) <anaményá nyumbá ndi mwáálá _{MiP}>
 he.hit house with rock
 'He hit the house with the rock'

However, a SMiP boundary *does* appear within the VP in (27) (as indicated by the lengthening and H tone on the penultimate syllable of the *wh*-word). This suggests that, contrary to the claim being made, it may in fact *not* be advisable to attempt to characterize prosodic *wh*-domains in Chicheŵa by appealing to the general prosodic phrasing in the language.

Richards also analyzes French as exemplifying the type in (20iv).

- (20iv) <C**wh** \leftarrow SMiP> *wh*-in-situ Chicheŵa

French has head-initial Comp and is claimed to impose metrical boundaries at the right edge of maximal projections. As predicted in the proposed approach, French exhibits *wh*-in-situ just as in Chicheŵa. One complication, however, is that *wh*-questions via movement can also be formed, as illustrated in (29b).

- (29) French (Richards' (95))
 a. <C Tu as vu qui _{SMiP}>?
 you have seen who
 'Who did you see?'
 b. <Qui C tu as vu ~~qui~~ _{SMiP}>?

Richards does in fact note that leftward *wh*-movement ought to also be an option for the languages of the type in (20iv) under the proposed approach "as long as the movement improves the prosodic structure of the question" (p. 155). If so, then it must be the case that the MiP boundaries within the SMiP created by the *wh*-phrase in (20iv) are erased in cases of *wh*-in-situ but somehow maintained in cases of *wh*-movement. It is not clear how this state of affairs can be obtained, but this is precisely what must be confirmed in order to provide evidence for the proposed approach.

2.3. Phase for ‘Look-ahead’

Finally, in the concluding section of Chapter 3, a new potential solution for the look-ahead problem (mentioned in the paragraph below the table (20) in Section 2.2 above) is offered. It starts with the claim that the only syntactic maximal projections relevant to prosodic boundary marking are ‘phases’ (Chomsky (2001)). It is assumed that all material in the sister domain of the phase head are sent to PF by Spell-Out, while the material at the edge remains part of the syntactic computation. At PF, prosodic boundaries are inserted “on the right or left edge of the phase,” (p. 201) and “the PF component returns to the syntax an object that has been partly annotated for prosody.” (p. 202) In this way, the type of phonological information relevant to syntax is determined via Spell-Out before the syntactic derivation is complete, and the application of *wh*-movement in syntax does not have to ‘look-ahead’ for the satisfaction of the phonological condition.

An appeal to the notion of a phase offers a new kind of ‘window’ through which we can view the prosody-syntax interaction in new ways, which may provide solutions to some of the potential problems of the originally proposed approach pointed out in Section 2.2 above. However, since the details of this approach are not spelled out and virtually no independent supporting arguments are provided, it is difficult to see how this approach can actually do everything it is claimed to do. For instance, a question that immediately arises is how Spell-Out can establish the prosodic boundaries of the phase at PF while its edge (and hence the higher of its syntactic boundaries) has yet to be sent there. (Recall that what is sent to PF by Spell-Out is the material in the sister domain of the phase head, not the material of the entire phase.) It is difficult to imagine how Spell-Out makes it possible for a prosodic boundary of the phase to be inserted in the phonology without the presence of its corresponding syntactic boundary. The assumption that PF can selectively return certain types of prosodic information to syntax is also an entirely new claim that calls for full-scale justification. In fact, it is not even clear if there is any substantial difference between claiming that “phonology returns to the syntax some aspects of phonology” and claiming that “syntax can look-ahead and access aspects of phonology.” Thus, even if we take into consideration that the proposed phase approach was offered only as a premature potential solution, it does not solve the look-ahead problem in question in any straightforward way.

3. Synchronization of Sounds and Meanings

Richards' investigation of the prosody-syntax interaction makes clear, simple, and valuable typological predictions. The above cross-linguistic examination demonstrates that the predicted language types in (20i–iv) are indeed existent, except for that in (20ii). At the same time, however, serious unsolved problems and/or unanswered questions have been posed for each of the four cases (including type (20i) as exemplified by Japanese). The fact that all of these problems/questions concern the phonological representation of prosodic phrasing casts a shadow over the integrity of the typological predictions based upon prosodic phrasing. Moreover, as argued above, we must also conclude that the look-ahead problem still persists in the proposed approach. Given this state of affairs, I feel compelled to shy away from the present attempt to explain the typological variation of *wh*-questions by appealing to prosodic phrasing.

In closing his monograph, Richards states:

“The theories presented here raise many questions for possible further study. Like any explanations, my explanations have to stop somewhere, and we should ask whether still deeper levels of explanation are possible. **Why should a *wh*-phrase and its scope position have to share a prosodic domain?** [emphasis by YK]” (p. 206)

In this section, we will attempt to provide an answer to the question asked at the end of this quote. We believe that a proper answer to this question will approach the syntactic typology of *wh*-questions without recourse to prosodic phrasing and in a way that avoids the look-ahead problem.

3.1. Physical Marking for Logical Interpretations

While we are no longer able to maintain that general prosodic phrasing plays a key role in the typology of *wh*-questions, we still have reason to believe that Richards is heading toward the right direction in his investigation of this topic. In particular, it strikes us as a correct generalization to claim that overt *wh*-movement applies when a language fails to supply an appropriate prosodic *wh*-domain, and to claim that that the position of Comp plays an important role in this syntactic choice. At the core of this generalization is Wachowicz's (1978) idea that all languages must provide some form of surface physical cues for marking *wh*-questions and Cheng and Rooryk's (2000) claim that prosody can function as one of such cues. Elaborating further on this view, we hypothesize that assigning a distinctive *wh*-prosodic pattern and moving a *wh*-phrase to the periphery of CP

share the same PF-function of physically indicating *wh*-questions.

Along these lines, Deguchi and Kitagawa (2002) and Kitagawa (2005) argue that *wh*-prosody physically marks the interpretive scope domain of *wh*-questions in Tokyo Japanese. For example, a potentially ambiguous question can be disambiguated with prosody, as illustrated in (30) and (31).⁴

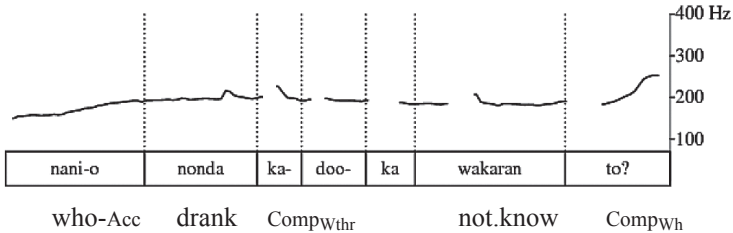
- (30) [CP₁ JYOn-wa [CP₂ MEarii-ga NAni-o katTA-ka] Imademo
 John-Top Mary-Nom **what**-Acc bought-Comp_{Wthr} even.now
siRITAGAtteiru-no?
 want.to.know-Comp_{Wh}
 (literally) ‘**What** does John still want to learn *whether* Mary bought?’
- (31) [CP₁ JYOn-wa [CP₂ MEarii-ga NAni-o katTA-ka] Imademo
 John-Top Mary-Nom **what**-Acc bought-Comp_{Wh} even.now
 siRITAGAtteiru-no?
 want.to.know-Comp_{Y/N}
 ‘Does John still want to learn **what** Mary bought?’

In (30), the prosodic domain extends to the matrix Comp *-no* (as evidenced by the post-focal reduction being prolonged to the end of the utterance), and the subordinate *wh*-phrase takes matrix scope. In (31), on the other hand, the prosodic domain is terminated at the subordinate Comp, and the *wh*-phrase takes subordinate scope.

The contrast just discussed indicates that prosody plays an important role to physically mark the interpretive domain of *wh*-focus, reinforcing the overt question marker (e.g. *-ka/-no* in Japanese). Quite interestingly, it has also been reported that prosodic *wh*-domains in Fukuoka Japanese show similar patterns but are realized in a phonetically different way (Kubo (1989) and Smith (2005)). The contour for Fukuoka Japanese, illustrated in (32) below (from Smith (2013: 120)), starts with a rise on the *wh*-word, after which high pitch (indicated by underlined capital letters) is maintained until the end of the *wh*-scope domain, and then ends with an utterance-final interrogative rising contour as in (32). (We will examine a potentially ambiguous case in Fukuoka Japanese similar to (30) and (31) in Section 3.2.4.1 below.)

⁴ In glosses of these and other examples, each distinct function of complementizers in Japanese is indicated as Comp_{Wh} (*wh*-scope maker), Comp_{Wthr} (a polar-question complementizer), Comp_{Y/N} (yes/no question marker) and Comp_{That} (declarative complementizer). Recall also the notation for indicating prosody on linguistic examples described in the paragraph above (21).

- (32) [CP₁ ... [CP₂ ... naNI-O NONDA-KADOOKA] WAKARAN-TO]?
 who-Acc drank-Comp_{Wthr} not.know-Comp_{Wh}
 (literally) ‘What doesn’t X know whether Y drank?’





Let us now hypothesize that whatever method of physical marking may be adopted for *wh*-questions (assigning a distinctive *wh*-prosodic pattern or moving a *wh*-phrase to the periphery of CP, etc.), its primary purpose is to indicate both of the following:⁵

- (33) a. The item to be interpreted as focus
 b. The constituent which constitutes its scope domain

To fulfill (33a), the *wh*-focus itself is generally expressed with a morpheme or word belonging to a special class, i.e. *wh*-words. In addition, languages also involve the additional physical marking of the *wh*-focus word itself. To fulfill (33b), the beginning or the end of the *wh*-focus domain is also physically signaled. In performing the two tasks in (33), the following three elements naturally play a significant role: the position of the *wh*-phrase, the position of its associated Comp, and the prosody across the region of the sentence between the two. When we reanalyze the language types in (20i–iv) paying attention only to the positions of the *wh*-phrase and Comp (rather than to prosodic phrasing), we obtain (34i–iv).⁶

⁵ At this point, we settle for this informal statement of the generalization, postponing its formalization to Section 3.2.

⁶ Note that we have not added anything new or extra to Richards' approach by revising (20i–iv) into (34i–iv). All we have done is to avoid any appeal to prosodic phrasing. Note also that Richards' condition on *wh*-prosody in (19) also appeals to the notions of *wh*-phrase and Comp in defining a *wh*-domain. In the end, we will reach an analysis in which the linear position of Comp plays a less crucial role.

- (34i) [CP ... **wh** ... C] *wh*-in-situ Japanese
- (34ii) [CP ... **wh** ... C] *wh*-move to right ?

- (34iii) [CP C ... **wh** ...] *wh*-move to left English/Tagalog

- (34iv) [CP C ... **wh** ...] *wh*-in-situ Chicheŵa

This generates several typological predictions, which we will now evaluate in turn. First, it appears that the physical marking of a *wh*-question in languages of type (34i) is typically carried out via prosody. In Tokyo Japanese, for instance, focus prominence is placed on the *wh*-item in the form of elevated high pitch accent, thus physically marking its focus status and fulfilling (33a). Moreover, the terminating point of the post-focal reduction indicates that the end of the CP is the scope domain for *wh*-focus, thus fulfilling (33b). (Refer back to (30) and (31) above as well as the pitch-track diagram in (21).) Since this analysis does not make reference to prosodic phrasing, the presence of MiP boundaries within the post-focal domain (as discussed in Section 2.2 above) does not pose any problem, unlike in the prosodic boundary approach.

In Comp-initial languages like English and Tagalog, for which no such prosodic marking is available, the physical marking of a *wh*-question is achieved by overt *wh*-movement, thus representing the language type in (34iii). Having been displaced from its base-generated position and placed at the left periphery of the clause, the overtly-moved *wh*-phrase comes to be identified as the item to be interpreted as focus. Since the moved *wh*-phrase must land in the vicinity of the invisible Comp at the beginning of the clause, the scope domain of *wh*-focus can be automatically identified as the maximal projection of this Comp (CP).⁷ In a sense, leftward overt *wh*-movement in Comp-initial languages can be characterized as an efficient way to physically mark all the pieces of information necessary for the interpretation of *wh*-questions. First, the item to be interpreted as focus is clearly indicated since it has been dislocated. Moreover, the *wh*-focus interpretive domain is also clearly indicated since it corresponds to the maximal projection of the Comp having the specifier position to which the *wh*-phrase has been dislocated. The movement strategy is adopted also in Tagalog, as observed in (25a) above. Recall that the absence of *wh*-

⁷ For the sake of simplification, we will not take into consideration the ‘split CP’ analysis as in Rizzi (1997).

in-situ in the immediately post-verbal position in this language, as in (26), remained unaccounted for in the prosodic boundary approach. In contrast, this does not pose any problem for the proposed ‘physical marking’ analysis since it does not appeal to prosodic phrasing.

The language type in (34iv) also corresponds to Comp-initial languages, but this time to ones for which the physical marking of a *wh*-question *can* be carried out by prosody. Although Chicheŵa presumably is a language of this type, the literature often reports difficulty recognizing any particular prosodic properties distinctively associated with *wh*-questions in this language. Myers (1996: footnote 1, p. 29), for instance, is forced to pigeonhole their description because of “a great deal of variation both within and between speakers.” Downing (2011: 32) reports that she finds no distinctive prosodic properties for *wh*-question other than a raised overall pitch. Downing and Pompino-Marschall (2013: 9–10, 16), however, present a quite interesting discussion which has a potential to explain how such difficulty arises. They first report their experimental results on the prosody involved in the *answers* to *wh*-questions in Ntcheu Chicheŵa as in (35a, b).

(35) a. Broad focus: (pp. 9, 16)

Q: Chí-na-chítika ndí **chi-yáni**?

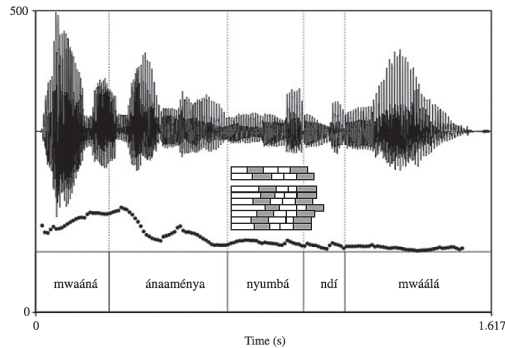
7SBJ-TAM-happen COP 7-what

‘**WHAT HAPPENED?**’

A: Mwaná a-ná-menya **nyumbá** ndí mwalá.

1-child 1SBJ-TAM-hit 9.house with 3.rock

‘**THE CHILD HIT THE HOUSE WITH A ROCK.**’



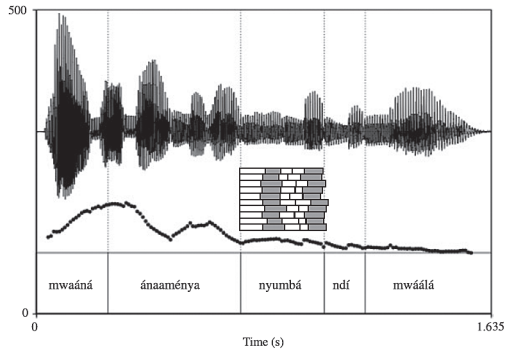
b. Narrow focus: (pp. 10, 16)

Q: Mwaná a-ná-menya **chi-yáni** ndí mwalá?

1-child 1SBJ-TAM-hit 7.what with 3.rock

‘**WHAT** did the child hit with the rock?’

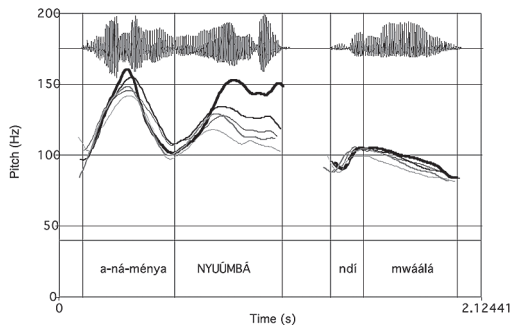
A: Mwaná a-ná-menya **nyumbá** ndí mwálá.
 1-child 1SBJ-TAM-hit 9.house with 3.rock
 ‘The child hit **THE HOUSE** with a rock.’



They observe first that focus is prosodically indicated only by the lengthening of the final foot of the focus domain rather than by any specific prosodic property of the focus expression itself, whether the answer to a *wh*-question involves *broad focus* as in (35a-A) or *narrow focus* as in (35b-A). As a result, narrow and broad foci in Ntcheu Chicheŵa are prosodically indistinguishable in most cases, as illustrated by the two pitch-track diagrams in (35). Downing and Pompino-Marschall also report, however, that some speakers assign a distinct prosodic pattern as in (36) below when they provide an answer to a *wh*-question involving narrow focus as in (35b-Q). (|| indicates a pause.)

(36) Narrow focus: (pp. 5, 23)

A: A-na-mény-á **NYUMBÁ** || ndí mwáálá.
 1-SBJ-RECENT.PAST-hit 9.house with 3.rock
 ‘S/he hit the **HOUSE** with a rock.’



As indicated by the pitch-track diagram in (36), the pitch of the focused

word is raised, thus disturbing the expected downstep. The raised pitch is then followed by a steep fall into the pause. As a result, the High tone associated with the post-focal word is realized noticeably lower and makes the focused element prominent. Downing et al. (2004: 177) called this an ‘anti-accent’ effect and regarded it as a distinctive focus prosodic pattern in Chicheŵa. In order to reconcile these seemingly contradictory experimental results, Downing and Pompino-Marschall proposed to regard the prosodic pattern in (36) as what they call *emphatic prosody*, which is optionally assigned when speakers would like to indicate narrow focus disambiguously. Suppose now that, as Downing and Pompino-Marschall claim, narrow and broad foci in Chicheŵa are prosodically indistinguishable *unless speakers adopt an option of assigning a prosodic pattern as in (36)*. Suppose further that permitting *broader* focus without making any extra prosodic effort is a default strategy Chicheŵa speakers generally adopt. It then is naturally expected that focus prosody is rarely and variably assigned to *wh*-questions in this language, as has been reported in the literature. Note now that the prosodic pattern used to unambiguously indicate narrow focus in Chicheŵa as in (36) resembles the focus prosody observed in Tokyo Japanese in (21), where the prosodic *wh*-domain starts with raised pitch on the *wh*-focus word and ends where the post-focal reduction stops.

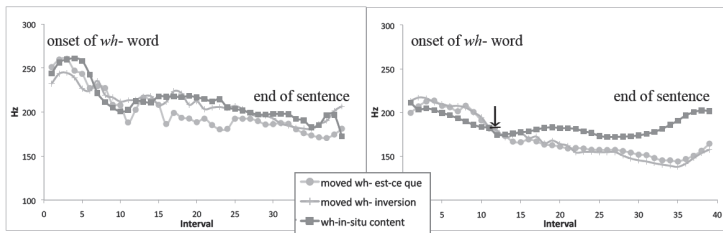
The above investigation of (34i), (34iii) and (34iv) suggests that a general division of labor exists between prosody and displacement to the periphery in achieving a physical marking that is associated with the interpretive implementation of *wh*-questions.⁸ This general picture is supported by the well-known observation that displaced *wh*-items themselves generally do not carry focus prominence in *wh*-movement languages (Ladd (1996: 170–172)). Accordingly, we predict that *wh*-in-situ is accompanied by some kind of distinctive prosody while overt *wh*-movement is not, even in the languages that permit both options like French. These predictions appear to be upheld. Cheng and Rooryk (2000) argued that *wh*-in-situ in French obligatorily involves sentence-final rising intonation, which *wh*-movement does not. Déprez et al. (2013) empirically verify this claim in their production experiment on prosodic patterns of *wh*-questions like (37)–(39) below.

⁸ Tentatively, I assume that *wh*-movement is a more marked strategy of physical marking than *wh*-prosody since it involves an extra process of relocating phonetic content to the periphery of a clause, while prosody is assigned to a sentence no matter what.

- (37) *Wh*-movement with the question marker *est-ce que*:
Quel élément *est-ce qu'* elle a mis au milieu?
which shape QUES.PRT she has placed in.the middle
 'Which shape did she place in the middle?'
- (38) *Wh*-movement with subject-auxiliary inversion:
Quel élément *a-t-elle* mis au milieu?
which shape has.she placed in.the middle
- (39) *Wh*-in-situ:
 Elle a mis **quel élément** au milieu?
 she has placed **which shape** in.the middle
 (literally) 'She placed which shape in the middle?'

Interestingly, the final rise was assigned in the *wh*-in-situ construction by most, but not all, the speakers who participated in their experiment. Those who did not assign a final rise instead placed an elevated pitch on the *wh*-word itself. Déprez et al. (2013: 14) illustrate the results of their experiment with the diagrams in (40), with the left and right panels representing the pitch contours for these two different sub-groups of participants. The three contours inside each plot correspond to the three sentence types in (37)–(39).

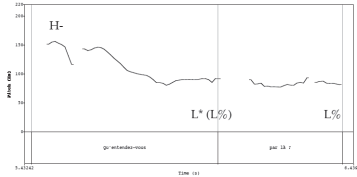
- (40) a. High pitch accent on the *wh*-word: b. Clause-final rising contour:



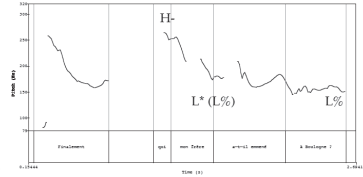
Not only did Déprez et al. (2013) find that different speakers choose between these two different strategies, but they also demonstrated that the extent of the final rise and the height of the pitch on the *wh*-word negatively correlate with each other. These two results suggest that the two patterns are likely to be variables of the prosody for *wh*-in-situ in French. Furthermore, Bayssade et al. (2007: 167–168) observe that, in the *wh*-question accompanied by a falling contour, the elevated high pitch accent of the *wh*-word is followed by a low pitch accent (and one or more low boundary tones, according to their phonological analysis). This post-focal pitch lowering is illustrated by the pitch-track diagrams (41a, b) they provide

and also by the diagram in (40a). (The *wh*-word in (41a, b) is assigned a phrasal H- in Bayssade et al.'s (2007) analysis.)

(41) a.

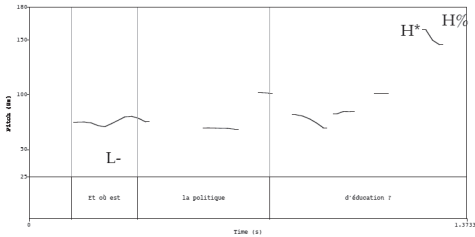


b.



Finally, when the sentence is assigned a clause-final rising contour as in (40b), the onset of the *wh*-word starts with low pitch, which Déprez et al. (2013: footnote 9, p. 14) describe as “flat intonation or a compressed pitch accent” and Bayssade et al. (2007: 168) analyze as involving a phrasal L-, as in (42).

(42)



To sum up, a *wh*-question is realized as *wh*-in-situ in French only when a distinctive prosodic pattern for a *wh*-question is assigned to it (either a raised pitch on the *wh*-word or a final rise, depending on the speaker). Otherwise, the *wh*-question is realized with the application of overt *wh*-movement. Once again, since prosodic phrasing does not need to play any direct role in these analyses, we are not forced to assume that the two options of *wh*-questions in these languages are reduced to the presence versus absence of MiP boundaries.

When the prosodic analyses of *wh*-in-situ languages reported above are compared, a general picture emerges. In each case, a prosodic *wh*-domain is initiated with a *wh*-focus word and terminated at the end of the clause in which this *wh*-focus takes scope. In particular, a *wh*-focus word is marked by some local tonal event, and the end of the clause is marked by either a distinctive contour (e.g. a rise) or the termination of a stretch of low/high pitch. These findings are as summarized in (43).

(43) Prosodic patterns in *wh*-in-situ languages:

Language	Example	<i>wh</i> -word	End of CP
Tokyo Japanese	(30) and (31)	clear pitch prominence	end of low pitch sequence
Fukuoka Japanese	(32)	rising contour	end of high pitch sequence
Chicheŵa	(36)	some pitch prominence followed by a pause	end of low pitch sequence
French (rising)	(54a) (=39)	compressed pitch	rising contour
French (falling)	(54b) (=39)	clear pitch prominence	end of low pitch sequence

Exploring these patterns is a first step in responding to the need for examining much fuller data like (30) and (31) in languages other than Tokyo Japanese. These generalizations in (43) will be appealed to when we attempt to grammaticalize the sound-meaning synchronization in *wh*-questions in Section 3.2.4.1.

What remains to be accounted for is why rightward *wh*-movement as in (34ii) is not observed, at least in spoken languages.

(34ii) [CP ... **wh** ... **C**] *wh*-move to right ?


We can surmise the reason why this option is generally avoided as follows. Recall that it is being claimed here that overt *wh*-movement applies in quest of some form of physical marking associable with the interpretive aspects of *wh*-questions. While leftward overt *wh*-movement can successfully signal the involvement of a *wh*-focus (and its interpretive domain) at the beginning of a clause, rightward movement cannot encode such pieces of information until the very end of the clause. Such a delay of information imaginably creates a critical handicap when this kind of question sentence is processed. It therefore seems natural that languages should shy away from adopting the grammaticalization of such an inefficient way of physically marking *wh*-questions.

3.2. Grammaticalizing Sound-Meaning Correlations

In discussing typological variation in *wh*-questions in general, and discussing the prosodic disambiguation of potential *wh*-scope ambiguity in Japanese as in (30) and (31) in particular, we paid attention only to the surface correlations between *wh*-prosody and *wh*-scope. We also offered some informal generalizations and analyses to capture this observable surface correlation as if we were assuming that prosody directly derives semantic

effect (or vice versa). We now begin a more serious investigation of how the grammar can achieve these surface correlations. If this investigation is pursued within the minimalist program, its goal can be restated as finding a way to guarantee synchronization of a specific PF and a specific LF for a *wh*-question without giving rise to any theory/model-internal contradiction like that posed by the look-ahead problem.

3.2.1. Overt Movement as ‘Look-ahead’

Before beginning this discussion, we first review some of the restrictions imposed on grammar by the core working hypotheses of the minimalist program. First, the input to the grammar should be nothing but the information encoded in lexical items (“Inclusiveness”). Second, the information in lexical items should be completely split so that each of the interface representations (PF and LF) consists solely of the information legible to the performance systems of sounds and meanings, respectively (“Legibility”). Third, syntactic derivation should be induced only by an interface need to derive legible PF and legible LF without involving any form of ‘look-ahead’ (“(Local) Economy”). These constraints imposed on grammar must always be observed in order for the minimalist program to be maintained properly.⁹

These fundamental requirements, however, have not always been met in the development of the theory of minimalist syntax. Overt movement, for example, has been characterized as a rule that applies before Spell-Out so that it can affect both PF and LF rather than LF alone. Note that this is a straightforward case of a look-ahead. In order to conceal this state of affairs, Chomsky (2000, 2001) postulates an EPP-feature, characterized as a ‘virus that requires a spec’ which must be eliminated before any larger constituent is created by Merge. In other words, movement is made overt at the expense of postulating an otherwise unmotivated imperfect entity that needs to be eliminated even before it reaches the interface. This approach directly disregards the local economy requirement mentioned above. Note also that, because of this tailor-made imperfection that has to be eliminated

⁹ In this article, the ‘minimalist program’ refers to a general program seeking “to discover to what extent minimal conditions of adequacy suffice to determine the nature of the right theory” (Chomsky (2000: 92)), pursued with the working hypotheses mentioned above. Crucially, the use of the term in this article does not refer to any particular mechanics or technical details Chomsky has adopted in pursuing this program, for example, postulation of specific functional categories like AGR or *v*, an appeal to a ‘probe-goal relation’ (or its predecessor ‘feature checking’) or overt Agree.

before Spell-Out, overt movement induces displacement effects at both PF and LF *accidentally*. In short, the whole approach here is simply a restatement of the problem rather than a solution.

By definition, since overt movement displaces phonetic content, it affects not only the semantics of a sentence but also its pronunciation. The source of the look-ahead problem just observed is the attempt to achieve this effect by forcing its application before Spell-Out, i.e., before the derivation reaches the interface components. Yet at this point in the derivation, there is no genuine grammatical motivation for such an operation. What the grammar needs to achieve, then, is to let overt movement affect sounds and meanings separately (in accordance with an interface need to derive a well-formed PF and a well-formed LF, respectively) yet somehow guarantee their synchronized effects.

3.2.2. Prosody-Semantics Correlations as ‘Look-across’

Recall now the correlations between *wh*-prosody and *wh*-scope observed for Japanese in (30) and (31). If these remain mere observations, then it remains to be explicated how exactly the grammar makes possible such correlations. A common claim found in the literature is simply that a certain prosodic pattern is responsible for producing a specific semantic effect (or vice versa), but this claim provokes a problem of local economy in the grammar comparable to the ‘look-ahead’ required by overt movement. The only difference is that, in this case, since an LF is derived directly from a PF (or vice versa) skipping syntax, the prosody-semantics correlation involves ‘look across’ rather than ‘look ahead.’ The task that must be undertaken by the grammar in both cases is the same—it must somehow find a way to guarantee the synchronization of a specific PF effect and a specific LF effect while finding an independent interface motivation to establish each of them.

We would like to argue in the remainder of this article that these seemingly independent issues (the ‘look-ahead’ problem of overt movement and the ‘look-across’ problem of *wh*-in-situ) can be resolved in the same way, i.e. with an appeal to the same grammatical mechanisms. The key to the solution is to strictly observe the three minimalist constraints imposed on grammar mentioned above.

3.2.3. Synchronizing and Splitting Sounds and Meanings

First, we will establish the synchronization of sounds and meanings in general by adopting a feature complex of the form $[f_P, f_L]$, where f_P is a

feature relevant to PF and f_L to LF. The paired features [f_P , f_L], which we call a ‘PL-complex (physical/logical feature complex),’ represent two different interface aspects of a single linguistic phenomenon. PL-complexes are added to lexical items, along with formal features like Case and F-features, when a Numeration (or Lexical Subarray) is formed. For instance, when a Numeration is formed for the utterance in (44) below, various extra features (among others) are added to the lexical items, as indicated in (45).

(44) [As an answer to the question ‘Who does John love?’]

He loves **MARY**.

(45) N: {*he* (NOM), *loves* (PRES, 3P/SG), *Mary* (ACC, [**FOC_P**, **FOC_L**])}

Here, because of its focused status, the lexical head of the object $N_{\max/\min}$ *Mary* is assigned the PL-complex [**FOC_P**, **FOC_L**]. This PL complex consists of two distinct types of features: a phonetically interpreted focus feature *FOC_P* and a semantically interpreted focus feature *FOC_L*.

When a language user consciously or unconsciously decides what lexical items are to be used in generating an utterance, he or she also determines what informational role should be assigned to each of them in accordance with the appropriate information packaging strategy for a given context. This decision leads to the introduction of PL-complexes to particular lexical items. The PL-complex [**FOC_P**, **FOC_L**] was added to *Mary* in (45) in this way. The matter of what particular lexical items are selected into the Numeration is not determined by purely grammatical factors alone but by various extra-grammatical factors like register and style as well—as in the selection from *angry*, *mad* and *pissed off*. As such, we consider Numeration to be an interface between the computational component of the minimalist grammar and other cognitive systems. Likewise, information packaging, i.e., how we convey a message, rather than what we convey, is also determined by extra-syntactic factors like discourse and pragmatics. For these reasons, we consider Numeration to be the appropriate level for the introduction of PL-complexes.

The feature f_P eventually comes to be associated with some instruction to the performance system for sounds when it appears at PF, and the feature f_L eventually comes to be associated with some instruction to the performance system for meanings when it appears at LF. As such, the paired features [f_P , f_L] in PL-complexes are naturally bound to be completely split in the course of computation. This means that no extra device or new hypothesis needs to be added to the standard minimalist assumptions in order to capture the synchronization of sounds and meanings. Simply put, Spell-Out

splits the features on all lexical items into those relevant to PF and those relevant to LF and separately delivers them to the interfaces, and $[FOC_P, FOC_L]$ are only some specific instances of such features.

The core idea of a PL-complex can be traced back at least to the syntactic focus marker “F” proposed by Jackendoff (1972: 240). Jackendoff’s “F” and our PF-complexes, however, are distinct in two respects. First, “F” was claimed to be introduced by a syntactic rule in the course of a derivation (in particular, introduced to surface structure by an attachment transformation or to deep structure by a phrase structure rule), reflecting the Extended Standard Theory framework of late 1960s and early 1970s. PL-complexes, on the other hand, are added directly to lexical items at the outset of a syntactic derivation. Second, “F” is a single feature to be interpreted both phonetically and semantically, while PL-complexes consist of two distinct types of features which are separately interpreted at PF and LF. PL-complexes can be considered the minimalist reincarnation of “F,” with the necessary adjustments required by the new theoretical assumptions of minimalism. Such adjustments allow PL-complexes to give us several clear advantages over “F” because they consist of, by definition, two independent features f_P and f_L . For instance, when we appeal to this property of PL-complexes, we can reduce cross-linguistic variation in the syntactic realization of *wh*-questions to the variation in the f_P of individual lexical items while maintaining the universality of the paired f_L . This point will be discussed in more detail directly below.

An anonymous reviewer questions the value of the proposed approach, claiming that what it achieves is “matched or exceeded by proliferation at the level of Numeration,” and hence it falls in the situation described by Chomsky (1981: 13) where he points out that “[s]hifting the variety of devices from one to another component of grammar is no contribution to explanatory adequacy.” On the contrary, as pointed out in two preceding paragraphs, an appeal to PL-complexes does not require any extra device or new hypothesis in minimalist syntax. Lexical items are nothing but a bundle of phonological and/or semantic features, to which formal features may be added, and all such features must be properly assorted and sent separately to PF and LF when the computation splits. As described with (45), PL-complexes are added to lexical items just as formal features like Case and F-features are added when the Numeration is formed. Postulating a feature akin to a PL-complex in order to induce both phonetic and semantic effects of focus is not entirely new, as just portrayed above. Finally, as will be argued below, the proposed approach permits us to eliminate theory/

model-internal contradictions like look-ahead and look-across problems, which otherwise would remain recalcitrant.

3.2.4. Interface Licensing

Up to this point, we have postulated that what starts out as a PL-complex $[f_P, f_L]$, i.e. a pair of P-feature and L-feature, comes to be separated in the course of derivation toward PF and toward LF. What is left to be achieved is to identify the role each of these features plays at the interface level. We consider PL-complexes to fulfill the role of guaranteeing that the linguistic expression they are assigned to comes to properly represent a specific linguistic concept (e.g. focus) both at PF and LF. In particular, the PF and the LF for a sentence must represent cues that can eventually be interpreted as appropriate instructions for the relevant performance system. When such interface cues are established, a linguistic expression can be said to become ‘legible’ at the interface—‘physically legible’ at PF (henceforth ‘P-legible’) and ‘logically legible’ at LF (henceforth ‘L-legible’). This way, PL-complexes permit us to maintain the core minimalist tenets (Inclusiveness, Legibility and (Local) Economy) while properly establishing the observed synchronization of sounds and meanings, thus solving the ‘look-across’ problem.

When we adopt this view of interface licensing, we note that there is a fundamental similarity between the synchronization of ‘prosody+semantics’ and the synchronization of ‘overt movement+semantics.’ As such, it is practically useful to use ‘overt syntax’ to refer to both. We thus use the term overt syntax as a cover term to refer to *a grammatical procedure that achieves the synchronized PF- and LF-effects encoded by PL-complexes*. Under this new definition, the synchronization of *wh*-prosody and *wh*-semantics can be regarded as a product of overt syntax, just as the synchronization of *wh*-movement and *wh*-semantics is. Put reversely, overt movement also involves a type of PF-LF synchronization achieved by PL-complexes. In fact, all of prosody, overt movement, overt morphology, and possibly syntactic location (e.g. adjacency and periphery) can be regarded as properties that have potential to induce P-legibility in overt syntax. This is the motivation for the term ‘physical’ legibility rather than ‘phonetic’ legibility.¹⁰

¹⁰ Yoon (2012) and Kitagawa and Yoon (2012) argue that the notions of P- and L-legibility can be made even more general and extended to many other aspects of overt syntax. For instance, they point out that the Visibility Condition (Joseph Aoun, Chom-

3.2.4.1. Overt Syntax with Prosody

We now examine the overt syntax of *wh*-questions for which P-legibility is fulfilled by prosody, thus resulting in *wh*-in-situ. This case represents the language types in (34i) and (34iv) (discussed in Section 3.1).

(34i) [_{CP} ... **wh** ... **C**] *wh*-in-situ Japanese

(34iv) [_{CP} **C** ... **wh** ...] *wh*-in-situ Chicheŵa

We hypothesize that the notion ‘*wh*-focus’ is introduced into the Numeration as what we call ‘*wh*-*C* pair’ (cf. Kitagawa and Rodríguez-Mondoñedo (2010), Kitagawa (2011)). A *wh*-*C* pair is a syntactic unit consisting of a pair of lexical items—a *wh*-word and a Comp_{wh} —and specified with a PL-complex of the form [$\langle \text{wh}_P + C_P \rangle$, $\langle \text{wh}_L + C_L \rangle$]. This is illustrated in (46) below.

(46) Japanese: $\langle \text{nani} + \text{ka/no} \rangle$ ($[\langle \text{wh}_P + C_P \rangle$, $\langle \text{wh}_L + C_L \rangle$])

what COMP_{wh}

Chicheŵa: $\langle \text{chiyáani} + \text{kodí}/\emptyset_{\text{wh}} \rangle$ ($[\langle \text{wh}_P + C_P \rangle$, $\langle \text{wh}_L + C_L \rangle$])

what COMP_{wh}

Note that a *wh*-*C* pair is ‘paired’ in two ways—it consists of a pair of lexical items (a *wh*-word and a Comp_{wh}), and it is specified with a PL-complex (the P-features $\langle \text{wh}_P + C_P \rangle$ and the L-features $\langle \text{wh}_L + C_L \rangle$). By characterizing a *wh*-*C* pair this way, we make the following claim. At the time language users make the ‘blueprint’ of an utterance by forming a Numeration, they already encode the way *wh*-interrogation is incorporated into that utterance by indicating which item is interpreted as focus and in which projection it takes scope and is interpreted. That is, when a *wh*-word and its associate complementizer are introduced into the syntax, it is already specified how they must be represented at PF and at LF. The idea of encoding grammatical information as two independent elements that are associated as a single unit is not novel to generative syntax. For instance, in English, perfective aspect, progressive aspect, and the passive construction are often analyzed as one unit consisting of both the auxiliary verb and the verbal inflection (i.e. *have* + *-EN*, *be* + *-ING* and *be* + *-EN*, respectively).

sky (1981: 117)) poses a typical ‘look-across’ problem in the minimalist framework since it claims to have captured the generalization that Case marking at PF makes an argument NP legible to θ -marking at LF without clarifying how grammar can establish such a correlation. By regarding morphological case, adjacency and periphery as physical implementation of the P-features assigned to a nominal argument as part of a PL-complex, Yoon (2012) and Kitagawa and Yoon (2012) capture such a case- θ correlation as a synchronized PF-LF effect.

The P-features $\langle wh_p + C_p \rangle$ in languages of the type (34i) and (34iv) make the paired *wh*-word and $Comp_{wh}$ become P-legible in the manner described in (47) below.

(47) P-legibility of *wh*-in-situ:

A *wh*-phrase and a *Comp* making up a *wh*-C pair become P-legible when their P-features [$\langle wh_p + C_p \rangle$] define a unique domain of prosody for focus (henceforth **FPd**) in such a way that:

- (i) [wh_p] physically marks the initiation of FPd, and
- (ii) the end of the maximal projection headed by [C_p] physically marks the termination of FPd.

It is in this way that the PF is realized for cases of *wh*-in-situ, as in (34i) and (34iv). The way FPd is phonetically implemented in such cases, however, varies from language to language (as exemplified in (43) above), though the implementation for any given language is presumably selected from the options made available by Universal Grammar. The most common pattern seems to involve indicating the *wh*-focus word with a distinctively high or low pitch, followed by a stretch of relatively level pitch that terminates at the end of CP (thus marking the end of FPd).

Independently of the licensing at PF, the *wh*-C pair is made 'L-legible' at LF in the manner described in (48).

(48) L-legibility of a *wh*-question:

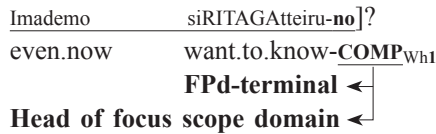
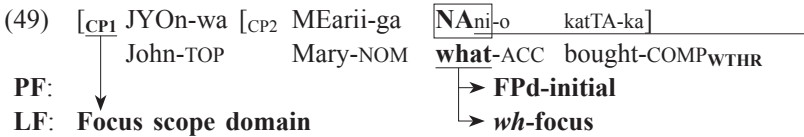
A *wh*-phrase and a *Comp* making up a *wh*-C pair become L-legible when their L-features [$\langle wh_L + C_L \rangle$] define a unique domain of interpretation for focus in such a way that:

- (i) [wh_L] identifies the item to be interpreted as focus, and
- (ii) the maximal projection headed by [C_L] is identified as this item's scope domain.

We believe that the L-legibility of *wh*-questions is established in the same manner (as described in (48)) for both *wh*-in-situ languages and *wh*-movement languages. [Wh_L] can be considered an interpretable sub-feature that provides *wh*-focus content, while [C_L] is an uninterpretable sub-feature that gets deleted when its maximal projection comes to indicate the interpretive domain of focus. We will discuss how L-legibility can be implemented in covert syntax in both *wh*-in-situ and *wh*-movement languages in Section 3.2.4.3. As for the P-features, [Wh_p] in *wh*-in-situ languages can be considered an interpretable sub-feature that provides a phonological tone target that marks the initiation of FPd at PF. In contrast, [C_p] is an uninterpre-

table sub-feature that marks the termination of FPD.¹¹ This sub-feature is deleted when it marks the end of the post-focal pitch pattern at the end of the relevant maximal projection. Since [C_P] and [C_L] of a *wh*-C pair are uninterpretable sub-features, their failure to make the *wh*-C pair visible is expected to induce ungrammaticality. While [wh_P] and [wh_L] are interpretable sub-features, they must also play a role in making the *wh*-C pair legible at the interface by being associated with [C_P] and [C_L], respectively.¹² Such association will allow the focus prosody starting with a distinctively high or low pitch of a *wh*-word to be properly terminated, and will also allow the focus value of a *wh*-word (in the sense of Rooth (1992)) to be elevated to the ordinary semantic value.¹³

How visibility is implemented at PF and LF in a potentially ambiguous *wh*-question is exemplified for Tokyo Japanese in (49) and (50) and for Fukuoka Japanese in (51) and (52).¹⁴ Observe how FPD at PF and a *wh*-focus scope domain at LF are aligned in each case when the visibility of the *wh*-question is established in accordance with (47) and (48).¹⁵



(literally) ‘**What** does John still want to learn *whether* Mary bought?’ (= (30))

¹¹ One possible exception is the [C_P] that is implemented as a clause-final rising contour in French *wh*-in-situ.

¹² Kitagawa (2005) and Kitagawa and Fodor (2006) argue that native speakers of Japanese unconsciously and implicitly assign *wh*-prosody even when they process written *wh*-questions in silent reading.

¹³ At the same time, the post-focal materials located within FPD at PF presumably come to be regarded as the tail portion of the background of the focus at LF.

¹⁴ In Fukuoka Japanese, an accent appears before the subordinate Comp when FPD terminates at the end of the subordinate CP. See Smith (2013) for a discussion on the variations in the prosody-scope correlations exhibited by young Fukuoka Japanese speakers.

¹⁵ While LFs do not have prosodic patterns, prosody is nonetheless indicated in these and the following examples for ease of comparison between PF and LF.

(50) [CP₁ JYOn-wa [CP₂ MEarii-ga NA_{ni}-o
 John-Top Mary-Nom **what**-Acc
 PF: ↓ → **FPd-initial**
 LF: **Focus scope domain** → **wh-focus**

katTA-ka Imademo siRITAGAtteiru-no]?
 bought-Comp_{wh2} even.now want.to.know-Comp_{Y/N}
→ **FPd-terminal**
→ **Head of focus scope domain**

‘Does John still want to learn **what** Mary bought?’ (= (31))

(51) [CP₁ Naoya-wa [CP₂ Mariko-ga naN(I)-O KATTA-KA
 Naoya-Top Mariko-Nom **what**-Acc bought-Comp_{Wthr}
 PF: ↓ → **FPd-initial**
 LF: **Focus scope domain** → **wh-focus**

WAKARAN-TO]?
 not.know-Comp_{wh1}
FPd-terminal ←
Head of focus scope domain ←

(literally) ‘**What** does Naoya not know *whether* Mariko bought?’
 (Smith (2013: 119))

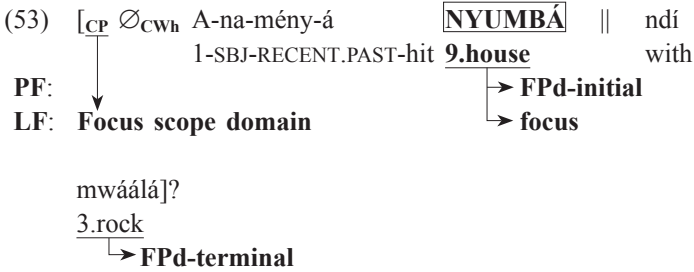
(52) [CP₁ Naoya-wa [CP₂ Mariko-ga naN(I)-O
 Naoya-Top Mariko-Nom **what**-Acc
 PF: ↓ → **FPd-initial**
 LF: **Focus scope domain** → **wh-focus**

KATTA-ka wakaran-to)?
 bought-Comp_{wh2} not.know-Comp_{Y/N}
→ **FPd-terminal**
→ **Head of focus scope domain**

‘Does Naoya not know **what** Mariko bought?’
 (Smith (2013: 119))

In head-final languages like Japanese, FPd is terminated at Comp_{wh}. Since this Comp_{wh} is the head of the scope domain of the *wh*-focus word, the marking of the end of FPd at PF is even more clearly linked to the interpretive domain of the *wh*-focus at LF in Japanese than it is in Comp-initial *wh*-

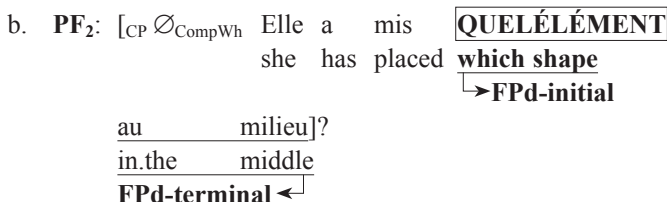
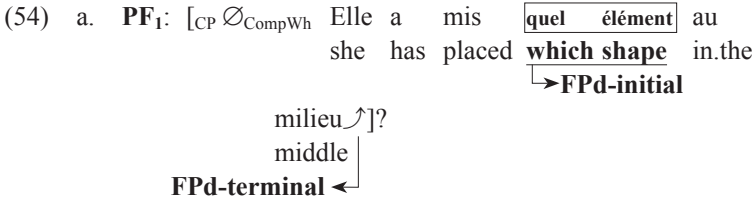
in-situ languages like Chicheŵa exemplified in (53).



‘S/he hit the **HOUSE** with a rock.’

Note that FPD as a whole at PF (e.g. *what* ~ Comp_{WhI} in (49)) does not necessarily correspond to the focus scope domain at LF (e.g. CP_1 in (49)). Instead, the two are merely linked, with the endpoint of CP_1 functioning as their pivot. In this way, the proposed approach captures the prosody-interpretation synchronization between the unsynchronized PF and LF domains in *wh*-in-situ languages.

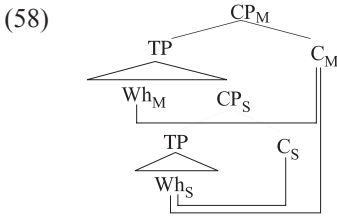
As we saw in Section 3.1, French permits two distinct types of FPD, which are illustrated in (54a) and (54b) below. (54a) involves a compressed pitch on the *wh*-word and an utterance-final rise (indicated by \uparrow), whereas (54b) involves clearly elevated pitch on the *wh*-word followed by a sequence of low pitch.



Both PFs in (54) can be paired with the LF in (55) below, whose L-legibility is achieved in accordance with (48).

3.2.4.3. Structural Conditions on the Implementation of L-legibility

It seems clear that L-legibility in *wh*-in-situ languages must be implemented in covert syntax by appealing to the relative syntactic relation between the *wh*-word and the maximal projection of its associated Comp_{wh} . The examples we have examined thus far, e.g. (49) and (50), verify that both matrix CP (CP_M) and subordinate CP (CP_S) can serve as the scope domain of the subordinate *wh*-in-situ (Wh_S) in a construction schematized in (58).



As is well-known, however, only CP_M can serve as the scope domain for the matrix *wh*-in-situ (Wh_M). The L-legibility of a *wh*-C pair in Japanese (and possibly all *wh*-in-situ languages) thus seems to be implemented in logical syntax under the structural condition as in (59).

(59) $[\text{Wh}_L]$ is dominated by the maximal projection of $[\text{C}_L]$.

In *wh*-movement languages, on the other hand, L-legibility of a *wh*-C pair is implemented under the structural condition as in (60).

(60) $[\text{Wh}_L]$ is located directly under the maximal projection of $[\text{C}_L]$.

One possible way to assimilate the two cases is to treat (60) as an effect that holds for not just *wh*-movement languages but also for *wh*-in-situ languages. *Wh*-movement would then have to take place in covert syntax to achieve L-legibility as in (60) and derive an LF as in (61).

(61) LF: $[\text{C}_{\text{PL}} \text{wh}_L \text{C}_L [\text{TP} \dots \text{wh}_L \dots]]$ (or $[\text{C}_{\text{PL}} \text{wh}_L [\text{TP} \dots \text{wh}_L \dots] \text{C}_L]$)

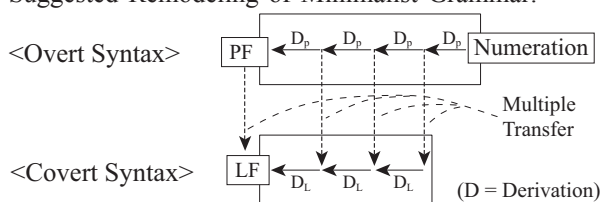
Since we have hypothesized that a *wh*-C pair (as a unit) represents a *wh*-focus construction, it might be reasonable to consider that a hierarchically-local union of the *wh*-word and Comp_{wh} at LF is a universal requirement. Here, we consider $[\text{C}_L]$ to be an uninterpretable feature that gets deleted when the union of the *wh*-word and Comp_{wh} is achieved and the interpretive domain of *wh*-focus is identified at LF. Alternatively, we may hypothesize that the L-legibility of a *wh*-C pair in *wh*-movement languages is also implemented as in (59) but involves the ‘tail copy’ $[\text{Wh}_L]$ within TP to be interpreted as a choice function variable (cf. Reinhart (1997)). We must, however, leave further pursuit of this topic to future research.

3.2.5. Overt Syntax Revisited

Let us now return to the ‘look-ahead’ problem of overt movement pointed out in Section 3.2.1. The ‘P/L-legibility’ analysis of overt *wh*-movement sketched out above may be regarded as advocating the view that overt *wh*-movement is a PF-movement that also induces synchronized LF-effects. This analysis effectively solves the look-ahead problem in question since physical (and hence overt) dislocation of phonetic content now takes place in the course of the derivation toward PF, and its application is motivated strictly by an interface requirement. While this approach can stand as a perfectly self-contained proposal, we can in fact take a step further and bring overt movement back into syntax with only small revisions of the minimalist model of grammar. The fact that the current minimalist model of grammar cannot achieve overt movement without inducing a look-ahead problem suggests, in itself, a need to redesign the model.

Let us therefore explore the alternative remodeling of the computational component of the minimalist grammar illustrated in (62).

(62) Suggested Remodeling of Minimalist Grammar:



The crucial revision here is that overt syntax and covert syntax do not overlap. They are completely separate and operate in the following order. Overt syntax starts with the generation of linguistic expressions by (externally) merging the features encoded in lexical items and their projections. The goal of overt syntax is to derive a well-formed PF, at which the P-legibility of linguistic expressions must be achieved. An operation in overt syntax is enacted solely for this purpose, triggered by the f_p of a PL-complex. For example, a [Wh_p] sub-feature assigned to a *wh*-word in English requires that word's maximal projection to keep moving to the periphery of a syntactic object each time merge applies. This process continues until it eventually reaches the left periphery of the CP headed by its associated Comp containing [C_p]. This way, overt *wh*-movement applies in overt syntax without inducing any look-ahead problem(, which is inevitably caused by EPP characterized as ‘I need a Spec’ (Bošković (2007))). In a nutshell, overt syntax determines the overt/physical properties of syntactic expressions that are relevant to PF, such as the domain of prosodic/phonetic

activities (e.g. Fpd domain) and the linear and hierarchical order of the phonetic content of syntactic elements (e.g. displacement).

At any derivational stage of overt syntax, any portion of the logical and semantico-pragmatic properties of lexical items (L-features) may be extracted away from P-features and fed into covert syntax 'as needed' for interpretation. This is achieved by multiple transfer, applying in the way proposed by Epstein et al. (1998). Such a 'derivational' interpretation can induce, for instance, various LF-reconstruction effects.

This way, the overt syntactic operations in (62) may induce synchronized semantic effects, but this is due to the design of grammar, not because its application within overt syntax is triggered by LF factors. Covert syntax then attempts to derive a well-formed LF, at which L-legibility of linguistic expressions must be achieved. In short, covert syntax determines only the properties of syntactic expressions that are relevant to LF, such as the hierarchical relations and dependencies among syntactic constituents (e.g. the predicate-argument relation, the operator-variable relation and its scope).¹⁶

While the proposed reorganization of syntax may appear to be drastic at first sight, the revisions are in fact relatively small-scale. First, this reorganization has simply decomposed traditional overt syntax by untangling and separating its PF-effects and LF-effects, while permitting them to be synchronized with an appeal to PL-complexes. Second, multiple transfer merely applies in the opposite way to Spell-Out, stripping away L-features rather than P-features from the feature complexes of lexical items. If such small-scale revisions permit us to account for the synchronization of sounds and meanings while avoiding the serious theoretical problems involving 'look-ahead' and 'look-across,' it is certainly worth exploring them, although their full evaluation will require much future research.¹⁷

¹⁶ Here, we are assuming, rather loosely, that the overt syntactic derivation is subject to the rules of phonology and phonetics toward its end before it derives PF, and covert syntactic derivation is subject to semantics toward its end before it derives LF. To be more precise, (62) should be regarded as a model of two syntactic components whose output representations are subject to further derivation in phonology/phonetics and semantics, respectively.

¹⁷ It should be made clear that (62) is proposed as a model of grammar, *not* as an acquisition model.

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